



**SUPPLY CHAIN RESILIENCE PRACTICES AND PERFORMANCE OF  
TELECOMMUNICATION FIRMS IN NAIROBI CITY COUNTY, KENYA**

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**ABSTRACT**

Supply chain resilience refers to a corporation's ability to tolerate an interruption and to also recover from interruptions. The telecommunication sector plays a critical role in communication. The telecommunication firms in Kenya have been facing performance challenges mainly due to high competition in the market. The general objective of the study was to examine the effect of supply chain resilience practices and performance of telecommunication firms in Nairobi City County, Kenya. The specific objectives were to examine effect of inventory buffers, and ecosystem partnerships on performance of telecommunication firms in Nairobi City County, Kenya. The study was guided by inventory control theory and social exchange theory. The study adopted a descriptive research design. The unit of analysis was four telecommunication firms. The unit of observation was the management staff in the firms; 66 senior level managers, 111 middle level managers, and 141 lower level managers. Yamane 1967 formula was used to obtain a sample of 176 respondents sampled using stratified random sampling technique. This research used questionnaires to collect primary data. A pilot study was conducted with 18 management staff representing 10% of the sample. The study used content and construct validity. Reliability was measured using Cronbach's Alpha coefficient. Data was analysed using SPSS Version 28. Descriptive statistics were frequency, percentage, and mean. Inferential statistics includes Correlation and regression. Findings were tabulated. The pilot study demonstrated strong validity and reliability of the research instruments. The study revealed that all variables significantly influenced performance, with coefficients of 0.282 for inventory buffers, and 0.294 for ecosystem partnerships, with all p-values < 0.05, indicating their positive contributions to firm success. The study concludes that these resilience practices are critical in enhancing operational efficiency, responsiveness, and overall firm performance. It is recommended that firms invest in advanced inventory management systems, and cultivate strong ecosystem partnerships to drive innovation and competitive advantage.

**Key Words:** Supply Chain Resilience Practices, Inventory Buffers, Ecosystem Partnerships, Performance, Telecommunication Firms

## **Background of the Study**

Supply chain resilience (SCR) is the capability of the organization to rapidly react to any vulnerabilities in the supply chain, and to get back to a normal state after a disruption has occurred. Supply chain inconsistency has become a bone of contention to some business entities (Abdallah, Alfar, & Alhyari, 2021). Lin et al. (2021) stated that SCR is a term that often refers to a corporation's ability to tolerate an interruption and to also recover from said interruption. This is a vital priority for firms where delivery, cost, flexibility, and quality must be maintained. A company's risk management prospects reflect its resilience. To enhance SCR, it is necessary to reduce complexity, minimize the number of actors involved, and decrease the geographical distance between them, but also to be flexible and innovative. Pettit, Croxton, and Fiksel (2019) outlined five essential SCRE capabilities: the ability to foresee, adapt, respond, recover, and learn the stages of resilience, as well as resilience tactics and competencies that are required to be resilient.

SCR facilitates firms into quickly responding to any unforeseen changes and in restoring their operations by combining and reconfiguring the firms' available resources and capabilities. Within the literature, there is no universal definition of the SCR. Building supply chain resilience begins with being quick to recognize a problem. A problem may result from external risks driven by upstream and downstream activities, such as demand, environmental, supply, business and regulatory risks, or it may be internal, such as due to personnel, manufacturing operational and process risks as well as, quality planning and control risks. Second, companies should be able to develop an appropriate recovery plan. Third, the companies should redesign their supply chains to align to resilience needs. After strategy formulation, it is important that organizations implement them through matching their cultures and structures to their new goals (Ivanov & Das, 2020).

Donadoni et al., (2018) employed supply chain risk management, redundancy, visibility, suppliers and customers collaboration as resilience supply chain strategies. Supply chain resilience offers a blue print for resilience through open private partnership, strategical policy with information technology together with the need for organizations to put it in place. There is need for Supply chain and businesses to develop resilient that is better at detecting and reacting to better dangers previously they cause intense, managed and perhaps disastrous budgetary outcomes. Resilient supply chain depends on prescience situation modeling and consistency, operational measurements are valuable as they seem to be taking a look at the past or today; the presence of sorted out and well organized databases is a key wheel of enterprise performance.

## **Statement of the Problem**

The telecommunication sector play a critical role in communication, contributing to the Gross Domestic Product (GDP), creation of economic opportunities through mobile money agents, facilitating economic activities, facilitating. The telecommunication firms in Kenya have been facing performance challenges mainly due to high competition in the market. According to the last quarter report (CA,2020), Safaricom PLC and Equitel recorded losses of 0.3% and 0.1 % in market shares in mobile subscription. Safaricom market share decreased by 5.4%. Telkom has shut down almost 90% of its mobile money agent network due to loss of subscribers. Kenya communication authority (2022) established that profitability in Kenya telecommunication industry has been declining whereby voice traffic reduced from 1.8 billion to 1.7 billion in the last quarter last quarter of 2021. The Communications Authority of Kenya (CA) Quality of Service Report (QoS, 2023) showed that only Safaricom surpassed the 80% performance threshold. The firm attained 90% of the set Key Performance Indicators (KPIs). Airtel and Telkom Kenya attained 79% and 65% respectively hence did not meet the 80% QoS and KPIs threshold. The report further revealed that the County with the best QoS is Nairobi, 93.9% while Laikipia scored the least at 54%.

There exists various studies on supply chain resilience strategies; Mogere, Kwendo, and Fozia (2023) sought to find out the effect of supply chain resilience on service delivery in the public health care sector in the Western Region of Kenya and found that there is a statistically significant relationship between resilience and service delivery. Mulicho and Muli (2021) on the influence of supply chain resilience practices on the performance of Food and Beverages Manufacturing Firms in Kenya indicated that supply chain risk management, agility, supply chain collaboration and supply chain integration significantly influence the performance of Food and Beverages Manufacturing Firms in Kenya. Kosgey (2021) on effect of supply chain resilience on organizational performance showed the existence of interdependence of supply chain resilience with organizational performance. Githonga (2021) showed that supply chain resilience enhances SME operational performance. There is study limitation on supply chain resilience practices in the telecommunication firms in Nairobi City County, Kenya since none of the local studies focused on the telecommunication industry in Kenya. This study sought to fill this research gap by examining the effect of supply chain resilience practices on telecommunication firms in Nairobi City County, Kenya.

### **Objectives of the Study**

The general objective of the study was to establish the effect of supply chain resilience practices and performance of telecommunication firms in Nairobi City County, Kenya.

### **Specific Objectives**

- i. To establish the effect of inventory buffers on performance of telecommunication firms in Nairobi City County, Kenya.
- ii. To determine the effect of ecosystem partnerships performance of telecommunication firms in Nairobi City County, Kenya

## **LITERATURE REVIEW**

### **Theoretical Review**

#### **Inventory Control Theory**

Inventory control theory was developed by Starr and Miller in 1962. Inventory control involves the actual control of inventory; this can mean inventory of raw materials, works-in-progress or finished goods. Inventory control theory is concerned with all actions related to the storing of items and the consequences, both positive and negative, thereof. (Daft, 2001). There are several mathematical models in use that can act as a useful tool in inventory control. These models strive to balance storage costs with order costs; the cost of shortages is also considered. While inventory control theory tends to be a bit shortsighted regarding the non-monetary costs of storage, and it makes assumptions regarding future demand and delivery that could not be known, inventory control theory is still a cost-saving tool, and is considered part of good business practice in manufacturing environments (O'Farrell, 2010). One of the most common applications of inventory control theory is in the determination of the optimal quantity of inventory to be held. The theory is applicable to the variable on inventory buffers. Inventory control ensures that stock levels are well maintained to meet market demands. Calculating the right amount of buffer stock helps to keep carrying costs low while making sure customer orders are fulfilled on time.

#### **Social Exchange Theory**

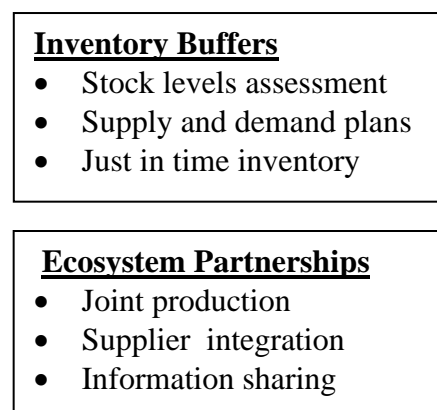
The social exchange theory was developed by George Homans in 1958. A steady continuous and strong exchange relationship ensures reliable supply. The central objective of supplier relationship is attaining the status of a preferred buyer, instead of simply being a regular buyer or even an exit buyer. This leads to better treatment and guaranteed supply while reducing risks that may be involved in the supply chain (Lopez-Navarro et al., 2013). Within the Social Exchange Theory, transactions are bidirectional, meaning that there is mutual exchange of material things, where something has to be given in exchange of something else in a given

environment (Cropanzano & Mitchell, 2005). Additionally, the Social Exchange Theory assumes that individuals take part in an exchange only when they expect their rewards from it to justify the cost of participation. It means buyer supplier relationship is mutual and there is equitable sharing of resources and benefits. The theory supports the objective on ecosystems partnership. A good relationship with the company surroundings would helping in brand creation and improvimg market share hence improved performance.

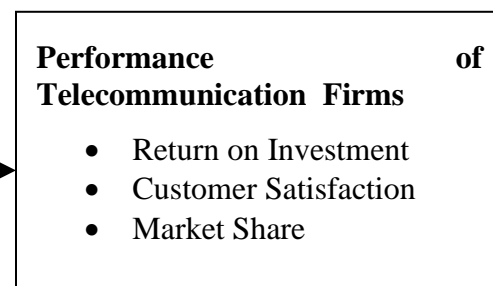
### Conceptual Framework

A conceptual framework is a diagrammatic illustration of the expected relationship between your variables. The framework explains graphically the key variables of the study, the sub-variables the constructs and presumed relationships among them (DeMarco, 2020). The framework shows the independent variable which is supply chain resilience ( inventory buffers and ecosystem partnership), and the dependent variable (performance of telecommunication firms).

#### Independent Variables



#### Dependent Variable



**Figure 2. 1: Conceptual Framework**

#### Inventory Buffers

Buffer stocks are specifically stockpiles managed in a manner to moderate price fluctuations (Makina & Keng'era, 2018). Buffer inventory (also known as safety stock, supply chain safety net, or contingency stock) refers to a surplus of inventory that is stored in a warehouse in case of an emergency, supply chain failure, transportation delays, or an unexpected surge in demand. It acts as a cushion to protect the organization from stockouts and ensure the availability of products to meet customer demands. Buffer inventory can be maintained at various stages of the supply chain, including raw materials, work-in-progress, and finished goods (Kristina, 2023).

Atnafu and Balda (2018) found out that buffer stocks are goods sold from stockpiles when prices reach or approach predetermined ceiling and they may be purchased for stocking when prices reach or approach a predetermined floor level to get optimal supply chains as a new phenomenon in production management and manufacturing. The buffer stock policy is commonly used in the markets that suffer from volatile to unstable prices. According to Karani and Osoro (2020), buffer stock is a scheme established and funded by the government to control prices in the key markets. The concept works by actively buying and selling the goods in the market so that prices are stabilize. Abokyi (2021) observed that larger buffer stockholdings usually permit a longer period of stable prices, but at costs that rise exponentially over time, while smaller stocks imply that prices fluctuate more with substantial cost savings. The application of this type of initiative in most countries is to improve producers' incomes and well-being.

## **Ecosystem Partnerships**

Business ecosystems are economic communities that are supported by foundation of interacting organisations and individuals that are usually created around platforms. (Bosch-Sijtsema & Bosch, 2015). Ecosystems include different sets of actors, such as companies, organisations, and individuals. The central idea of ecosystems is that these actors or so-called participants aim jointly to bring value to clients (Rinkkala et al., 2019.) A partner ecosystem is a network of businesses who serve similar audiences but are not competitors and may thus benefit from collaborative marketing and sales strategies. In an ecosystem, the involved companies orchestrate all indirect distribution channels to scale and grow. A marketing automation platform (MAP), a video marketing platform, and a content management system (CMS) are three businesses who target similar customers and would benefit from joining or creating a network together (Tarek, 2023).

A partner ecosystem approach upends the traditional paradigm of competition among enterprises, moving away from bitter rivalries toward a more fluid and collaborative path to success. It's not competition, rather Coopetition . When the outcomes are mutually beneficial, there is no reason companies shouldn't collaborate. In today's market, the ecosystem approach often gives crucial access to research, new technologies and competencies that an enterprise wouldn't otherwise have. A strong ecosystem is often the differentiator between similar offerings. Creating a network of strong strategic partners is just the beginning. Enterprises need to be able to direct and manage the right collaborators to achieve the desired outcomes (Betz, 2021).

## **Empirical Review**

### **Inventory Buffers and Firm Performance**

Danielsbacka (2020) examined effect of inventory management on working capital. The study used secondary and primary data. Secondary data was collected from the companies' enterprise resource planning system while primary data was collected using interview schedules and observation checklists. Results showed that the firms had a lot of capital tied up in excessive and obsolete inventories. The inventory turnovers were very low or zero meaning that a huge proportion of the items in the warehouse were not being consumed at all.

Yankah, Osei, Owusu-Mensah, and Agyapong (2022) investigated effect of inventory management on the performance of manufacturing enterprises in the Kumasi Metropolis, Ghana. The study employed descriptive and explanatory research designs. The target included 62 staff of the manufacturing companies. The findings showed that stock management is a factor in the success of manufacturing companies. Optimum stock management methods were implemented which helped to improve the operation of industrial enterprises.

Salahudeen and Abraham (2018) examined effect of inventory management systems on operational performance in manufacturing firms in Lagos, Nigeria. The study adopted a descriptive research design. The sample size for the study was 60 staff that were selected randomly. Questionnaires were used to collect data. This study conclude that failure to maintain a proper, adequate and accurate inventory control management results in reduced profit and performance. It was recommended that, the organization should avoid the dangers that are inherent in keeping too little or too much of stock

Mweshi (2022) studied effect of optimum inventory management on firm performance. This study was based on secondary data that was collected through reviewing publication and books. Results showed that out-of-stock events caused by machine breakdowns, or unreliable suppliers very likely dissatisfy customers, cause extra costs and harm future demand because demand depends on organizational behavior and is not exogenous from it. Having an appropriate level of inventory even though it lowers profit in the short term is important for the sustainable development of the firm and the supply chain.

Oloo (2023) sought to establish the relationship between buffer stocks practices and supply chain leverage of sugar manufacturing firms in Kenya. The study used a descriptive approach. The target population was 241 staff of the manufacturing firms in Kenya. Findings indicated that green stocks practices significantly affect supply chain leverage of sugar manufacturing firms in Kenya. The findings from the regression models indicated that buffer stocks practices, significantly affected supply chain leverage of sugar manufacturing firms in Kenya. Buffer stocks further help to overcome any uncertainties in the demand and supply markets and support continuous production even with seasonal variation in the supply of raw materials.

Saro (2022) sought to establish the relationship between inventory control practices and supply management in selected public and private Universities in Nakuru County. The target population of this study was 115 employees from procurement department from Egerton and Kabarak Universities. Multistage sampling procedure was used to select 89 respondents. Data was collected using questionnaires. Findings showed that inventory audit were efficiently done through ensuring accuracy in recording. The Universities also ensured that costs were well controlled to reduce waste and mismanagement of resource. The inventory audit was also done periodically to ensure all Universities property and resources were secured. There was a significant relationship between inventory audit and supply management.

Mohamud and Mwangi (2021) studied effect of continuous replenishment and stock controlling on supply chain performance of retail chain stores in Nairobi County, Kenya. The study adopted descriptive survey research design. The target population of the study was 106 supermarkets in Nairobi. The primary data was collected using questionnaire. Results revealed that stock controlling, continuous replenishment and stock controlling had a significant and negative influence on supply chain performance in supermarkets in Nairobi City County.

### **Ecosystem Partnerships and Firm Performance**

Hsu and Vijay (2018) examined the effect of information sharing capability on buyer supplier relationships and firm performance in USA, Europe, and New Zealand. The study used data that was collected from different firms. Results showed that there was a positive relationship between information sharing capability, buyer supplier relationships, and firm performance. Information sharing capability and buyer supplier relationships are complex, multi dimensional constructs.

Kwabena, Boakye, and Famiyeh (2019) studied effect of supplier integration on firm performance in Ghana. Results showed a positive significant relationships between supplier integration and competitive operational capabilities and between supplier integration and firm performance. The study highlighted the importance for managers in developing economies and improving their firms' operational capabilities and competitiveness by investing in supplier integration. Gebisa and Ram (2020) investigated the effect of information sharing and inventory management practice on firms' performance in Ethiopia. The study companies operating in Ethiopia. Data were collected from 170 respondents including employees, suppliers, and distributors of the companies. The study concluded that information sharing has both direct and indirect effects on a firm's performance in the supply chain practices; whereas inventory management practices have a direct effect on the firm's performance.

Siachitema (2022) evaluated the effect of supplier relationship management practices on performance of supermarkets in Nairobi County, Kenya. The study adopted a descriptive research design. The target population was 252 staff of the supermarkets. Stratified random sampling and random sampling was used to select 155 respondents. Primary data was collected using semi-structured questionnaires. Results showed that the supermarkets value trust when working with suppliers. In addition, senior supermarkets management and suppliers' management have a great relationship with each other. The supermarkets and suppliers are dependent on each other. The supermarkets' objectives/strategy are shared with supplier/s and the relationships with suppliers were achieved over a long period of time. Results further

showed a significant positive relationship between collaborative supplier relationship management and performance.

Muthoka, Kilika, and Muathe (2022) studied effect of strategic alliances on firm performance. The study target was 74 manufacturing SMEs in Kenya. Data was collecting using questionnaires. Results showed that there was a positive and significant effect of strategic alliances on firm performance, while the level of collaboration has a significant partial mediating effect on the relationship between strategic alliance and firm performance. The study concluded that collaboration is relevant in strategic alliances formed by manufacturing SMEs in Kenya since the strength of the relationship between strategic alliance and firm performance depends on the level of collaboration .

Kiprotich, Gachunga, and Bonuke (2022) examined how information sharing affected the performance of manufacturing companies in Kenya. The study employed an explanatory research design. The target was 766 procurement managers and 264 were sampled. The primary data collected using questionnaires. The study concluded that information sharing has significant effect on performance of manufacturing companies in Kenya. It was further determined that the implementation of information sharing, the quality of the shared information, the kind of shared information, and the technology used to communicate information affect how much information businesses exchange throughout supply chains.

### **RESEARCH METHODOLOGY**

The study adopted a descriptive research design. This study targeted tier-one telecommunication firms in Kenya. According to the Communication Authority of Kenya (2024), there are four tier-one telecommunication firms in Kenya: Safaricom PLC, Airtel, Telkom, and Equitel. The unit of analysis for this study was the telecommunication firms themselves, as the research aims to understand the impact of supply chain resilience practices on their performance. The unit of observation was the employees within these firms, specifically those at the senior management, middle management, and lower management levels. The study's sampling frame was 318 management staff of the four one tier telecommunication firms in Kenya. The sample size of 177 was determined using Yamane 1967 formula. The study used stratified random sampling technique. The respondents was stratified into three management level as indicated in the target table. Stratification ensures that every category in the target population has equal chances of participating in the study.

This research used questionnaires to collect primary data. The researcher used SPSS Version 28 to analyze the quantitative data collected from the study samples. Descriptive statistics were employed to summarize and describe the main features of the data. These included percentages, frequencies, and means, which helped in providing a clear overview of the data distribution. Inferential statistics were used to make inferences about the population based on the sample data. The study utilized correlation and regression analyses.

### **RESEARCH FINDINGS AND DISCUSSIONS**

The study targeted a population of 177 respondents. Out of the 177 distributed questionnaires, 156 were filled and returned, resulting in a response rate of 88.1%. This response rate is considered robust and sufficient for academic research, as response rates above 70% are generally regarded as adequate for making generalizations about the population (Babbie, 2010). The high response rate of 88.1% supports the credibility of the study findings, ensuring that the data collected are representative of the targeted population.

#### **Descriptive Analysis**

This section presents descriptive statistics for the study variables, providing insights into respondents' levels of agreement with statements related to inventory buffering and ecosystem partnerships. The findings were interpreted based on A mean value of 1-1.4 was strongly disagree, 1.5-2.4 disagree, 2.5-3.4 neutral, 3.5-4.4 agree and 4.5-5 strongly agree. On the other

hand, a standard deviation greater than 1.5, suggests that the responses were more diverse, with a wider range of scores across the participants.

### Inventory Buffers

The first objective of the study was to establish the effect of inventory buffers on performance of telecommunication firms in Nairobi City County, Kenya. The analysis of inventory buffers explored the extent to which firms utilize buffer stocks to enhance performance. Table 1 presents the findings obtained.

**Table 1: Descriptive Analysis of Inventory Buffers**

Statements	Mean	Standard Deviation
Stock buffers allow maximum capacity utilization of the firm warehouse	4.121	0.683
The firm holds buffer stocks to ensure uninterrupted service delivery	4.203	0.635
The company keeps stock buffers to ensure constant flow and supply of products	4.147	0.663
Buffer stocks determine refill frequency and time taken to fill orders	4.083	0.702
Buffer stocks play a critical role in maximum storage capacity utilization	4.054	0.689
The company reduces production cost through stock buffers for continuous supply even with shortages	4.178	0.646
The firm always maintains accurate inventory records	4.096	0.673
The firm achieves free-flowing order fulfillment	4.143	0.679
<b>Aggregate Mean</b>	<b>4.128</b>	<b>0.671</b>

Based on the findings, respondents generally agreed that stock buffers allow maximum capacity utilization of the firm warehouse (M= 4.121, SD= 0.683); that the firm holds buffer stocks to ensure uninterrupted service delivery (M= 4.203, SD= 0.635); the company keeps stock buffers to ensure constant flow and supply of products (M= 4.147, SD= 0.663); and that buffer stocks determine refill frequency and time taken to fill orders (M= 4.083, SD= 0.702). Respondents also agreed that buffer stocks play a critical role in maximum storage capacity utilization (M= 4.054, SD= 0.689); the company reduces production cost through stock buffers for continuous supply even with shortages (M= 4.178, SD= 0.646); the firm always maintains accurate inventory records (M= 4.096, SD= 0.673); and that the firm achieves free-flowing order fulfilment (M= 4.143, SD= 0.679).

The aggregate mean score of 4.128 indicates that respondents generally agree that inventory buffers positively impact firm performance. This finding is consistent with Salahudeen and Abraham (2018), who found that proper inventory management systems improve operational performance. Similarly, Mweshi (2022) emphasized the importance of maintaining appropriate inventory levels to support sustainable firm development, aligning with the observed positive impact of inventory buffers on performance.

### Ecosystem Partnerships

Study's second objective was to determine the effect of ecosystem partnerships performance of telecommunication firms in Nairobi City County, Kenya. The analysis of ecosystem partnerships explored how collaborative relationships with suppliers impact performance. Table 2 presents summary of findings obtained.



**Table 2: Descriptive Analysis of Ecosystem Partnerships**

Statements	Mean	Standard Deviation
The firm conducts regular meetings with suppliers to address their views and opinions	4.091	0.664
The management and suppliers have a good relationship with each other	4.179	0.632
Management shares future product requirements with suppliers	4.146	0.650
Suppliers are informed of the mission and vision of the firm	4.104	0.678
The firm is interested in long-term relationships with existing suppliers	4.118	0.667
Suppliers are recognized and rewarded when the company makes good profits	4.139	0.644
The firm and suppliers are dependent on each other	4.063	0.693
There is joint service delivery with suppliers	4.197	0.625
<b>Aggregate Mean</b>	<b>4.130</b>	<b>0.656</b>

Based on the findings, respondents generally agreed that the firm conducts regular meetings with suppliers to address their views and opinions (M= 4.091, SD= 0.664); the management and suppliers have a good relationship with each other (M= 4.179, SD= 0.632); management shares future product requirements with suppliers (M= 4.146, SD= 0.650); and that suppliers are informed of the mission and vision of the firm (M= 4.104, SD= 0.678). Respondents were also in agreement that the firm is interested in long-term relationships with existing suppliers (M= 4.118, SD= 0.667); suppliers are recognized and rewarded when the company makes good profits (M= 4.139, SD= 0.644); the firm and suppliers are dependent on each other (M= 4.063 SD= 0.693); and that there is joint service delivery with suppliers (M= 4.197, SD= 0.625).

The aggregate mean of 4.130 indicates strong agreement that ecosystem partnerships significantly enhance firm performance. This finding is consistent with Kwabena, Boakye, and Famiyeh (2019), who noted that supplier integration improves competitive operational capabilities. Siachitema (2022) also highlighted the positive impact of collaborative supplier relationships on firm performance, supporting the observed benefits in this study.

### Firm Performance

The general objective of the study was to establish the effect of supply chain resilience practices and performance of telecommunication firms in Nairobi City County, Kenya. The analysis of firm performance assessed the overall impact of supply chain resilience practices on telecommunication firms. Table 3 presents summary of findings obtained.

**Table 3: Descriptive Analysis of Firm Performance**

Statements	Mean	Standard Deviation
Clientele base of the company	4.147	0.647
Volume of sales	4.179	0.633
Profit per customer	4.224	0.604
Customer satisfaction levels	4.202	0.611
Usage levels of the company's products	4.247	0.578
<b>Aggregate Mean</b>	<b>4.200</b>	<b>0.615</b>

The descriptive analysis of firm performance reveals that respondents generally agree that supply chain resilience practices have a positive impact on the performance of telecommunication firms, as reflected in the high mean scores across various performance indicators. Specifically, the highest mean score was observed for the usage levels of the company's products (M = 4.247, SD = 0.578), indicating that effective supply chain practices are strongly linked to increased product usage. Similarly, profit per customer had a mean score

of 4.224 (SD = 0.604), suggesting that these practices contribute to enhanced profitability. Customer satisfaction levels also scored high (M = 4.202, SD = 0.611), underscoring the importance of supply chain management in meeting customer expectations. The volume of sales (M = 4.179, SD = 0.633) and clientele base (M = 4.147, SD = 0.647) further emphasize the positive effect of resilience practices on expanding market reach and increasing sales.

The aggregate mean of 4.200 (SD = 0.615) indicates a strong overall agreement that supply chain resilience practices significantly enhance firm performance. These findings align with studies by Hsu and Vijay (2018) and Kiprotich, Gachunga, and Bonuke (2022), who found that effective supply chain collaboration and information sharing directly improve firm performance by enhancing customer satisfaction, sales, and profitability.

### Correlation Analysis

Correlation analysis was conducted to determine the strength and direction of the relationships between the independent variables (inventory buffers, and ecosystem partnerships) and the dependent variable (firm performance). Interpretations were: if the correlation values are  $r = \pm 0.1$  to  $\pm 0.29$  then the relationship between the two variables is small, if it is  $r = \pm 0.3$  to  $\pm 0.49$  the relationship is medium, and when  $r = \pm 0.5$  and above there is a strong relationship between the two variables under consideration. Table 4 presents the findings obtained.

**Table 4: Correlation Matrix**

Variables		Firm Performance	Inventory Buffers	Ecosystem Partnerships
Firm Performance	Pearson Correlation	1		
	Sig. (2-tailed)			
	N	156		
Inventory Buffers	Pearson Correlation	0.705**	1	
	Sig. (2-tailed)	.000		
	N	156	156	
Ecosystem Partnerships	Pearson Correlation	0.720**	0.561	1
	Sig. (2-tailed)	.000	.033	
	N	156	156	156

**Note: Correlation is significant at the 0.05 level (2-tailed).**

The correlation coefficient between inventory buffers and firm performance is 0.705 ( $P < 0.05$ ), indicating a strong positive relationship. This suggests that effective inventory management through buffering significantly enhances firm performance. This finding supports Danielsbacka (2020), who highlighted that low inventory turnover negatively affects performance, underscoring the importance of optimized inventory management.

The strongest positive relationship was found between ecosystem partnerships and firm performance, with a correlation coefficient of 0.720 ( $P < 0.05$ ). This indicates that collaborative partnerships with suppliers significantly boost firm performance. This finding is consistent with Gebisa and Ram (2020), who demonstrated that information sharing and supplier collaboration directly enhance firm performance.

### Regression Analysis

The coefficients analysis explores the specific impact of each independent variable on firm performance.

**Table 5: Regression Coefficients for Study Variables**

Variable	Unstandardized Coefficients (B)	Std. Error	Standardized Coefficients (Beta)	t	Sig.
(Constant)	1.067	0.134		7.967	0.000
Inventory Buffers	0.282	0.065	0.301	4.338	0.000
Ecosystem Partnerships	0.294	0.059	0.316	4.983	0.000

The regression equation derived is:

$$\text{Firm Performance} = 1.067 + 0.282 (\text{Inventory Buffers}) + 0.294 (\text{Ecosystem Partnerships})$$

The coefficient for inventory buffers is 0.282, indicating a positive and significant impact on firm performance ( $p = 0.000$ ). This suggests that improved inventory buffering can lead to a 28.2% increase in performance. This result aligns with Oloo (2023), who found that buffer stocks significantly enhance supply chain leverage, supporting the importance of inventory buffering in enhancing firm success.

The coefficient for ecosystem partnerships is 0.294, showing the strongest positive impact on performance ( $p = 0.000$ ). This suggests that robust ecosystem partnerships enhance performance by 29.4%. This finding is consistent with Muthoka, Kilika, and Muathe (2022), who highlighted the significant impact of strategic alliances on firm performance, emphasizing the value of collaboration in achieving business success.

## Conclusions

The study concludes that inventory buffers are a vital component of supply chain resilience for telecommunication firms in Nairobi City County. Effective inventory management through buffering enhances capacity utilization, ensures uninterrupted service delivery, and reduces operational costs. The strong positive correlation and significant impact observed in the regression analysis confirm that inventory buffers play a crucial role in optimizing supply chain performance, aligning with the findings of related studies.

Ecosystem partnerships are concluded to be the most influential resilience practice for enhancing firm performance. Collaborative relationships, joint service delivery, and regular communication with suppliers foster a conducive environment for supply chain innovation and improvement. The strong positive impact observed in the study emphasizes that strategic alliances and partnerships are essential for driving performance and achieving long-term competitive advantage.

## Recommendations

### Inventory Buffers

Telecommunication firms should invest in advanced inventory management systems to optimize buffer stock levels and ensure accurate demand forecasting. Regular assessment of inventory turnover rates and stock replenishment frequencies can further enhance capacity utilization and reduce holding costs. Firms should also focus on maintaining balanced inventory levels to avoid excess or obsolete stock, thereby improving operational efficiency and overall performance.

### Ecosystem Partnerships

Firms should actively cultivate ecosystem partnerships by fostering collaborative relationships with suppliers and other stakeholders. Regular communication, information sharing, and joint service delivery initiatives can strengthen these partnerships, driving innovation and enhancing supply chain performance. Firms are also encouraged to establish long-term strategic alliances that focus on shared goals and mutual growth, ensuring sustained competitive advantage.

## Suggestions for Further Studies

Future research should explore the impact of technological advancements, such as artificial intelligence and blockchain, on supply chain resilience and performance in the telecommunication sector. Additionally, studies could investigate the role of supply chain resilience practices in other industries, such as manufacturing or retail, to compare the effectiveness of these strategies across different contexts. Further research could also focus on the challenges and barriers to implementing supply chain resilience practices in emerging markets.

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