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Analysis of Factors Affecting Logistic Performance Among Registered Freight and Forwarding Firms in Nairobi County, Kenya

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Abstract

Purpose: The general objective of the study was to establish the environmental factors affecting logistics performance among registered freight forwarding firms in Nairobi County, Kenya. The specific objectives comprised of examining the effect of the internal environment, external environment and firm size on the logistic performance of registered freight forwarding firms in Nairobi County, Kenya.

Methodology: This study used a descriptive research design. The study targeted 1676 managing director and senior departmental level managers drawn from the registered freight and forwarding firms. Data was collected using questionnaires. The collected data was entered into SPSS 28 analytical tool where it was coded and analysed. Both descriptive and inferential analysis was applied.

Findings: The findings showed that firm size had a positive and significant moderating effect on the relationship between environmental factors and performance of registered freight and forwarding firms in Nairobi County, Kenya. The study concludes that there is a positive and statistically significant relationship between internal environment factors and logistic performance. The study shows that while the structural aspects are important, the cultural and leadership elements play a more pivotal role in enhancing logistic performance. The study further concludes that external environment factors have a positive and significant effect on logistic performance. The study notes that infrastructure, policy and technology are crucial, but the potential benefits of technology may not be fully realized or uniformly adopted across the firms. The study also concludes that firms of all sizes can potentially achieve high logistic performance by focusing on effective resource utilization, strategic market analysis, and continuous development efforts.

Unique Contribution to Theory, Policy and Practice: The study recommends that the policymakers should focus on simplifying documentation and customs procedures to reduce delays and improve the overall efficiency of logistic operations. The government should invest and increase support in research and development. The study also recommends that firms should establish clear communication policies that foster teamwork and engagement since encouraging participatory engagement and keeping employees informed of shared goals can spur productivity. Logistical firms should also invest in resources including human resource and financial resources. The firm should recruit and retain adequate and competent personnel to meet organizational goals as well as mobilize financial resources effectively to support investments in technology and infrastructure.

Keywords: *Internal Environment, External Environment, Firm Size and Logistics Performance.*

Background of the Study

In the modern economy, a company's efficiency is highly dependent on its ability to deliver goods and services required by customers on time and in good condition. With customers' demand for goods becoming more apparent with recent technological development, firms are turning their attention to logistics services to increase the efficiency of their processes. Ding and Jie (2021) aver that logistics services, which comprise the planning, controlling, forwarding, and storage of goods is important not only at firm level but also contributes significantly at macroeconomic level with its impact on economic development. In China, for instance, the sector contributes 14.4% of gross domestic product (GDP), and 8% of USA's GDP (Ali & Abou, 2021). Many countries consider it paramount to have an efficient and effective logistics sector and have adopted measures towards this improvement. However, despite this, many logistics firms are underperforming and struggling to deliver efficient services. Njomo (2023) reports of increased cost of operation, inadequate financing, and competitive pressures as some of the main challenges facing logistics firms. Koskei and Wanjala (2023) confirm a high failure rate in the sector, with 56% of Kenyan logistics service providers closing their operations within five years of operation.

Business competitiveness in dynamic environments is highly dependent on managements' ability to identify and understand and the changes occurring within the operating environment. Chang and Lai (2017) confirm that improving logistic performance requires one to identify the factors within the operating environment that impede or facilitate logistics performance. Chang and Lai (2017) further assert that while environmental determinants have significant influence on a country's logistics performance score, certain aspects such as simplification of customs clearance procedures, telecommunications sector and infrastructural development are cut across all regions. India's Jhawar, Garg and Khera (2017) concur and confirm that there is a causal loop between strategic investments in transport and technologies and policy intervention, and logistics sector performance while Ali and Shakoor (2020) concede that the management's ability to assess and respond to changes in the operating environment is critical to attaining competitive advantage among freight firms.

The case for a competitive logistics sector is especially important in developing economies which need numerous resources and expertise to meet its development agenda (Kuteyi & Winkler, 2022). Logistics services are even more paramount in Africa where the population is expanding rapidly and e-commerce continues to penetrate the continent, resulting in African countries accounting for 0.6 percent of total transactions in 2017 (Koskei & Wanjala, 2023). However, while more developed countries are relying on harmonization of trade and regulatory policies and information communication technologies to ease the movement of goods, the World Bank (2023) confirms that African countries have been lagging in policy and infrastructure development, as well as technology integration. The struggle of the African logistics sector is depicted in the low logistics efficiency score rating and high costs associated with transporting goods in African countries (Funke, Bello, & Muhammed, 2020).

According to Kuteyi and Winkler (2022), rail, road, port, as well as storage facilities in Africa are highly substandard and fail to meet internationally recommended standards, making them unattractive to global transporters resulting in poor performance and a challenge moving goods, both within and across borders. Luke and Walters (2022) highlight a critical shortage of entrepreneurs with adequate logistics skills, networks and connections in Africa and argue that these factors are contributing to the continent's low logistics capabilities. In West Africa, Wang et al. (2022) note of the influence of corruption, political instability, imbalance, and fragmented logistics infrastructure development on the regions' low logistics performance measured by lead clearance and delivery time, as well as the reliability of the quality of goods delivered. Information technology sector development, technology adoption, streamlined policies and strategic orientation are among the main factors cited to influence logistic performance of Kenyan freight forwarders (Abbas, 2016; Getenga, 2022; Koskei & Wanjala, 2023). In these studies, larger firms that possessed the competence and resources to adapt to regulatory as well as technology changes were shown to be more competitive than smaller firms (Wang et al. 2022; Luke & Walters, 2022).

Statement of the Problem

Freight forwarding firms are crucial to economic development and important to Kenya's competitiveness in the international sector. These firms facilitate the movement of all goods that are essential to trade and strategic development, contributing up to 7% of the country's GDP (Koskei & Wanjal, 2023). The government's response has been to make strategic investments in road and rail as way as port development. However, the sector still lags its peers, with the Freight Logistics (2021) report confirming that service delivery delays and unpredictability have resulted in structural inefficiencies, unfavourable policies and leadership wrangles at the national level. Investment challenges have increased the cost of transport (Taylor, 2020), and corruption and inefficiencies have seen the port of Mombasa being ranked 326 out of 348 in terms of timeliness by the Container Port Performance Index (2022). Volatile freight rates, congestion, and delayed delivery of goods are impacting customer satisfaction with the sector and impacting business performance. Research reveals that many factors influence logistics service performance. In China, harmonization of policies across the sector and strategic infrastructural development were shown to influence logistics sector performance (Ali & Shakoor, 2020), while in Turkey, inefficient documentation and clearance standards were highlighted as inefficiencies in the logistics sector (Töngür, Türkcan & Ekmen-Özçelik, 2020). On the other hand, firms' inability to integrate emerging technologies and adapt best practices were the main factors contributing to poor logistics service provision in the study by Peynirci (2023). While these studies focus on Asian and European nations, regional studies highlight the influence of low-quality infrastructure, unsupportive policies, and licensing requirements as challenges to freight and forwarding firms' competitiveness in Burkina Faso. The study by Assefa, Nuru, and Nadeem (2022) highlighted poor management, and strategic planning as challenges to operational efficiency among freight firms. These factors are also present in local studies such as Githaiga (2021), Ayimba and Awuor (2020), and Njomo (2023) who highlight slow infrastructure development, clearance and forwarding inefficiencies, organizational inefficiencies, management and leadership challenges, resource challenges and

other challenges. While informative, none of these studies focus on assessing how internal and external environment factors interact to affect organizational performance. Moreover, these studies examine performance of railway or rail transport Githaiga (2021), organizational strategies (Gakere, 2020), or budgeting processes adopted by logistics firms. This study solved this gap through an assessment of the factors influencing logistics performance of freight and forwarding firms in Kenya.

Specific Objectives

i To examine the effect of the internal environment on the logistic performance of registered freight and forwarding firms in Nairobi County, Kenya.
ii To determine the effect of the external environment on the logistic performance of registered freight and forwarding firms in Nairobi County, Kenya.
iii To establish the moderating effect of firm size on the relationship between internal and external factors and the logistic performance of registered freight and forwarding firms in Nairobi County, Kenya

Literature Review

Internal Environment Factors on Logistic Performance

Internal environment factors exist within specific organizations, and they are usually created, maintained, and propelled by the organization's management or ownership. The importance of the internal environment is stressed by Penrose (1959), and Wernerfelt's (1984) resource-based view theory which proposed that the internal resources controlled by an organization are its main sources of superior performance. This theory considers firms to be a bundle of strategic resources and has been used extensively to explain how firms can use internal resources to create a sustainable competitive advantage over their competitors. Wernerfelt (1984), firms can achieve competitiveness when they align resources with their strategy and leverage them towards addressing environmental challenges and taking advantage of opportunities. Internal environment factors include company culture, the mission, vision and objectives, organizational structure and resources, management and leadership IT infrastructure and tools and human resource competency (Hasani & O'Reilly, 2021; Michaelis, Kunze, & Bruch, 2015). Internal environment factors such as organizational assets, leadership culture and technical know-how have all been identified as main internal factors that determine organizational success (Marzuki & Sularso, 2018; Afinindy, Salim, & Ratnawati, 2021; Gachui, 2020; Eze, 2023).

i. Organizational Culture

Aharonovitz, Vidal Vieira and Suyama (2018) researched on the effect of supply chain relationships on logistics performance with focus on how organizational practices and logistics collaboration influence performance outcomes. The specific focus was on the how meetings, relationship history and supplier selection affect logistics performance in Brazil and findings were that while supplier selection affects logistics collaboration, relationship history impacts logistics performance most. Moreover, interpersonal skills, organizational culture, and communication

were more significant elements than operational engagements such as meetings. The study concluded that relational history could enhance supply chain performance. Karagöz and Akgün (2015) sought after the link between organizational culture, IT capability and logistics capability and their influence on logistics firm performance. The study used Partial Least Squares (PLS) analysis and assessed data from 80 Turkish logistics firms which revealed that the culture affects performance via its impact on logistics capability. Logistics-related IT capabilities were also shown have significant impact highlighting the importance of building a culture that encourages innovation and adoption of new integrated technologies. The study, however, fails to detail how the external situation impacts this relationship. Čuček and Mlaker Kač (2020) researched on the influence of organizational culture on logistics score and employee satisfaction in Slovenia, identifying clan, adhocracy, market, and hierarchical culture as the four main types of culture. Regression analysis results were that companies using the clan culture, which is more inclusive in its participatory nature, have more satisfied employees who achieve higher performance signified by improved engagement. In contrast, the adhocracy culture type had no significant impact on employee performance. This study fails to evaluate the other resource factors influencing employee performance.

ii. Organizational Structure

Sopa (2022) performed a structural equation modelling of the effect of the factors influencing change management on logistics performance. The study collected data in Thailand and SEM analysis revealed that while organizational leadership approach, communication, and compensation and incentives influence change management, independently, they do not have a direct impact on organizational performance. The researcher highlighted the benefit of linking the internal environment with the organizations' strategy but offers contextual gaps having used change management as a moderating variable. The study used SEM in analysis while the current utilized logistic regressions. The analysis by Aulia, Sucipto and Gunawan (2021) used a case study design in examination into the influence of the work environment, employee discipline and organizational culture on employee performance in Indonesia. Multiple linear regression analysis revealed that the direction of the influence of the factors flow from the culture dimension, to work discipline and finally to the work environment. The analysis concludes that communicating and internalizing the internal culture has significant impacts on other elements that influence performance and eventual firm competitiveness. The study used a case study which sourced data specific to one company. The quantitative research by Vu, Dam and Ha (2022) sought after the determinant factors for strategy management accounting in the logistics sector, collecting data from Vietnamese accountants and directors. Correlation and regression analysis results revealed that while the SMA application is a transformative strategic tool that enhances strategic decision making, the size of the company, the structure of the organization and its technological advancement all have significant influences on the degree of SMA implementation. This study did not evaluate the influence of factors such as manager characteristics.

iii. Leadership and Decision Making

Huang (2022) researched on the influence of organizational knowledge management on logistics performance in terms of innovation. Specifically, the study evaluated the firms' technological innovation capability and inferential statistics were applied in analysis revealing that in China, the organizations' learning ability, organizational structure and technical talents are the main internal factors influencing knowledge management and innovation of new products and services. The study failed to assess how external factors influence logistics performance. Teshome (2023) used leadership theories in analysis of the influence of leadership approaches on the organizational performance of Ethiopian shippers in research that employed descriptive and inferential statistics in analysis. The study assessed four leadership styles and denounced that transformational leaders inspire and motivate employees towards the vision, that transaction leaders provide adequate recognition/rewards, and that democratic leaders provide support which is key to learning and growth. The study highlighted the importance of different leadership approaches. The researchers Pangarso, Saragih and Nuriz (2021) specified the factors influencing employee performance in Indonesia by focusing on the effects of transformative leadership and organizational culture. The quantitative study used a cross-sectional approach and multiple linear regression analysis revealing that transformative leaders, through active engagement and positive organization principles provide guidance and recognition that enhances self-confidence and plays a key role in empowering and improving the decision making and performance of employees.

External Environment Factors

The external environment comprises factors outside an organization that do not fall within its sphere of control. Matović (2020) avers that the PESTE be consistent of the abbreviation framework is the main tool detailing the main elements of the macro environment. It comprises the remote environment (political, socio-cultural, economic, and technological factors), and the task environment which comprises competitors, operating infrastructure, customers, suppliers, and regulators. The framework, developed by Kotler (1998) has been instrumental in assisting businesses to understand how the operating environment influences their performance, and has been useful in identifying opportunities or threats that can face the organization (Lozhkina, Kulikova, Gorbatkova, & Zelenkina, 2021). Ding and Jie (2021) highlighted the importance of a favourable environment with stable interest rates to business operations dealing with cross-country goods and Funke, Bello and Muhammed (2020) confirmed that quality rail, road and transport infrastructure have significant positive impacts on the performance of freight forwarders. Kapaito and Wachiuri (2023) used the theory in assessment of the influence of environment factors on the performance of logistics firms in the agricultural sector and this study will use it to identify the external environment factors that influence logistic performance.

i. Infrastructure Factors

Logistics services are highly integrated services that require a complex system of interconnected transport infrustructure that can be categorized as hard infrustructure elements (roads, ports, airports, and railways), and soft infrastructure elements (transparency, customs efficiency and institutional reforms) (Chege, 2021). The efficiency of such systems is core to the success of firms

operating within this environment that can be chaotic and highly dynamic. A country's ability to strategically invest in development of these critical infrustructure is key to its economic growth and development (Agweny, 2021). Torun and Çetinoğlu (2020) evaluated the effects of the quality of infrastructure on logistics performance of logistics firms from 160 countries. Since the study involved countries with different levels of infrastructure quality, statistical analysis techniques were applied. Findings were that the quality of logistics infrustructure has significant positive effects on logistics performance. Sénquiz-Díaz (2021) focused on the effects of the quality of infrastructure and the efficiency of logistics services on logistics performance in terms of volume of exports, focusing on data reported by 29 countries between 2012 and 2018. The study was based on the endogenous model and analysis revealed that the quality of roads, ports and other transport infrastructure all significantly increase developing economies' exports. The study revealed that poor airport infrastructure quality was the main factor hindering growth in volume of exports. Sénquiz-Díaz (2021) carried out another study but specified the influence of transportation infrastructure size on logistics performance of 74 countries. The analysis employed partial least square (PLS) and SEM (PLS-SEM) in analysis of data reported between 2012 and 2018. Findings were that the size and degree of interconnectedness of logistics infrastructure has significant effects on logistics performance and smaller logistics firms were recommended to leverage technologies and improve policies and transparency practices. These studies were based on multiple countries while the current evaluates firms in Kenya.

ii. Policy Environment

In the study by Huang (2022) that evaluated the organizational factors affecting innovation among Chinese firms, the information facilities and the policy environment signified by intellectual property culture and patent policy in the external environment were identified as the main external factors influencing management and use of knowledge to advance new product and service innovation. Policies along technology infrastructure and patent security, if border policies were significant determinants of how the firms explored new product development. Hwang et al. (2017) focused on an assessment of macro-environment factors influencing logistics performance through a literature review of evidence from Asian countries. The factors that were isolated included the quality of strategic infrastructure, the market relationships, industrial policy priorities, and communication network configurations. Specifically, documentation requirements, duty fees and inspection speed were customs policies influencing different efficiency levels of logistics service providers. this study also reviewed literature from Asian countries while the current studied primary data. In Ethiopia, Ayele (2019) sought after the factors affecting logistics firm performance in Ethiopia with specific focus on information integration, transportation, inventory, warehousing, material handling, and packaging. The study used an explanatory research design that used multiple linear regression in analysis which revealed that on its own, customs efficiency in Ethiopia has the most significant largest impact on the performance of multimodal transport. Other variables were the quality of infrastructure, timeliness, competence, and the tracking and tracing factors.

iii. Technology and Infrastructure Factors

The analysis by Tiupysheva, Reznik and Zahorodnia (2023) specified the effect of technological development on the efficiency of warehouse management. The study employed literature review which, upon analysis revealed that modern warehouses are more than just points of storage but have been transformed by technologies into transshipment points that facilitate assembly, labelling, sorting, cross-docking, and consolidation of goods. These modernizations have improved logistics performance by minimizing storage costs, increasing efficiency of transportation, and facilitating timely delivery of goods. The research by Pham et al. (2019) was on the influence of information technologies on the performance of logistics firms in Vietnam and used an exploratory research design. The study involved senior managers and analysis revealed that the volume and type of information shared have significant impacts on logistics performance. The study revealed that while in Vietnam, the type of information shared was important, (operational information), it was shared through traditional media, and this limits the applicability and timeliness of supply chain partners. The managers opined that strategic information sharing or integrated communication systems would improve information sharing and capitalization. In sticking to an analysis of the technological environment on performance, Lee et al. (2022) evaluated the effect of digital supply chain on manufacturers' performance in Malaysia. The study adopted a quantitative research design and used Partial Least Square SEM in analysis and findings were that digital supply chain performance indicators digitalization, supply chain management and technology implementation enhance organizational performance. The study revealed that industry 4.0 technologies and clear digitization policies all have significant impacts on supply chain performance. This analysis was limited to the effect of the technological environment on digital supply chain performance.

Moderating Effect of Firm Size on the Relationship Between Environmental Factors and Logistic Performance

As per resource-based view literature, the size of an organization in terms of its resources has significant impacts on its ability to meet its main objectives owing to its influence on decision making (Sheikh & Alom, 2021). According to Tanui and Serebemuom (2021), an organization's access to resources has a significant impact on executives' decision-making discretion, considering it influences their access to larger economies of scale that enable them to afford quality input materials ahead of smaller organizations. Researchers such as Michaelis, Kunze and Bruch (2015) show the firm's size playing a moderating role on the relationship between profitability and CEO charisma. Müller, Kiel and Voigt (2018) noted that larger firms can access key resources such as storage and transport connections, emerging ICTS, as well as finances from formal financial institutions, which are key to competitiveness. Confirming that Korean shippers have been experiencing challenges associated with over-supply of ship fleets and a decrease in freight rates, Lee (2019) examined the effect of the impact of internal and external factors of shipping alliances on logistics performance. Hierarchical regression analysis results were that while a high level of inter-firm coordination and organizational learning enhances logistic performance, the duration of

the alliance and the size of the organizations moderate the negative relationship between alliance cost and shipping performances. The study identifies costs associated with prohibiting opportunistic behaviours or cheating among the partners as positives for larger shippers but did not examine how other external factors such as policy development influence these firms' performance. Sheikh and Alom (2021) hypothesized that firm size plays a significant moderating role in facilitating access to higher order resources in research that ascertained that utilizing company size provides considerable insight into top management activities, logistics processes and strategic relationships. The study examined the association between corporate governance, board practices and performance of Bangladeshi shippers and report limited adherence to corporate governance and board practices resulting in reduced transparency and increased inefficiencies. In the study, larger firms enjoyed more profit grabbing opportunities through better governance practices. The study did not examine the effect of external factors on logistic performance.

Research Methodology

This study utilized a cross-sectional research design. The population of the study was the registered 1676 freight forwarding firms. The unit of observation for the study was the managing directors. The research used a purposive sampling technique in the selection of the unit of observation. The sample size of 399 firms was calculated using the Yamane formula. Structured questionnaires were utilized to collect data.The research relied on quantitative analysis using both descriptive and inferential analysis techniques. Descriptive statistics was used in summarizing the collected research data into frequencies, percentages, means and standard deviation. Inferential analysis on the other hand involved Spearman correlation and linear regression analysis. The study conducted diagnostic checks; normality, collinearity, linearity, and heteroscedasticity to ascertain the data meets the threshold for regression analysis. The analyzed research data was presented using figures and tables. The below regression models were applied in the study;

$$\mathbf{LP = B_0 + B_1X_1 + B_2X_3 + B_3X_3 + \varepsilon} \text{ .....(i)}$$

The terms are interpreted as follows; LP is the logistic performance of the firms, ε is the estimated error of the overall model, B_0 is the constant of the estimated model, B_1-B_3 are the coefficients for the individual predictor variables, X_1 represents organization culture, X_2 represents organization structure and X_3 represents leadership and decision making

$$\mathbf{LP = B_0 + B_1X_1 + B_2X_3 + B_3X_3 + \varepsilon} \text{ .....(ii)}$$

The terms are interpreted as follows; LP is the logistic performance of the firms, ε is the estimated error of the overall model, B_0 is the constant of the estimated model, B_1-B_3 are the coefficients for the individual predictor variables, X_1 represents infrastructure factors, X_2 represents policy environment and X_3 represents technology factors

$$\mathbf{LP = B_0 + B_1X_1 + B_2X2 + \varepsilon} \text{ .....(iii)}$$

The terms are interpreted as follows; LP is the logistic performance of the firms, ε is the estimated error of the overall model, B_0 is the constant of the estimated model, B_1-B_2 are the coefficients for

the individual predictor variables, X_1 represents internal environment factors and X_2 represents external environment factors. The study further adopted the below model to undertake the moderator analysis;

$Y = \alpha + bX + cZ + dX*Z + \varepsilon$ .....(iv)

Where;

Y= logistic performance of freight and forwarding firms, **X**= Aggregate effect of environmental factors, **Z**= Hypothesized moderation effect of firm size on the environmental factors and logistic performance of freight and forwarding firms, **dX*Z** = The composite effect of firm size and environmental factors on the logistic performance of freight and forwarding firms, ε = Error term

b, c, d = Coefficients of the predictor variables.

Results

The survey intended to collect survey data from a sample of 399 logistics firms operating within Nairobi County. A total of 329 questionnaires representing 82.5% response rate which was deemed suitable for the quantitative analysis. Findings emanating from this response is enough to provide generalizable results and inferences for the overall population.

Descriptive Findings and Analysis

Logistics Performance

The study reviewed the logistic performance of the freight and forwarding firms. The summary of the structured statements was analyzed using means and standard deviation and findings are shown below.

Table 1 Descriptive Analysis of Logistic Performance

	N	Mean	Std. Deviation
The firm has witnessed an improvement in the efficiency in shipping and delivery of our customer orders	329	4.0182	.89356
There is increased timeliness in the clearance of goods at entry and inland ports within the country	329	4.0729	.81945
There is increased efficiency within ports of entry due to realignment of customs procedures within the country	329	4.0699	.86847
There is increased investment in modern technologies to improve the tracking and tracing of cargo in freight	329	4.0395	.78958
There is an improvement in the road and rail network which ensures reliability and efficiency in transport of cargo	329	4.2067	.81515
The firm has invested in our team to improve our competencies and capabilities which enhance the level of customer service	329	4.0122	.81141
There is increased collaboration within the sector which improves the speed of trade and fosters logistics performance	328	4.0457	.88188

Results revealed strong agreement that there is improvement in the road and rail network which ensures reliability and efficiency in transport of cargo (mean = 4.0267). The respondents agreed that there is increased timeliness in the clearance of goods at entry and inland ports within the country (mean = 4.0729). The findings showed agreement (mean = 4.0457) there is increased collaboration within the sector which improves the speed of trade and fosters logistics performance. Analysis showed agreement the firm has witnessed an improvement in the efficiency in shipping and delivery of our customer orders (mean = 4.0182).

Effect of Internal Environment Factors on Logistic Performance

Organization Culture

The first construct for internal environment factors focused on the organization cultures and the findings revealed that there was strong agreement among respondents (mean = 4.3769) the firm motivates employees to adopt an innovative culture that can spur efficiency in our operations. Further the study showed agreement the firm ensures employees are well informed of our shared goals and values which spurs productivity (mean = 4.1641).

Table 2 Descriptive Analysis of Organizational Cultures

Organization Culture	N	Mean	Std. Deviation
The firm has put in place clear communication policy which fosters teamwork and engagement	329	4.3040	.66627
The firm motivates employees to adopt an innovative culture that can spur efficiency in our operations	329	4.3769	.71837
The firm encourages participatory engagement between employees which ensures we attain our shared goals	329	4.1277	.72968
The firm ensures employees are well informed of our shared goals and values which spurs productivity	329	4.1641	.82110

Organization Structure

The study focused on the organization structure adopted within the firms and the results indicated there was strong agreement that there is an internalized business model that guides operations of each unit to enhance delivery of services (mean = 4.4894). The analysis showed agreement (mean = 4.1277) the firms emphasize coordination between teams which enhances the ability to meet the aims of the organization.

Table 3 Descriptive Analysis of Organizational Structure

	N	**Mean**	**Std. Deviation**
The firm has an internalized business model that guides operations of each unit to enhance delivery of services	329	4.4894	.69452
The firm has put in place structure that encourages collaborative decision making between employees	329	4.3100	.67710
The firm encourages formalization of business process which is kye to improving the overall productivity of the team	329	4.2067	.71981
The firm emphasizes coordination between teams which enhances the ability to meet the aims of the organization	329	4.1277	.81270

Leadership and Decision Making

The study also reviewed the level of leadership and decision making and analysis showed there was strong agreement (mean = 4.4073) the firm's leadership has put emphasis on participatory decision-making which stimulates employee's productivity. The respondents were in agreement the firm leadership regularly conduct meetings with staff to receive feedback on areas the firm can improve processes (mean = 4.1733).

Table 4 Descriptive Analysis of Internal Environment Factors

Leadership & Decision Making	N	Mean	Std. Deviation
The firm leadership has put emphasis on participatory decision-making which stimulates employee's productivity	329	4.4073	.71017
The firm leadership routinely recognizes good work among employees through offering monetary and non-monetary rewards	329	4.2705	.73028
The firm leadership regularly conduct meetings with staff to receive feedback on areas the firm can improve processes	329	4.1733	.68326
The firm leadership has put in place mechanisms to improve learning and growth of our employees	329	4.1733	.82478

Correlation between Internal Environment Factors and Logistic Performance

The research adopted Spearman rank correlation to establish the direction of the relation between the independent variables and logistic performance.

Table 5 Correlation Internal Environment Factors and Logistic Performance

Correlations

			Logistics Performance	Organization Culture	Organization Structure	Leadership & Decision Making
Spearman's rho	Logistics Performance	Correlation Coefficient	1.000			
		Sig. (2-tailed)	.			
	Organization Culture	Correlation Coefficient	.438**	1.000		
		Sig. (2-tailed)	.000	.		
	Organization Structure	Correlation Coefficient	.450**	.605**	1.000	
		Sig. (2-tailed)	.000	.000	.	
	Leadership & Decision Making	Correlation Coefficient	.415**	.452**	.491**	1.000
		Sig. (2-tailed)	.000	.000	.000	.
		N	329	329	329	329

**. Correlation is significant at the 0.01 level (2-tailed).

The correlation test established there was moderate positive relation between organization culture (r = .438**, sig = .000<.05), organization structure (r = .450**, sig = .000<.05), leadership & decision making (r = .415**, sig = .000<.05) with the logistic performance of registered freight and forwarding firms in Nairobi County, Kenya.

Regression between Internal Environment Factors and Logistic Performance

The study adopted multiple linear regression analysis to determine the magnitude of the relationship between internal environment factors and logistic performance. The results are summarized in Table 6.

Table 6 Regression Internal Environment Factors and Logistic Performance

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.513[a]	.263	.256	.45266

a. Predictors: (Constant), Leadership & Decision Making, Organization Culture, Organization Structure

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	23.795	3	7.932	38.710	.000[b]
	Residual	66.593	325	.205		
	Total	90.387	328			

a. Dependent Variable: Logistics Performance

b. Predictors: (Constant), Leadership & Decision Making, Organization Culture, Organization Structure

Coefficients[a]

		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	T	Sig.
1	(Constant)	1.258	.265		4.738	.000
	Organization Culture	.320	.073	.295	4.415	.000
	Organization Structure	.093	.074	.086	1.261	.208
	Leadership & Decision Making	.247	.065	.219	3.775	.000

a. Dependent Variable: Logistics Performance

The overall regression results revealed a coefficient of determination (R^2 = .263) which implied that holding all factors constant the selected three internal factors predict 26.3% of the changes in the logistic performance of registered freight and forwarding firms in Nairobi County, Kenya. The ANOVA analysis of the study showed a F-calculated = 38.710, Sig = .000<.05 thus signifying there is a positive and statistically significant relationship between internal environment factors and the logistic performance of registered freight and forwarding firms in Nairobi County, Kenya.

Based on the regression coefficients the study model can be plotted as;

$LP = 1.258 + .320X_1 + .093X_3 + .247X_3 + .265$ .....(4.1)

The regression coefficient for organization culture was **$B_1 = .320$** with a sig value .000<.05 thus showing there was a positive and significant effect of organization culture on logistic performance. Changing the variable organization culture by a unit will positively improve the logistic performance by .320. The analysis further showed a coefficient of organization structure **$B_2 = .093$, sig = .208>.05** thus confirming there was an insignificant effect on logistic performance. Lastly the findings on leadership and decision making yielded a coefficient **$B_3 = .247$** had a sig value .000<.05 thus indicating a positive and significant effect. Thus, changing leadership and decision making by a unit will improve logistic performance of the firms by a factor of .247

Effect of External Environment Factors on Logistic Performance

Infrastructure Factors

The first construct under external factors sought to examine the infrastructure factors within the logistics firms and the summary is shown indicated strong agreement there is adequate and quality rail and road network within the country which supports movement of goods and services (mean = 4.3404). Respondents indicated agreement the country ensures there is adequate security systems to ensure the cargo is stored and delivered with no hitches (mean = 4.0395).

Table 7 Descriptive Analysis of Infrastructure

Infrastructure Factors	N	Mean	Std. Deviation
There is adequate and quality rail and road network within the country which supports movement of goods and services	329	4.3404	.72808
The port authorities have invested in new equipments and modern technologies in warehousing to improve operational capacity	329	4.1884	.72901
The country has focused on integrating emerging technologies in tracking and tracing of cargo in-transit	329	4.0973	.78649
The country ensures there is adequate security systems to ensure the cargo is stored and delivered with no hitches	329	4.0395	.87737

Descriptive Analysis of Policy Factors

The research further focused on the policy factors of the logistics firms and the results indicated agreement (mean = 4.1854) government has reduced the number of documentations required thus easing movement of goods and services. Analysis revealed agreement the government is focused in eradicating bureaucratic processes thus eliminating custom inefficiency (mean = 3.9848).

Table 8 Descriptive Analysis of Policy Factors

Policy Factors			
The government has reduced the number of documentations required thus easing movement of goods and services	329	4.1854	.82582
The government has moved with pace to harmonize border policies with our trading partners to improve reliability in our service	329	4.1125	.90196
The government is focused in eradicating bureaucratic processes thus eliminating custom inefficiency	329	3.9848	.90548
The government regularly reviews policies and regulations to ensure there is improved custom clearance processes.	329	4.0091	.90892

Technology Factors

The study also reviewed the level of leadership and decision making and findings showed strong agreement there is improvement in modernization of infrastructure at the ports which enhances efficiency in clearing of cargo (mean = 4.4255). A mean of 4.1733 indicated agreement there is

increased integration of new technological systems which support real-time sharing of information which enhance efficiency in logistic services.

Table 9 Descriptive Analysis of Technology Factors

Technology Factors			
There has been improvement in modernization of infrastructure at the ports which enhances efficiency in clearing of cargo	329	4.4255	.70370
There is increased utilization of new technologies in tracking of cargo which ensures security and reliability in delivery of cargo	329	4.3891	2.87875
There is increased integration of new technological systems which support real-time sharing of information which enhance efficiency in logistic services	329	4.1733	.77524
There is increased digitization of communication between partners in the logistic industry which improves decision-making	329	4.2584	.80592

Correlation between External Environment Factors and Logistic Performance

The research adopted Spearman rank correlation to establish the direction of the relation between the external environment factors and logistic performance.

Table 10 Correlation External Environment Factors and Logistic Performance

Correlations			Logistics Performance	Infrastructure Factors	Policy Environment	Technology Factors
Spearman's rho	Logistics Performance	Correlation Coefficient	1.000			
		Sig. (2-tailed)	.			
	Infrastructure Factors	Correlation Coefficient	.532**	1.000		
		Sig. (2-tailed)	.000	.		
	Policy Environment	Correlation Coefficient	.425**	.468**	1.000	
		Sig. (2-tailed)	.000	.000	.	
	Technology Factors	Correlation Coefficient	.391**	.537**	.544**	1.000
		Sig. (2-tailed)	.000	.000	.000	.
		N	329	329	329	329

**. Correlation is significant at the 0.01 level (2-tailed).

The analysis of infrastructure factors showed moderate positive relation of infrastructure factors (r = .532**, sig = .000<.05) and policy environment (r = .425**, sig = .000<.05) and logistic performance of registered freight and forwarding firms in Nairobi County, Kenya. Results also showed a weak positive relation between technology factors (r = .391**, sig = .000<.05) with the logistic performance of registered freight and forwarding firms in Nairobi County, Kenya.

Regression between External Environment Factors and Logistic Performance

The study adopted multiple linear regression analysis to determine the magnitude of the relationship between external environment factors and logistic performance. The results are summarized in Table 11.

Table 11 Regression External Environment Factors and Logistic Performance

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.571[a]	.326	.320	.43298

a. Predictors: (Constant), Technology Factors, Policy Environment, Infrastructure Factors

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	29.458	3	9.819	52.376	.000[b]
	Residual	60.930	325	.187		
	Total	90.387	328			

a. Dependent Variable: Logistics Performance

b. Predictors: (Constant), Technology Factors, Policy Environment, Infrastructure Factors

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.567	.204		7.678	.000
	Infrastructure Factors	.427	.050	.447	8.513	.000
	Policy Environment	.135	.039	.174	3.448	.001
	Technology Factors	.040	.029	.066	1.347	.179

a. Dependent Variable: Logistics Performance

The second regression model analysis showed a coefficient of determination (R^2 = .326) which implied that holding all factors constant the selected three external factors predict 32.6% of the changes in the logistic performance of registered freight and forwarding firms in Nairobi County,

Kenya. The ANOVA analysis of the study showed a F-calculated = 52.376, Sig = .000<.05 thus signifying there is a positive and statistically significant relationship between external environment factors and the logistic performance of registered freight and forwarding firms in Nairobi County, Kenya.

Based on the regression coefficients the study model can be plotted as;

$LP = 1.567 + .427X_1 + .135X_3 + .040X_3 + .204$ .....(4.2)

The regression coefficient for infrastructure factors was **$B_1 = .427$** with a sig value .000<.05 thus showing there was a positive and significant effect of infrastructure factors on logistic performance. Changing the variable infrastructure factors by a unit will positively improve the logistic performance by .427. The research further showed a coefficient of policy environment **$B_2 = .135$** had a sig value .000<.05 thus indicating a positive and significant effect of policy factors. Thus, changing policy factors by a unit will improve logistic performance of the firms by a factor of .135. Finally, the analysis further showed a coefficient of technology factors **$B_3 = .040$, sig = .179>.05** thus confirming there was an insignificant effect of technology factors on logistic performance.

Effect of Firm Size on the Logistic Performance

The research further examined the moderating effect of firm size on the interaction between the predictor variables and logistic performance. The analysis of the responses using descriptive, correlation and regression tests are presented in this section.

Table 12 Descriptive Analysis of Firm Size

	N	Mean	Std. Deviation
The firm has made strides in recruiting adequate and competent personnel to aid meeting our organization aims	329	4.3739	.66032
The firm has mobilized adequate financial resources to support investment in modern equipments and technologies	329	4.2857	.68330
The firm relies on its wide network to improve its market share thus improving performance	329	4.1672	.75265
The firm has invested on market analysis which allows access to information critical to diversifying the service offering	329	4.1003	.80715
The firm supports continuous development which supports scale expansion and acquisition of new customer base	329	4.0638	.81086

The findings showed strong agreement (mean = 4.3739) the firm has made strides in recruiting adequate and competent personnel to aid meeting our organization aims. Respondents strongly agreed the firm has mobilized adequate financial resources to support investment in modern equipments and technologies (mean = 4.2857). Analysis showed agreement (mean = 4.0638) the firm supports continuous development which supports scale expansion and acquisition of new customer base.

Correlation between Firm Size and Logistic Performance

The research adopted Spearman rank correlation to establish the direction of the relation between the firm size and logistic performance.

Table 13 Correlation Firm Size and Logistic Performance

Correlations			Logistics Performance	Firm Size
Spearman's rho	Logistics Performance	Correlation Coefficient	1.000	
		Sig. (2-tailed)	.	
	Firm Size	Correlation Coefficient	.413**	1.000
		Sig. (2-tailed)	.000	.
		N	329	329

**. Correlation is significant at the 0.01 level (2-tailed).

The correlation test established there was a moderate positive relation between firm size and the logistic performance of registered freight and forwarding firms in Nairobi County, Kenya (r = .413**, sig = .000<.05).

Regression between Firm Size and Logistic Performance

The study adopted multiple linear regression analysis to determine the magnitude of the relationship between firm size and logistic performance. The results are summarized in Table 14.

Table 14 Regression Firm Size and Logistic Performance

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.370[a]	.137	.135	.48836

a. Predictors: (Constant), Firm Size

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12.400	1	12.400	51.995	.000[b]
	Residual	77.987	327	.238		
	Total	90.387	328			

a. Dependent Variable: Logistics Performance

b. Predictors: (Constant), Firm Size

Coefficients[a]

		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.332	.242		9.639	.000
	Firm Size	.413	.057	.370	7.211	.000

a. Dependent Variable: Logistics Performance

The regression findings showed a coefficient of determination (R^2 = .137) which implied that holding all factors constant the firm size predicts 13.7% of the changes in the logistic performance of registered freight and forwarding firms in Nairobi County, Kenya. The ANOVA analysis of the study showed a F-calculated = 51.995, Sig = .000<.05 thus signifying there is a positive and statistically significant relationship between firm size and the logistic performance of registered freight and forwarding firms in Nairobi County, Kenya. Based on the regression coefficients the study model can be plotted as;

LP = 2.332 + .413X_1+ .242 .....(4.3)

The regression coefficient for firm size was **B_1 = .413** with a sig value .000<.05 thus showing there was a positive and significant effect of firm size on logistic performance. Changing the variable firm size by a unit will positively improve the logistic performance by .413.

Overall Regression Model

The research further implemented a multiple linear regression to examine the overall model and the moderated model to estimate the magnitude of effect on the logistic performance of registered freight and forwarding firms in Nairobi County, Kenya.

Table 15 Overall Regression Model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.565[a]	.320	.316	.43430
2	.569[b]	.324	.318	.43359

a. Predictors: (Constant), External Environment, Internal Environment

b. Predictors: (Constant), External Environment, Internal Environment, Firm Size

The research on the main objective showed a coefficient of determination (R^2 = .320) which implied that holding all factors constant 32% of the changes in the logistic performance of registered freight and forwarding firms in Nairobi County, Kenya can be predicted by the environmental factors (external and internal). The second model showed that including the moderating variable firm size led to an improvement on the coefficient (R^2 = .324) indicating positive moderating effect. Jointly environmental factors and firm size predict 32.4% of logistic performance.

Table 16 Overall ANOVA Summary

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	28.897	2	14.449	76.602	.000[b]
	Residual	61.490	326	.189		
	Total	90.387	328			
2	Regression	29.288	3	9.763	51.930	.000[c]
	Residual	61.099	325	.188		
	Total	90.387	328			

a. Dependent Variable: Logistics Performance

b. Predictors: (Constant), External Environment, Internal Environment

c. Predictors: (Constant), External Environment, Internal Environment, Firm Size

The ANOVA analysis for the first model showed a F-calculated = 76.602, Sig = .000<.05 thus signifying there is a positive and statistically significant relationship between environmental factors and the logistic performance of registered freight and forwarding firms in Nairobi County, Kenya. Results of the moderated model revealed a F-calculated = 51.930, Sig = .000<.05 thus signifying there is a positive and statistically significant joint relationship between environmental factors, firm size and the logistic performance of registered freight and forwarding firms in Nairobi County, Kenya.

Table 17 Overall Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.970	.259		3.743	.000
	Internal Environment	.418	.073	.323	5.721	.000
	External Environment	.315	.057	.312	5.528	.000
2	(Constant)	.826	.277		2.978	.003
	Internal Environment	.399	.074	.309	5.395	.000
	External Environment	.278	.062	.276	4.465	.000
	Firm Size	.090	.062	.080	1.441	.150

a. Dependent Variable: Logistics Performance

$LP = .970 + .418X_1 + .315X2 + .259$ .....(4.4)

To examine the effect of the internal environment on the logistic performance of registered freight and forwarding firms in Nairobi County, Kenya.

On the first variable internal environment the findings showed $\beta_1 = .418$, $t = 5.721$, $sig = .000<.05$ demonstrating a positive and significant effect between internal environment factors and the logistic performance. Changing internal environment components by a unit will significantly improve logistic performance of registered freight and forwarding firms in Nairobi County, Kenya by atleast 41.8%.

To determine the effect of the external environment on the logistic performance of registered freight and forwarding firms in Nairobi County, Kenya.

On the second variable external environment the findings showed $\beta_2 = .315$, $t = 5.528$, $sig = .000<.05$ demonstrating a positive and significant effect between external environment factors and the logistic performance. Changing external environment components by a unit will significantly improve logistic performance of registered freight and forwarding firms in Nairobi County, Kenya by atleast 31.5%.

To establish the moderating effect of firm size on the relationship between internal and external factors and the logistic performance of registered freight and forwarding firms in Nairobi County, Kenya

On the third variable firm size the analysis revealed $\beta_3 = .090$, $t = 1.441$, $sig = .150<.05$ demonstrating a positive and insignificant effect of firm size on the logistic performance.

Conclusions

The study concludes that there is a positive and statistically significant relationship between internal environment factors and logistic performance. Specifically, organization culture and leadership significantly contribute to logistic performance, while organization structure, despite being highly rated, did not show a statistically significant impact. This suggests that while the structural aspects are important, the cultural and leadership elements play a more pivotal role in enhancing logistic performance. The study concludes that external environment factors have a positive and significant effect on logistic performance. Specifically, infrastructure factors and the policy environment significantly contribute to logistic performance. However, technology factors, despite showing high mean scores in individual aspects, did not have a statistically significant impact overall. This suggests that while technology is crucial, its potential benefits may not be fully realized or uniformly adopted across the firms. The study concludes that the effect of firm size on logistic performance presents mixed findings. Linear regression analysis revealed a positive but statistically insignificant effect, suggesting that firm size alone does not directly impact logistic performance in a substantial way. However, simple regression analysis showed a positive and statistically significant relationship, indicating that when analyzed in a less complex model, firm size does show a significant impact on logistic performance. These findings suggest that while larger firms might have advantages such as more resources and broader networks, these benefits may not always translate directly to improved logistic performance. The study also

concludes that firms of all sizes can potentially achieve high logistic performance by focusing on effective resource utilization, strategic market analysis, and continuous development efforts.

Recommendations

The study recommends that policymakers should prioritize the development and maintenance of infrastructure including the road and rail networks to support the efficient movement of goods as enhanced infrastructure can reduce transit times and costs, improving logistic performance. Additionally, the policymakers should focus on simplifying documentation and customs procedures to reduce delays and improve the overall efficiency of logistic operations. This may include reducing the number of required documents and harmonizing policies with trading partners. There should also be regular reviewing and updating of policies to reflect the current needs and challenges of the logistics industry which will ensure that regulations remain relevant and supportive of industry growth. The study also recommends that the government should introduce incentives for technology integration. Providing incentives for firms to adopt advanced technologies such as GPS tracking, real-time information sharing systems, and digital communication platforms can enhance logistic efficiency and security. Additionally, the study recommends that the government should invest and increase support in research and development. Encouraging and funding research and development in logistic technologies can drive innovation and help firms stay competitive in the global market.

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