Analyzing the Effect of Supplier Evaluation Criteria on Public Health Supply Chain Performance: A Case Study of Kenya Ministry of Health

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DOI: https://dx.doi.org/10.47772/IJRISS.2025.908000330

Received: 29 July 2025; Accepted: 08 August 2025; Published: 09 September 2025

ABSTRACT

This paper empirically examines the influence of supplier evaluation criteria—including supplier quality standards, supplier delivery efficiency, supplier financial capacity and supplier compliance with procurement procedures on the supply chain performance of the Ministry of Health in Kenya–The study adopted an explanatory research design and employed a quantitative cross-sectional survey approach. Data were collected through structured questionnaires from relevant procurement and supply chain personnel within the Ministry of Health. Hypotheses were tested using multiple linear regression analysis in SPSS. The results revealed that all four supplier evaluation criteria had positive and statistically significant effects on supply chain performance. Supplier compliance had the strongest influence, followed by delivery efficiency, financial capacity and quality standards. The findings highlight the importance of incorporating comprehensive supplier evaluation frameworks in public health procurement. Procurement managers should emphasize compliance monitoring, financial vetting, and delivery tracking to improve supply chain outcomes. Regulatory agencies such as the Public Procurement Regulatory Authority (PPRA) should strengthen oversight mechanisms and encourage supplier development programs to enhance efficiency and reliability across the public health supply chain.

Keywords: Supplier evaluation, Procurement compliance, Supply chain performance, Public health, Ministry of Health, Kenya.

INTRODUCTION

In the contemporary linked world, the efficacy of public health supply chains is paramount, guaranteeing equitable access to essential medical supplies for all individuals. Supplier assessment is essential for the efficient operation of global procurement and logistics. Inadequate supplier management often results in persistent challenges with the supply of health goods (Agoro, 2022). The World Health Organization estimates that 30–40% of global health funds are allocated to procurement, with supplier-related inefficiencies significantly affecting both prices and quality results. Effectively assessing suppliers—considering their quality, dependability, financial stability, and ethical practices—has emerged as a crucial element in improving the performance of public health supply chains (Wachiuri, 2019).

In Africa, there is a growing acknowledgment of the need of assessing suppliers to enhance procurement performance. Numerous African nations have had persistent difficulties in their public health supply chains, often due to inconsistent supplier screening procedures and the lack of uniform assessment frameworks (Mutai & Okello, 2016). Research reveals that around 50% of stock-outs in public health institutions throughout Sub-Saharan Africa result from supplier delays and challenges in adhering to quality requirements (Maina & Moronge, 2018). African governments, supported by foreign donors, have initiated reforms in their procurement policies to include robust supplier assessment systems. Kenya, Nigeria, and Ethiopia have implemented mechanisms to monitor supplier performance, with the objective of improving accountability and transparency in public health procurement.

The Ministry of Health in Kenya oversees an extensive and intricate supply chain that services over 8,000 public health institutions. The Kenya Medical Supplies Authority (KEMSA) serves as the principal agency for procurement and logistics, ensuring the availability of health goods. Notwithstanding several reform initiatives, Kenya continues to contend with significant supply chain inefficiencies, often linked to insufficient supplier assessment procedures (Miriti, 2018). Research by Owich and Odero in 2023 revealed that elements such as supplier selection, risk management methods, and misalignment with supply chain regulations might adversely affect the performance of the entire health supply chain.

Recent research in Nairobi County indicated that just 37% of public health institutions had implemented thorough supplier assessment procedures, despite the government's commitment to improving the health sector (Muuki & Nderui, 2024). The observed gaps have considerable repercussions—resulting in delays in the delivery of medical supplies to individuals in need, the wastage of stockpiles, and the misappropriation of public cash. The Kenya Health Sector Strategic Plan (KHSSP) indicates that over 25% of health commodities experience delays or do not adhere to quality requirements upon arrival, a circumstance often associated with supplier performance concerns.

Despite continuous expenditures in Kenya's health sector, supply chain difficulties persist, underscoring the urgent need to examine the efficacy of existing supplier evaluation standards. Juma (2020) emphasizes that proficiently assessing suppliers may significantly improve procurement outcomes by promoting consistency, accountability, and quality in public health services. Nonetheless, we encounter significant hurdles, such as fragmented supply chains, underfunded regulatory bodies, and insufficient technical expertise, which hinder the comprehensive adoption of optimal techniques for global supplier evaluation.

This research seeks to connect knowledge and practice by analyzing the influence of many supplier assessment criteria—such as quality compliance, cost efficiency, delivery dependability, and financial capability—on the operation of Kenya’s public health supply chain.

This research utilizes the Ministry of Health as a case study to provide policy-relevant insights aimed at enhancing institutional procurement capability and improving health outcomes via a more robust and responsive supply chain.

This study aims to answer three primary research issues to achieve its objective: How do supplier assessment criteria impact the effectiveness of the public health supply chain in the Kenya Ministry of Health?

Second, which specific supplier evaluation attributes—such as quality assurance, cost efficiency, delivery reliability, and financial capacity—have the most significant impact on supply chain outcomes? Third, what mechanisms or institutional factors moderate or mediate the relationship between supplier evaluation and overall supply chain performance?

The structure of this document is organized as follows: Section 1 provides an introduction to the study; Section 2 presents a detailed review of relevant literature; Section 3 outlines the research methodology, including data collection approaches and analytical models; Section 4 discusses the empirical findings and their implications; and Section 5 concludes the study with policy recommendations aimed at strengthening supplier evaluation practices in Kenya’s public health sector.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Theoretical review

From the perspective of the Supply Chain Competitive Performance Theory, supplier evaluation criteria function as strategic enablers of healthcare supply chain efficiency, responsiveness, and service quality. The theory posits that supply chains gain competitive advantage when core capabilities—such as supplier reliability, quality assurance, and cost efficiency—are aligned with organizational goals (Longaray, Marube, & Ensslin, 2023). In Kenya’s Ministry of Health, evaluating suppliers plays a crucial role in shaping procurement results. It helps you choose the proper partners, speeds things up, and makes sure that important medical supplies are always on hand.

Strong assessments of supplier performance can integrate operational objectives with broader public health goals, making it easier for institutions to adjust and change (Yazdani, Torkayesh, & Chatterjee, 2020).

Williamson's Transaction Cost Theory, which he developed in 1981, builds on this paradigm by showing how procurement decisions and contracts may affect costs. The idea says that businesses try to lower transaction costs, such negotiating, monitoring, and enforcing, by doing things like screening suppliers, rating them, and forming long-term relationships. When the public sector buys healthcare, it might cost more to do business if it's not clear or efficient to choose providers. This involves longer wait times for services, higher costs, and not meeting quality requirements. A case study from Kenya reveals that when suppliers don't deliver what they say they would, the Ministry of Health frequently has to spend a lot of extra money on emergency purchases and problems with quality (Lega, Marsilio, & Villa, 2013). When government agencies develop clear rules for how to evaluate vendors, they may minimize risks and speed up the buying process.

Blau came up with the Social Exchange Theory in 1964. It helps us understand relationships by focusing on the importance of trust, reciprocity, and commitment in keeping buyer-supplier relationships robust. When procuring healthcare, the relationships with suppliers are based on more than simply business; they are based on trust, shared values, and a common understanding of dependability. Harikrishnan, Shivdas, and Ananthu (2025) say that the way people interact with one other is very important for the long-term sustainability of procurement partnerships, particularly in complex and high-stakes areas like public health. When suppliers think that assessments are fair and honest, they are more likely to follow performance criteria, invest capital into quality control, and react to the demands of the institution. This helps people work together, fosters trust, and makes it easier for items and information to flow across the healthcare supply chain.

The Supply Chain Competitive Performance Theory, Transaction Cost Theory, and Social Exchange Theory all provide us a useful way to think about how the criteria used to judge suppliers affect the performance of public health supply chains. Putting these concepts together lets policymakers design evaluation systems that are both affordable and establish trust, while also concentrating on performance. This will help Kenya's public health system become stronger and more flexible.

Supplier quality standards and supply chain performance

Salimian, Rashidirad, and Soltani (2021) examined how supplier quality management (SQM) might enhance internal quality performance in a supply chain-focused culture.The study used structural equation modeling to look into how supplier quality initiatives affect organizational performance by using a structured survey from manufacturing companies. The results showed that using supplier quality management practices had a big positive effect on internal quality outcomes, especially when there was a culture that encouraged working together in the supply chain and always getting better. The authors came to the conclusion that incorporating supplier quality mechanisms into the culture of an organization makes the whole supply chain more responsive and efficient.

Forker (1997) looked at what influence the quality of suppliers in U.S. manufacturing settings. The study looked at the different types of relationships between customers and suppliers, comparing hierarchical and collaborative approaches. The study used both qualitative and quantitative methods to find that strong communication between organizations, formal feedback loops, and protocols for continuous quality improvement all make suppliers perform significantly more effectively. The results show that building relationships with suppliers is just as important as enforcing contracts for making the supply chain more reliable and reducing quality-related problems.

Fynes, Voss, and De Búrca (2005) looked at the connection between the quality of relationships in the supply chain and the quality of performance across 200 suppliers. The authors came up with a conceptual model to look at trust, commitment, and sharing information as factors that affect the quality of relationships and the performance of the supply chain. Their real-world research showed that stronger connections lead to better products and fewer defects. The study made it clear that quality performance in supply chains is not just about operational metrics; but also deeply embedded in the behavioral and relational dynamics between firms and their

suppliers.The authors concluded that extending TQM practices into the supplier base enhances systemic performance and customer satisfaction.

Supplier delivery efficiency and supply chain performance

Shi, Yang, Yan, and Tian (2017) did a study on performance in China's e-retail sector. They looked at how the speed of supplier delivery influences how well the whole supply chain works. The research examined data from the industry to demonstrate that the "first mile," which is the section of the delivery process where suppliers bring items, is the most crucial bottleneck. The findings indicated that when supplies are late, issues with processing and delivering orders from suppliers are generally worse than problems with distribution. The report underlined the need to work with suppliers, make lead times more trustworthy, and use digital monitoring technologies to make deliveries better.

Gunasekaran, Patel, and McGaughey (2004) created a whole system for assessing how well a supply chain works, including delivery reliability as one of the most important parts. They used case studies from manufacturing to create a conceptual model that split delivery performance measures into three groups: on-time delivery, delivery frequency, and delivery flexibility. The study stated that lean inventory procedures and operational responsiveness relied on suppliers delivering items on time and consistently. Structured data demonstrated that shorter order cycle times and happier customers were substantially connected to delivery efficiency.

An optimization model by Bhattacharyya and Guiffrida (2015) illustrates how combined investments might make suppliers deliver better. The model looked at how buyers might work together to make lead times more accurate and delivery times more consistent by putting money into suppliers' skills, such as their transportation or storage assets. Their simulations revealed that these sorts of collaborative models may make delivery outcomes as efficient as possible, particularly in supply chains that are in high demand and need to be supplied fast. The research highlighted how important it is to develop suppliers in order to increase delivery performance.

Ibrahim and Hamid (2014) looked examined how the quality, delivery, and cost performance of suppliers all affect how well a supply chain works. They did empirical study with real manufacturing organizations and discovered that delivery performance was most directly linked to how quickly they responded to customers and how well they retained them.

The study found that frequent site visits, performance audits, and certification programs make suppliers much more efficient at delivering goods. This, in turn, makes the whole supply chain more reliable.

Milgate (2001) looked into how delivery performance affects complicated supply chains in several of disciplines. The study used exploratory case studies to show that more complicated supply chains, like those with multiple tiers or international sourcing, can hurt delivery performance unless they are balanced out by better dvanced coordination tools. The study emphasized that delivery reliability is foundational to product availability and customer service levels and must be maintained even in complex, global sourcing networks.

Bushuev and Guiffrida (2018) analyzed delivery performance in two-stage supply chains, particularly examining how different delivery time distributions affect overall efficiency. Using simulation models, they found that variability in supplier delivery windows creates compounding delays in downstream processes. The authors proposed dynamic planning and safety time buffers as mitigation tools, emphasizing the value of predictive analytics in managing supplier delivery uncertainty.

Shin, Collier, and Wilson (2000) examined the impact of a supply management orientation on supplier delivery and buyer performance. Based on survey data from U.S. manufacturing firms, the findings revealed that fostering close, long-term supplier relationships and integrating delivery metrics into contracts leads to improved operational reliability. The study concluded that delivery performance should be a shared strategic objective between suppliers and buyers.

Supplier financial capacity and supply chain performance

Adida and Perakis (2014) examined at how supplier capacity and financial incentives might help maximize supply chain profit. They showed that suppliers with stronger financial situations are better equipped to change their production capacity and provide quick delivery via a two-tier supply chain model. This makes the whole supply chain more profitable. The research showed that suppliers that are financially constrained tend to operate prudent which makes them less flexible and responsive, which adversely impacts downstream partners.

Wang, Yan, Chen, and Xu (2021) studied how a company's financial capabilities determine how well it does in financial supply chains (FSCs). They looked at data from firms in manufacturing and logistics and discovered that suppliers that have superior finances—measured by liquidity, loan availability, and asset leverage—make the supply chain work better in the near term and last longer in the long run. Their findings back up the premise that a supplier's financial health builds confidence and makes it simpler for everyone in the supply network to work together all the time.

Liu, Fang, Park, and Chen (2021) investigated into how small and medium-sized firms (SMEs) modify the way they do business with buyers and suppliers when they utilize supply chain financing (SCF) technologies. Their research demonstrated that the financial health of suppliers is a key determinant in performance consistency, particularly when the market is unpredictable. They discovered that suppliers who are financially stable are more likely to join SCF programs, which makes inventory flow better, cash conversion cycles shorter, and the whole chain more flexible.

Wandfluh and Hofmann (2016) conducted an empirical analysis on financial collaboration between in buyer–supplier dyads.. Their findings showed that shared financial planning, credit extension, and risk-sharing systems make deliveries more reliable and lower the cost of transactions. Suppliers who are financially stable are more likely to agree to these kinds of deals, which will contribute to their own companies and the supply chain as a whole more stable.

Ghadge, Jena, Kamble, and Misra (2021) investigated financial risk from the point of view of the relationship between a manufacturer and a supplier. The study found that when supplier companies are in financial difficulties, it can cause problems for other companies in the supply chain, especially in just-in-time (JIT) systems. The authors recommended proactive assessments of suppliers' financial health and stressed how important it is.

Supplier compliance with procurement procedures and supply chain performance

Chemoiywo (2014) conducted a study on public procurement procedures and supply chain performance among state corporations in Kenya. The study concluded that when suppliers follow procurement rules, it makes things more open, less corrupt, and better connections with suppliers. The study used structured questionnaires and regression analysis to come to the conclusion that suppliers that consistently follow procurement rules help with better planning, accountability, and, in the end, a more efficient supply chain.

Ratemo and Karanja (2017) examined moderating role of regulatory compliance affects the link between public procurement of innovation and supply chain performance. The study employed Kenyan governmental institutions and a correlational research method that used regression analysis. The findings demonstrated that there was a statistically significant and positive correlation between how effectively the supply chain performed and supplier regulatory compliance. The authors said that stricter ways of keeping an eye on and enforcing compliance would make procurement work better and decrease the risks that come with not following the rules.

Diba, Remy, and Pufahl (2019) utilized process mining methods to analyze procurement performance in organizations with different levels of supplier compliance. Their findings indicated that not following the rules(non-compliance), including turning in paperwork late, delivering the incorrect item, or not completing a bid, was strongly associated to inefficiencies in the procurement process and increased variance in the process. The research said that supplier relationship management (SRM) systems might help maintain track of compliance and find problems that need to be fixed.

Chemjor (2015) looked at how elements that impact supplier assessment, such procurement procedures, affected the performance of Kenyan parastatals. The research found that suppliers that followed the rules, such submitting in documentation on time, acquiring legal certification, and following bidding regulations, were more likely to satisfy the terms of the contract and provide goods and services on time. This made the supply chain more dependable and cut down on the need for emergency procurement.

Mrope and Namusonge (2017) looked at how following the rules and laws for public procurement affects how well it functions in Tanzania. They found that a lot of procurement difficulties happen when suppliers don't follow the law, which leads to contract violations and delivery delays. They decided that ensuring sure vendors follow the rules not only makes the supply chain work better, but it also safeguards public resources.

Njagi and Shalle (2016) looked at how managing relationships with suppliers influences procurement performance. They stressed that suppliers must follow procurement rules in order to develop confidence and keep operations in sync. Their findings revealed that suppliers who concentrate on compliance-oriented providers are more likely to be open, dependable, and eager to work together. This makes it easy to work together and boosts performance throughout the procurement process.

Amemba, Nyaboke, and Osoro (2013) investigated the problems that affecting public procurement in Kenya.They identified supplier non-compliance with procedures—such as bid rigging, false documentation, and late submissions—as key factors impeding procurement effectiveness. Their study emphasized the need for continuous supplier training, prequalification, and digital monitoring tools to ensure procurement integrity and performance.

RESEARCH METHODOLOGY

Target population and data

The target population for this study comprised of all 160 senior level, middle level and lower level under the procurement department of Ministry of health. A target population of 160 participants was targeted by the study. The study conducted a census of all the 160 participants from head quarter of the ministry of health and therefore there was no sampling.

Table 1: Target population

strata	**Target population(y)**	**Level % Target Population(t)**
Senior level	5	3.1
Middle level	55	34.4
Lower level	100	62.5
Total (x)	**160**	**100%**

Source, Researcher (2025)

Measurement of variables

The questionnaire was classified into three parts namely: predictors and dependent variables. The measurement scale was in the form of Likert scales. A 5-point Likert scale was adopted to obtain responses from the selected trainees. The Likert scale range between 1 and 5 with (1) strongly disagree; (2) disagree; (3) neutral; (4) agree; and (5) strongly agree.

Table 2: Measurement of variables

Variable	Operational Indicators	Measurement Scale	Data Collection Tool	Sources
Supply chain performance	• Efficiency • Optimal cost management • Lead times	Likert Scale	Questionnaire	Raza (2023)
Supplier Quality	• Specifications • Standards Compliance • Performance Testing • Durability	Likert Scale	Questionnaire	Wachiuri (2019)
Supplier Delivery Efficiency	• Timeliness • Lead Time • Transit Safety • Order Accuracy	Likert Scale	Questionnaire	Noshad and Awasthi (2018)
Supplier Financial Capacity	• Stability • Solvency • Liquidity • Growth Potential	Likert Scale	Questionnaire	Guarnieri and Trojan (2019)
Supplier Compliance with Procurement Procedures	• Legal Adherence • Ethical Standards • Documentation Compliance • Regulatory Compliance	Likert Scale	Questionnaire	Wachiuri (2019)

Source, Researcher (2025)

Model specification

In order to test hypotheses, a multiple regression analysis was carried out. A multiple regression models was utilized in the research. In order to conduct an analysis of the cross-sectional data, the following model parameters and regression equation was utilized.

$SCP_i = \beta_0 + \beta_1 SQS_i + \beta_2 SDE_i + \beta_3 SFC_i + \beta_4 SC_i + \varepsilon_i$ ..... **Model 1**

Data analysis and presentation

Descriptive Statistics

The descriptive statistics table summarizes responses from 150 participants on five constructs. The mean scores indicate generally positive perceptions, with Supplier Quality Standards (SQS) and Supply Chain Performance

(SCP) scoring highest at 4.13 and 4.11, respectively. Supplier Delivery Efficiency (SDE) had the lowest mean (3.50), suggesting room for improvement. Standard deviations range from 0.78 to 0.97, reflecting moderate variability in perceptions across constructs. Overall, the data suggest strong supplier quality and compliance, but variability in delivery performance.

Table 3: Descriptive statistic results

	N	Minimum	Maximum	Mean	Std. Deviation
SCP	150	1	5	4.1069	0.82171
SQS	150	1	5	4.1309	0.78027
SDE	150	1	5	3.4983	0.97235
SFC	150	1	5	3.8659	0.84194
SCOMP	150	1	5	3.9304	0.90877

Source, Researcher (2025)

Reliability Test

The reliability analysis showed strong internal consistency across all constructs, with Cronbach's Alpha values ranging from 0.733 to 0.855. Supplier compliance had the highest reliability (α = 0.855), followed by supplier financial capacity (α = 0.804). All constructs exceeded the acceptable threshold of 0.7, indicating reliable measurement scales. The overall average Cronbach's Alpha score was 0.784, confirming the instrument's reliability.

Table 4: Reliability test results

Constructs	**Cronbach's Alpha**	**N of Items**
Supplier chain performance	0.742	9
Supplier quality standards	0.733	7
Supplier delivery efficiency	0.764	7
Supplier financial capacity	0.804	7
Supplier compliance	0.855	7
Average Score	**0.784**	

Source: Research Data (2025)

Validity Test

The Kaiser-Meyer-Olkin (KMO) values ranged from 0.504 to 0.688, indicating mediocre to moderate sampling adequacy across all constructs. Bartlett's Test of Sphericity was significant ($p < 0.05$) for all variables, confirming the suitability of factor analysis. Supplier Delivery Efficiency (SDE) had the highest KMO (0.688), while Supply Chain Performance (SCP) had the lowest (0.504). These results validate the factorability of the data, though improvements in variable correlation could enhance robustness.

Table 5: Validity test results

Measure	Value
KMO (SCP)	0.504
Bartlett's Test (SCP)	Approx. Chi-Square
Approx. Chi-Square (SCP)	32.334
df (SCP)	36
Sig. (SCP)	0.044
KMO (SQS)	0.599
Bartlett's Test (SQS)	Approx. Chi-Square
Approx. Chi-Square (SQS)	18.138
df (SQS)	21
Sig. (SQS)	0.04
KMO (SDE)	0.688
Bartlett's Test (SDE)	Approx. Chi-Square
Approx. Chi-Square (SDE)	23.587
df (SDE)	21
Sig. (SDE)	0.014
KMO (SFC)	0.523
Bartlett's Test (SFC)	Approx. Chi-Square
Approx. Chi-Square (SFC)	17.068
df (SFC)	21
Sig. (SFC)	0.007
KMO (SC)	0.509
Bartlett's Test (SC)	Approx. Chi-Square
Approx. Chi-Square (SC)	20.875
df (SC)	21
Sig. (SC)	0.037
KMO (SCC)	0.663

Source: Research Data (2025)

Test for Regression Assumptions

In relation with the assumptions of regression analysis, the study carried out diagnostic tests to ensure data was accurate and unbiased. These tests included: multicollinearity test, linearity test, normality test and autocorrelation test.

Multicollinearity test

To check for multicollinearity between the independent variables, the study utilized the Variance Inflation Factor (VIF) and Tolerance levels. The results, as shown in the table 4.11, indicate that the VIF values for all the variables range from 1.338 to 1.649, which are well below the threshold of 3. This suggests that there is no multicollinearity between the independent variables, as higher VIF values (greater than 3) would indicate collinearity issues. Similarly, the Tolerance levels for all variables range from 0.606 to 0.747, which are all well above the minimum acceptable threshold of 0.10. These findings imply that there is no multicollinearity present among the independent variables in the model. Kinuthia (2025) said that VIF values between 1 and 10 are appropriate, and our findings are in line with that.

Table 6: Multicollinearity results

Variables	Collinearity Statistics	
	Tolerance	VIF
Supplier quality standards	.747	1.338
Supplier delivery efficiency	.621	1.609
Supplier financial capacity	.606	1.649
Supplier compliance	.700	1.429

a. Dependent Variable: SCP

Source: Research Data (2025)

Linearity test

We used scatter plots to see whether items were linear. The fit lines on the scatter plot for the Supplier Chain Performance (SCP) variable demonstrated that the regression normalized predicted values and the dependent variable (SCP) were positively linearly related. This indicates that as the predicted values rise, the actual observed values of SCP also rise, which shows that there is a strong and positive link. The points are equally spaced along the regression line, which supports the concept that there is linearity.

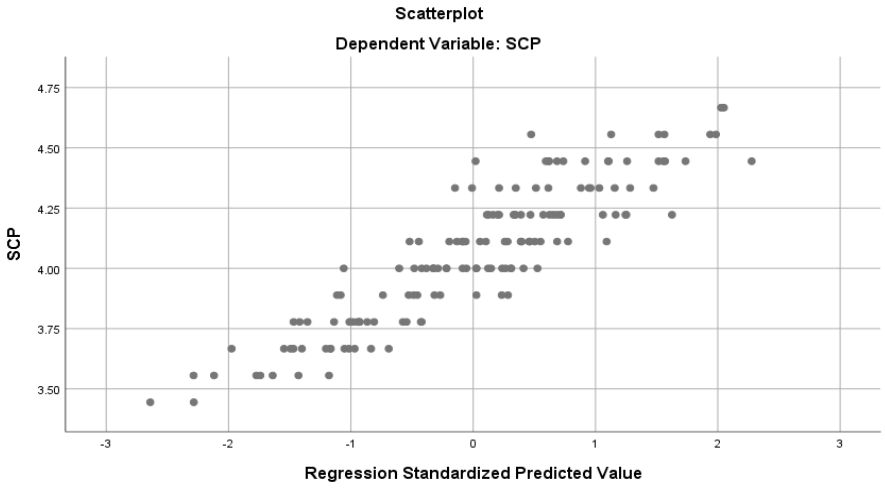

Figure 1: Results for linearity using Scatter Plots

Source: Research Data (2025)

Normality test

We did a normality test using regular P-P plots to make sure that the data set was normally distributed. The conventional P-P plot in the figure above indicated that the data points were quite close to the diagonal line. This suggests that the distribution of the residuals is almost typical. This alignment suggests that the assumption of normality was accurate, hence the research may utilize the data set. Engotoit et al. (2016) say that a data set is typical if the points on the P-P plot are very near to the best-fit line. These findings are similar to what they found in their research.

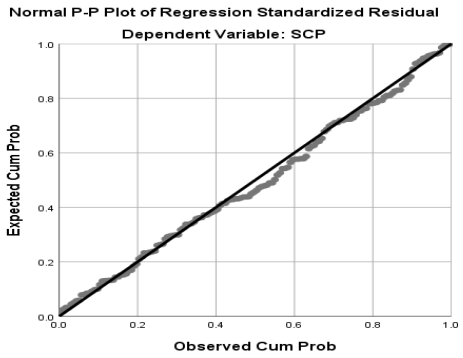

Figure 2: Results for normality using the P-P Plot

Source: Research Data (2025)

Autocorrelation test

We checked for autocorrelation with the Durbin-Watson test. To better understand the study's outcomes, the criterion of $1.5 \leq d \leq 2.5$ were used. As indicated in Table 4.12, the Durbin-Watson value (2.040) was below the threshold limit, which suggests there was no autocorrelation. This means that the residuals of the regression model are not autocorrelated, which is good for making sure that the model's estimates are correct. These results are in line with what Magoma, Mbwambo, Sallwa, and Mwasha (2022) who asserted that the Durbin-Watson test shows that autocorrelation exists when the variables' values are outside the range of $1.5 \leq d < 2.5$.

Table 7: Autocorrelation test results

Model Summary[b]		
Model	**Std. Error of the Estimate**	**Durbin-Watson**
1	0.12554	2.040
a. Predictors: (Constant), SCC, SQS, SCOMP, SDE, SFC		
b. Dependent Variable: SCP		

Source: Research Data (2025)

Correlation Analysis

The Pearson correlation results revealed strong, positive, and statistically significant relationships between Supply Chain Performance (SCP) and all independent variables. SCP had strong associations with Supplier Quality Standards ($r = 0.553^{**}$), Supplier Delivery Efficiency ($r = 0.668^{**}$), and Supplier Financial Capacity ($r = 0.709^{**}$), all at $p < 0.05$. Additionally, strong positive relationships were observed between SCP and Supplier

Compliance (r = 0.682**) as well as Supply Chain Collaboration (r = 0.658**). These findings suggest that improvements in supplier practices and collaboration significantly enhance supply chain performance.

Table 8: correlations results

Correlations							
		SCP	SQS	SDE	SFC	SCOMP	SCC
SCP	Pearson Correlation	1					
	Sig. (2-tailed)						
	N	150					
SQS	Pearson Correlation	.553**	1				
	Sig. (2-tailed)	.000					
	N	150	150				
SDE	Pearson Correlation	.668**	.410**	1			
	Sig. (2-tailed)	.000	.000				
	N	150	150	150			
SFC	Pearson Correlation	.709**	.450**	.505**	1		
	Sig. (2-tailed)	.000	.000	.000			
	N	150	150	150	150		
SCOMP	Pearson Correlation	.682**	.305**	.425**	.467**	1	
	Sig. (2-tailed)	.000	.000	.000	.000		
	N	150	150	150	150	150	
SCC	Pearson Correlation	.658**	.292**	.460**	.401**	.408**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	150	150	150	150	150	150
**. Correlation is significant at the 0.05 level (2-tailed).							

Source: Research Data (2025)

Regression Analysis

The purpose of this study was to analyze the effect of supplier evaluation criteria—including Supplier Quality Standards (SQS), Supplier Delivery Efficiency (SDE), Supplier Financial Capacity (SFC), and Supplier Compliance with Procurement Procedures (SCOMP)—on Supply Chain Performance (SCP) within the Ministry of Health in Kenya. Four hypotheses were formulated and tested using a multiple linear regression model. The analysis was conducted to assess both the individual and combined effects of the predictors on SCP, drawing on

frameworks from supply chain quality management and procurement compliance literature (Salimian, Rashidirad, & Soltani, 2021; Ratemo & Karanja, 2017).

Initially, correlation analysis revealed that all independent variables had significant positive associations with SCP. The R^2 value showed that the four predictor variables together explained 75.8% of the variation in SCP, while the corrected R^2 value showed that they explained 75.2% of the variation. These numbers show that the model can explain a lot, which shows how important the chosen variables are (Wandfluh & Hofmann, 2016; Chemoiywo, 2014).

We rejected Hypothesis H01, which said that supplier quality standards do not affect SCP. The results showed that there was a positive and statistically significant link ($\beta = 0.034$, $p = 0.000$). This conclusion is in line with the study of Soares, Soltani, and Liao (2017), who showed that supplier quality management practices, such as certification and performance tracking, contribute significantly to operational performance. Even if the coefficient is small, the effect is nevertheless important for maintaining a steady supply continuity and consistency in health commodities.

Hypothesis H02 investigated at how the efficiency of supplier delivery affects SCP. The regression coefficient for SDE ($\beta = 0.052$, $p = 0.000$) was positive and significant. This means that timely delivery directly makes the supply chain more responsive and reliable. Gunasekaran, Patel, and McGaughey (2004) also found that delivery performance is a critical measure of evaluating supply chain effectiveness.

The study indicated that supplier financial capability had a big effect on SCP while testing H03 ($\beta = 0.051$, $p = 0.000$). Suppliers who have are Financially capable are better equipped to handle orders, invest in logistics, and deal with operational shocks. This backs up what Ghadge et al. (2021) found before, which said that suppliers that are not financially viable increase systemic risk and make procurement unreliability across the supply chain.

The final hypothesis, H04, focused on supplier compliance with procurement procedures. The study found that SCOMP had the strongest effect on SCP ($\beta = 0.060$, $p = 0.000$), suggesting that regulatory adherence is vital for procurement integrity and performance. Chemoiywo (2014) and Mrope and Namusonge (2017) confirm that non-compliance results in procurement delays and inefficiencies, especially within public sector contexts. The total model's significance was confirmed by an F-statistic value of 113.753, demonstrating that the combined effect of the independent variables on SCP is extremely significant.

All variables showed strong t-values (3.966 to 7.497) and p-values below 0.001, further reinforcing the reliability and robustness of the regression model.

Table 9: Regression results for the direct effects

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	β	Std. Error	Beta		
(Constant)	.870	.155		5.609	.000
Predictor Variables					
SQS	.034	.009	.187	3.966	.000
SDE	.052	.009	.279	5.587	.000
SFC	.051	.008	.316	6.085	.000
SCOMP	.060	.008	.358	7.497	.000

	Model Summary					
	R	.871				
	R Square	.758				
	Adjusted R Square	.752				
	Std. Error of estimate	.14325				
	F Statistic	113.753				
a. Dependent Variable: Supply chain performance						

Source: Research Data (2025)

CONCLUSION AND RECOMMENDATION

This study investigated the correlation between supplier evaluation criteria—namely Supplier Quality Standards (SQS), Supplier Delivery Efficiency (SDE), Supplier Financial Capacity (SFC), and Supplier Compliance with Procurement Procedures (SCOMP)—and Supply Chain Performance (SCP) within the Ministry of Health in Kenya. The sample comprised supply chain participants engaged in public procurement activities inside healthcare facilities. The research utilized multiple linear regression analysis to evaluate the individual and combined impacts of these factors on SCP. The results show that all of the supplier evaluation standards had a positive and statistically significant influence on SCP, with supplier compliance having the most effect. The model explained a lot of the differences in supply chain performance ($R^2 = 0.758$), which shows that the chosen factors were good at predicting what would happen. The results show that improvements in supplier quality, delivery dependability, financial stability, and compliance with regulations all work together to make public health supply chains more responsive, efficient, and reliable overall.

Based on this information, a lot of suggestions are made. The Ministry of Health and other government agencies should set up detailed supplier assessment frameworks that emphasize adherence to procurement protocols. This will assure legal compliance and that service delivery is consistent and accountable. Second, supplier audits must include checks on financial stability and delivery performance to lower the risks that come with supply chain problems. Capacity-building programs and performance agreements can help suppliers meet procurement needs more effectively.

Also, to make sure that quality standards meet the needs of the health sector, accreditation, third-party certifications, and continual monitoring must be used to make sure that supplier quality standards are met. To keep an eye on delivery times and compliance indicators in real time, Investments on digital procurement technologies like e-procurement platforms and supplier relationship management (SRM) systems are essential.

Finally, the Public Procurement Regulatory Authority (PPRA) and the Ministry of Health's supply chain supervisory divisions must come up with and put into action rules that make suppliers more open, improve prequalification processes, and set stricter financial vetting standards. These changes will enhance institutional procurement capabilities and facilitate the provision of equitable, timely, and high-quality health care to the Kenyan populace.

REFERENCES

1. Adida, E., & Perakis, G. (2014). The effect of supplier capacity on the supply chain profit. Annals of Operations Research, 222(1), 69–94.
2. Agoro, C.O. (2022). Influence of Global Standards Implementation on Performance of Public Health Procurement Agency in Kenya.

3. Amemba, C. S., Nyaboke, P. G., & Osoro, A. (2013). Challenges affecting public procurement performance process in Kenya. Retrieved from https://www.academia.edu/download/54627435/5.pdf
4. Bhattacharyya, K., & Guiffrida, A. L. (2015). An optimization framework for improving supplier delivery performance. European Journal of Operational Research, 242(2), 522–531.
5. Blau, P. M. (1964). Exchange and power in social life. New York: Wiley. Harikrishnan, R., Shivdas, A., & Ananthu, S. (2025). Redefining supplier selection in healthcare sector: A novel framework for supplier classification. Journal of Health Organization and Management.
6. Bushuev, M. A., & Guiffrida, A. L. (2018). Supply chain delivery performance improvement for several delivery time distributions. International Journal of Operational Research, 33(2), 187–205.
7. Chemjor, R. K. (2015). Supplier evaluation criteria and procurement performance in parastatals in Kenya. University of Nairobi. Retrieved from https://erepository.uonbi.ac.ke/handle/11295/93970
8. Chemoiywo, P. K. (2014). Public procurement procedures and supply chain performance in state corporations in Kenya. University of Nairobi. Retrieved from https://erepository.uonbi.ac.ke/handle/11295/76388
9. Diba, K., Remy, S., & Pufahl, L. (2019). Compliance and performance analysis of procurement processes using process mining. Retrieved from https://icpmconference.org/2019/wp-content/uploads/sites/6/2019/07/BPI-Challenge-Submission-6.pdf
10. Engotoit, B., Zalengera, C., & Moya, M. (2016). Assessing data normality in social science research: The role of P-P plots. Journal of Quantitative Methods, 5(2), 134–142.
11. Forker, L. B. (1997). Factors affecting supplier quality performance. Journal of Operations Management, 15(4), 243–269.
12. Fynes, B., Voss, C., & De Búrca, S. (2005). The impact of supply chain relationship quality on quality performance. International Journal of Production Economics, 96(3), 339–354.
13. Germain, R., & Davis-Sramek, B. (2011). The impact of relational supplier exchange on financial performance: A study of the hospital sector. Decision Sciences, 42(3), 437–457. https://doi.org/10.1111/j.2158-1592.2011.01020.x
14. Ghadge, A., Jena, S. K., Kamble, S., & Misra, D. (2021). Impact of financial risk on supply chains: A manufacturer-supplier relational perspective. International Journal of Production Research, 59(15), 4602–4619. https://doi.org/10.1080/00207543.2020.1834638
15. Gunasekaran, A., Patel, C., & McGaughey, R. E. (2004). A framework for supply chain performance measurement. International Journal of Production Economics, 87(3), 333–347.
16. Ibrahim, S. B., & Hamid, A. A. (2014). Supply chain management practices and supply chain performance effectiveness. International Journal of Logistics and Supply Chain Management, 3(1), 25–35.
17. Juma, D. (2020). Effect of supplier evaluation on procurement function performance in Kisumu County.
18. Kinuthia, P. M. (2025). Effect of Macroeconomic Policy Implementation on Unemployment in Kenya. International Journal of Research and Innovation in Social Science, 9(5), 5533-5546.
19. Lega, F., Marsilio, M., & Villa, S. (2013). An evaluation framework for measuring supply chain performance in the public healthcare sector: Evidence from the Italian NHS. Production Planning & Control, 24(10–11), 931–947.
20. Liu, F., Fang, M., Park, K., & Chen, X. (2021). Supply chain finance, performance and risk: how do SMEs adjust their buyer-supplier relationship for competitiveness? SSRN Electronic Journal. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3942969
21. Longaray, A. A., Marube, N., & Ensslin, L. (2023). Performance evaluation of public healthcare supply chain management: A critical literature review. International Journal of Healthcare Technology and Management.
22. Magoma, E., Mbwambo, R., Sallwa, N., & Mwasha, J. (2022). Regression assumptions and model validation using the Durbin-Watson test: Evidence from public sector studies. African Journal of Econometrics and Statistical Research, 14(1), 87–99.
23. Maina, J.N., & Moronge, M. (2018). Effect of Supplier Appraisal Policy on Procurement Performance at KEMSA.
24. Milgate, M. (2001). Supply chain complexity and delivery performance: An international exploratory study. Supply Chain Management: An International Journal, 6(3), 106–118.
25. Miriti, L.K. (2018). Effect of Procurement Planning On Supply Chain Performance of KEMSA.

26. Mrope, N. P., & Namusonge, G. S. (2017). Does compliance with rules ensure better performance? An assessment of the effect of compliance with procurement legal and regulatory framework on performance of public procurement in Tanzania. ResearchGate. https://www.researchgate.net/publication/349204306
27. Mutai, J.K., & Okello, B. (2016). Effects of supplier evaluation on procurement performance of public universities in Kenya.
28. Muuki, A.K., & Nderui, D.N. (2024). Supplier Sourcing and Performance of Public Hospitals in Nairobi County.
29. Naibor, G. S., & Moronge, M. (2018). Influence of supplier selection criteria on performance of manufacturing companies in Kenya. International Journal of Procurement and Logistics, 6(3), 88–100.
30. Njagi, M. M., & Shalle, N. (2016). Role of supplier relationship management on procurement performance in manufacturing sector in Kenya: A case of East African Breweries. Retrieved from https://iajournals.org/articles/iajpscm_v2_i1_1_20.pdf
31. Noshad, K., & Awasthi, A. (2015). Supplier quality development: A review of literature and industry practices. International Journal of Production Research, 53(2), 466–487.
32. Owich, J.A., & Odero, J.A. (2023). Supplier Risk Management and Health Sector Supply Chain Performance.
33. Patil, D. (2024). Enhancing supply chain performance: A comprehensive review of supplier quality management strategies. Research Journal of Pharmacy and Technology, 16(3), 125–134.
34. Ratemo, B. M., & Karanja, N. (2017). Effect of regulatory compliance on the relationship between public procurement of innovation and supply chain performance. International Journal of Scientific Research and Management, 5(9). https://doi.org/10.18535/IJSRM/V5I9.14
35. Salimian, H., Rashidirad, M., & Soltani, E. (2021). Supplier quality management and performance: The effect of supply chain-oriented culture. Production Planning & Control, 32(10), 821–837. https://doi.org/10.1080/09537287.2020.1777478
36. Shi, Y., Yang, Z., Yan, H., & Tian, X. (2017). Delivery efficiency and supplier performance evaluation in China's E-retailing industry. Journal of Systems Science and Systems Engineering, 26(1), 1–21.
37. Shin, H., Collier, D. A., & Wilson, D. D. (2000). Supply management orientation and supplier/buyer performance. Journal of Operations Management, 18(3), 317–333.
38. Soares, A., Soltani, E., & Liao, Y. Y. (2017). The influence of supply chain quality management practices on quality performance: An empirical investigation. Supply Chain Management: An International Journal, 22(1), 1–15.
39. Vanichchinchai, A., & Igel, B. (2011). The impact of total quality management on supply chain management and firm's supply performance. International Journal of Production Research, 49(11), 3405–3424. https://doi.org/10.1080/00207543.2010.492805
40. Wachiuri, E.W. (2019). Influence of Supplier Evaluation Criteria on State Corporations in Kenya.
41. Wandfluh, M., & Hofmann, E. (2016). Financing buyer–supplier dyads: An empirical analysis on financial collaboration in the supply chain. International Journal of Logistics Research and Applications, 19(5), 397–419. https://doi.org/10.1080/13675567.2015.1065803
42. Wang, L., Yan, J., Chen, X., & Xu, Q. (2021). Do network capabilities improve corporate financial performance? Evidence from financial supply chains. International Journal of Operations & Production Management, 41(3), 271–296
43. Williamson, O. E. (1981). The economics of organization: The transaction cost approach. American Journal of Sociology, 87(3), 548–577.
44. Yazdani, M., Torkayesh, A. E., & Chatterjee, P. (2020). An integrated decision-making model for supplier evaluation in public healthcare system: The case study of a Spanish hospital. Journal of Enterprise Information Management.