



FIFTH PARTY LOGISTICS AND PERFORMANCE OF THE E-COMMERCE FIRMS IN NAIROBI CITY COUNTY, KENYA

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ABSTRACT

This study focuses on Fifth Party Logistics and Performance of E-Commerce Firms in Nairobi City County. Fifth Party Logistics represents a modern logistics trend that leverages specialized software platforms to deliver comprehensive services to customers and shippers. While 5PL offers significant benefits, such as cost savings, improved visibility and enhanced customer satisfaction for e-commerce firms in Nairobi City County, these firms continue to face challenges like Order fulfilment and seamless delivery operations. The fifth party logistics model enables e-commerce firms to have their logistical needs handled from initiation to delivery. To explore the relationship between Fifth Party Logistics and Performance of e-commerce firms in Nairobi City County, the study was guided by the following objectives: to examine the impact of customized warehousing of fifth party logistics and performance of the e-commerce firm in Nairobi city county; To assess the benefits of lean logistics of fifth party logistics and performance of e-commerce firms in Nairobi city county. The study adopted a descriptive research design and targeted e-commerce firms operating within Nairobi City County. Data was collected from a sample of 30 respondents and analyzed using SPSS Version 30. The findings revealed strong positive correlations between 5PL practices and firm performance. Regression analysis indicated that the practices collectively accounted for the variation in performance among the firms studied. Despite infrastructure and implementation challenges, the result confirms that effective use of 5PL significantly enhances delivery efficiency, reduces operation costs and improves customer satisfaction. The study concludes that the adoption of 5PL is a key strategic approach for improving the competitiveness and efficiency of e-commerce operations. It recommends greater investment in route optimization tools, automated warehousing systems, staff training on lean process, and full-scale integration of logistics technologies. Further research is suggested to explore 5PL practices across other counties and sectors, and to examine the long-term performance outcomes of technology driven logistics models.

Key Words: Fifth Party Logistics, Performance of E-Commerce Firms, Nairobi City County, Customized Warehousing, Lean Logistics

Background of the Study

The logistics industry has undergone remarkable changes, driven by the need to adapt shifting customer expectations, the accelerated demand for digitalization due to the pandemic, evolving socioeconomic dynamics, and the advent of innovative technological advancements. From early 2000's onwards organizations are increasingly making use of changes in logistics services. According to (Hernandez, 2022) the logistics services has been classified as either First party or single logistics (1PL) refers to private companies or individuals who handle the direct storage, transportation, delivery, and reception of goods. Second party logistics (2PL), involves logistics operators who manage both the transportation and warehousing of goods. Third party logistics (3PL), providers take on a broader role, handling logistics and warehousing operations such as order picking, inventory control, reverse logistics, and cross docking. Acting as intermediaries between the production plant and the customer, they optimize supply chain management, relieving businesses of these responsibilities. Fourth party logistics (4PL), goes a step further by offering logistics consultancy services, including planning, localization, management, integration of new technologies and overseeing supply chain operations. Unlike 2PL and 3PL, 4PL providers do not engage in physical transportation or warehousing. Finally, the evolution leads to Fifth party logistics (5PL), which represents the most advanced logistics model.

5PL is an emerging model in the logistics industry where service providers are engaged to create efficient supply chain management solutions. By integrating advanced IT systems, 5PL ensures real time visibility and control, enabling seamless and successful operations across all levels of the supply chain, (Winqvist, 2023). As logistics operations became more complex Fourth party Logistics (4PL) providers emerged, acting as logistics consultants to manage and optimize clients supply chains. Fifth party logistics (5PL) goes a step further, delivering comprehensive supply chain management that encompasses not only logistic services but also engineering and IT support. Leveraging advanced technology platforms and engineering expertise, 5PL is well equipped to handle the complexities and rapid pace of modern e-commerce. Matthieu, (2018) illustrates the comparison between the various players in the logistics network in Figure1.

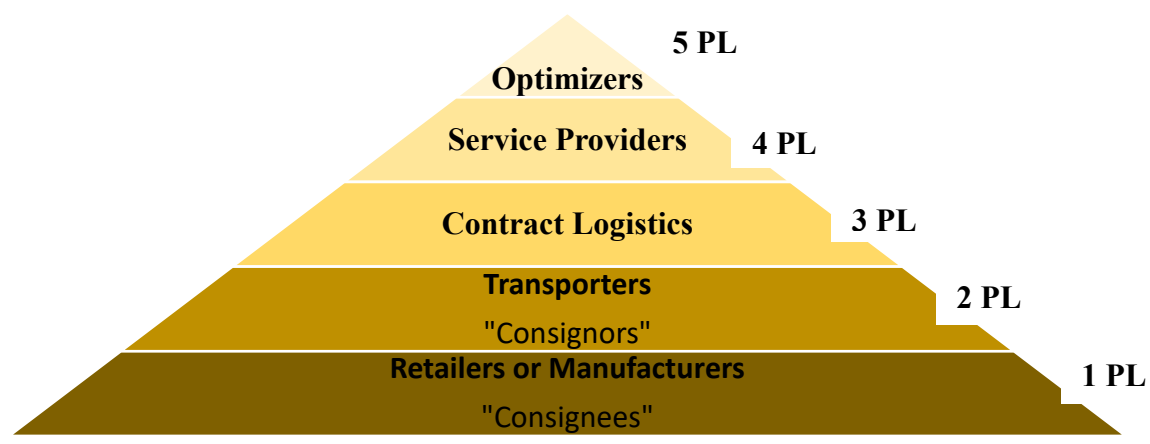


Figure 1: A Comparison between the various players in the logistics Network (Matthieu,2018)

Online purchasing, and hence e- commerce packaging, production and use have grown steadily in the recent years. Gull, Alabbad, Saqid, Iqbal, Nasir, Saeed and Alhuhaideb, (2023) defines e – commerce refers to the process of buying and selling goods and services online. Customers visit a website or marketplace, make purchases using electronic payments, and once the payment is received, the merchant ships the products or delivers the service.

The Kenyan e-commerce industry leads other African countries, with the digital economy contributing 7.7% to its GDP (UNCTAD, 2022). The Kenyan e-commerce market is projected to reach USD 793.70 million in 2024, driven by an internet penetration rate of 86% and an e-commerce adoption rate of 43.2% among the country's 55.5 million people (Statista, 2023). This penetration is expected to increase to 53.6% by 2025, with the highest consumer interest in categories such as clothing, shoes, food and beverages (International Trade Administration, 2024). A 2016 National ICT survey conducted jointly by the Communication Authority of Kenya and the Kenyan National Bureau of Statistics (KNBS) found that 39% of private enterprises are involved in e-commerce, (Communications Authority of Kenya, 2023).

The most challenging aspect of this study is the process of screening registered businesses and consolidating existing online companies. The difficulty arises from the fact that, in Kenya online trade platforms are not regulated under the Kenya Information and Communications Act (KICA), as they do not qualify as electronic services as defined by the act and are therefore not subject to licensing, (Communications Authority of Kenya, 2023) Government of Kenya. Similarly, Purity Kabuba, (2014), noted that gathering accurate information on internet activities, particularly online business, is exceptionally difficult in most developing countries, with Kenya being no exception, a challenge also observed by (Souter, 2012).

To address this, we were able to obtain a list of e-commerce firms from the Communications Authority of Kenya (CAK), as they are currently listed under the List of Licensed Postal and Courier Operations as at 1st June 2024 (Licensee Register, Communications Authority of Kenya.), before the new regulation is passed in Parliament.. Intense literature search has also helped to identify some e-commerce firms operating in Nairobi city county through the Yellow Pages, (National Business Directory, 2023 Edition) and the survey conducted by the Competition Authority of Kenya titled (Online Food and Groceries Delivery Platforms Market Study). Additionally, valuable insights into relatively new and successful e-commerce firms, such as NYSE listed Jumia, Jiji, Glovo, and U.S affiliated Copia which provide e-commerce solutions for low- income consumers. These developments have led to an increased focus on logistic management services as a key driver of business cost competitiveness. Current challenges and future trends have highlighted the growing need for firms to adopt Fifth Party Logistics (5PL).

Statement of the Problem

The Kenyan e-commerce industry leads other African countries in terms of digital economy contribution 7.7% to its GDP (UNCTAD, 2022). The Kenyan e-commerce market is projected to reach USD 793.70 million in 2024, driven by an internet penetration rate of 86% and an e-commerce adoption rate of 43.2% among the country's 55.2 million people (Statista, 2023). This penetration is expected to increase to 53.6% by 2025, with the highest consumer interest in categories such as clothing, shoes, food and beverages (International Trade Administration, 2024).

Despite the critical role the e-commerce industry plays in the economy, the industry according to International Trade Administration, (2024) online trade platforms in Kenya have traditionally not been regulated under the Kenya Information and Communications Act (KICA) as they don't constitute electronic services as envisaged under the act and are therefore not licensable. This means consumers cannot enjoy protection under the Consumer Protection Regulations (2010), which apply in instances where the authority's licensees offer services (Communications Authority of Kenya, 2023). Though in the Finance Act 2020 there was an introduction of a digital service tax of 1.5% on the gross transaction value, payable by individuals whose income from services is generated or accrues in Kenya through digital marketplaces, (Highlights of Amendments Under The Finance Act, 2020).

In addition, like other industries in Kenya, e-commerce companies have faced unique logistical challenges that hinder the optimal performance of e-commerce platforms. According to the Kenya National E-Commerce Strategy, (2023) these challenges include Quality of road infrastructure, need for network of warehouses, Inventory management, Order fulfilment, Technology limitations and Cost constraints from high operational cost and financial challenges. When these problems are examined, a big gap between the e-commerce companies and logistic companies is observed, prompting the integration of Fifth-Party Logistics (5PL) to streamline their supply chain operations, showcasing the potential benefits of advanced logistics solutions. While this logistics supply chain model has been studied in Western countries, there is a notable gap in research within Kenya. This study aims to fill that gap in the literature by exploring the opportunities and drawbacks of 5PL in the Kenyan context, as well as demonstrate the impact of 5PL on the performance of the e-commerce platform industry in Nairobi City County.

Objective of the Study

The general objective of the research is to study fifth party logistics and performance of the e-commerce firms in Nairobi City County, Kenya

Specific objectives of the Study

- i. To examine the impact of customized warehousing of fifth party logistics and performance of the e-commerce firms in Nairobi City County.
- ii. To assess the impact of lean logistics on fifth party logistics and performance of e-commerce firms in Nairobi City County

LITERATURE REVIEW

Theoretical Review

Resource Based View Theory

Resource based theory is a firms ability to maintain competitiveness depends on its access to valuable, rare, inimitable, and non-substitutable resources (Kero & Bogale, 2023). The resource-based theory focuses on how firms can leverage their unique, valuable, and scarce resources to generate income. Johnson, Scholes & Whittington (2008) stated that firms' resources can be categorized into four broad groups. The first group is physical resources, which include building blocks and various types of machinery. The second group is financial resources, encompassing capital, debtors, creditors, shareholders and bankers. The third group is human resources, which refer to the skills, expertise and knowledge of employees. Finally, the fourth group is intellectual resources, such as patents, brands, business systems and customer database.

Transaction Cost Economies (TCE) Theory

Transaction Cost Economics theory explains when it is more efficient for a transaction between two parties to occur across the market or within an organization (Nagle, Seamans and Tadelis, 2024). 5PL arrangements can be beneficial for e-commerce companies if the transaction costs (costs of contracting, monitoring, and managing the 5PL provider) are lower than the costs of maintaining an in-house logistics function. 5PL providers achieve economies of scale and expertise, potentially offering cost-effective solutions for e-commerce companies.

Just in Time (JIT) Inventory Management Theory

The core principle of JIT is to create a production system that eliminates activities that do not add value to the final product or disrupt the smooth flow of materials, effectively eliminating wasteful and costly elements from the production process. Originating from the Toyota

Production System, the essence of JIT is to reduce waste and enhance production flow. It has since been universally celebrated for its operational merits (Toyota Production System, 2019). The goals of JIT are closely tied to logistics (Paksoy, Kochan & Ali, (2021). According to Zhang (2014) in supply chain management, inventory levels not only affect the overall cost of a single enterprise but also restrict the performance on the entire supply chain. 5PL providers can excel at implementing JIT principles for e-commerce companies by optimizing inventory levels based on real-time demand data and efficient transportation management.

Conceptual Framework

The conceptual framework provides a structured approach to understanding fifth part logistics services which includes Customized warehousing, lean logistics on the performance of e-commerce firms in Nairobi city county. By linking the fifth party logistic services to profitability, customer satisfaction and competitive advantage, the framework offers a comprehensive view of how fifth party logistics can lead to better firm performance, as depicted in Figure 2.

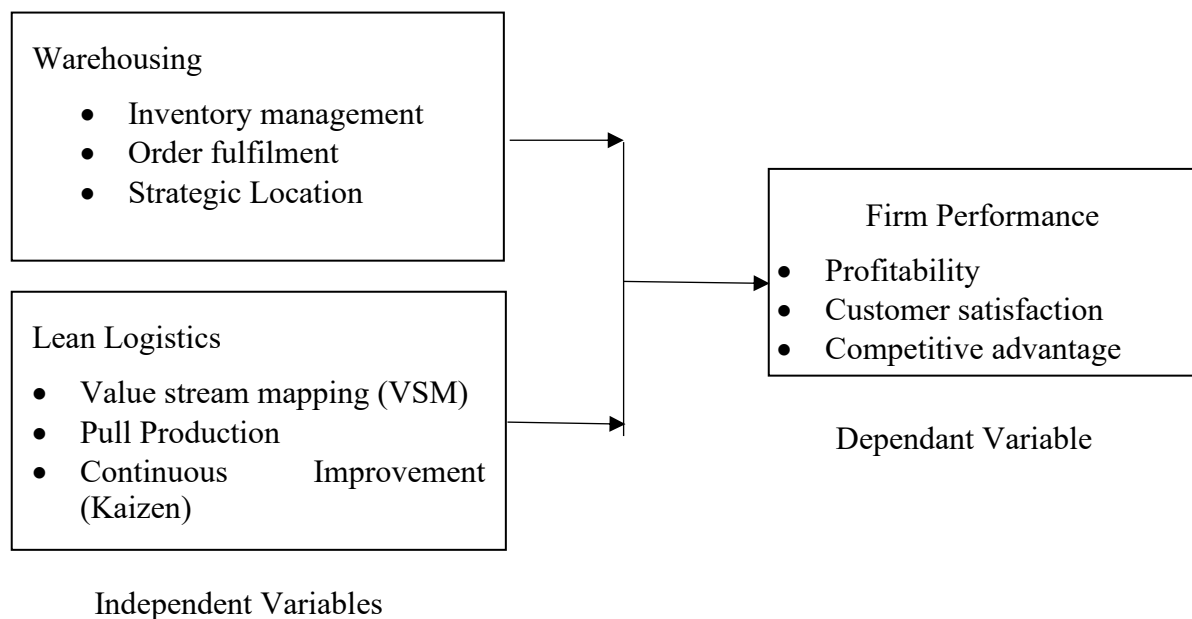


Figure 2: Conceptual Framework

Empirical Review

Although 5PL providers are increasingly using AI powered systems for inventory tracking and optimization, allowing warehouses to monitor stock levels, locations and movements in real time (Lebhar, Dadda and Ezzine 2022), there is limited research on how these innovations impact performance in specific geographic markets like Nairobi City County. Studies focus mainly on Western markets, where Grover & Ashraf, (2023) observed that the evolution of warehousing automation has empowered warehouses to achieve higher levels of productivity, accuracy and customer satisfaction. There are gaps in understanding the effectiveness of customized warehousing to accommodate diverse customer demands and inventory flows in developing economies.

In recent literature Ghabish & Amuthakkannan, (2024) lean logistics as a lean based approach that focuses on eliminating all forms of waste throughout the supply chain. It comprises the utilization of lean tools as well as techniques, for instance, value stream mapping, pull production and continuous improvement to streamline processes and reduce waste (Ali, 2024). By reducing waste lean logistics can help firms minimise cost, enhance their efficiency as well

as improve customer satisfaction (Ghabish & Amuthakkannan, 2024). Furthermore, the adoption of lean logistics has been found to have a positive impact on the competitive advantage of organizations (Garcia-Buendia, Moyano-Fuentes, Maqueira & Avella, 2022). However, that application of lean principles in 5PL is still evolving, with research often focusing on traditional models rather than the advanced integrations needed for 5PL in e-commerce settings. Further studies are needed to evaluate the adaptability of lean logistics strategies in dynamic, tech enhanced 5PL environments.

RESEARCH METHODOLOGY

The study adopted a descriptive research design to examine the relationship between 5PL logistics practices and the performance of e-commerce firms in Nairobi City County. This design enabled the variables to be observed as they naturally occur, without manipulation, while facilitating the establishment of correlations between logistics practices and firm performance. The target population comprised 32 licensed e-commerce firms registered under the Communications Authority of Kenya as at 1st June 2024, drawn from sectors including food and grocery, fashion and apparel, electronics, and general online retail. These firms represented the operational landscape of Nairobi's e-commerce sector, where obtaining reliable data remains challenging due to informal digital trading structures.

A sample size of 30 respondents was determined using the Yamane formula at a 95% confidence level and 5% margin of error. Stratified random sampling was employed to ensure proportional representation across the different e-commerce sectors, with respondents selected from each stratum to enhance inclusivity and reduce selection bias. This approach ensured that sector-specific operational nuances were captured in the analysis. Data were collected using a structured questionnaire comprising both quantitative and qualitative items, administered primarily through Google Forms with hard copies provided as an alternative. The questionnaire was divided into three sections: respondent and firm profile, adoption of 5PL practices, and the impact of 5PL on firm performance. A five-point Likert scale was used to measure perceptions, facilitating standardized quantitative analysis.

Reliability of the instrument was tested using Cronbach's alpha, with values ranging between 0.7 and 0.9, confirming strong internal consistency. Validity was ensured through expert review and computation of the Content Validity Index (CVI), supported by factor analysis and supervisory consultation. Data analysis was conducted using SPSS version 30, applying descriptive statistics (frequencies, percentages, cross-tabulations) and inferential analysis through correlation and regression. The regression model assessed the influence of warehousing, lean logistics, on the performance of e-commerce firms. Ethical compliance was upheld through approval from NACOSTI, informed consent from respondents, voluntary participation, and strict anonymity and confidentiality of all data.

RESEARCH FINDINGS AND DISCUSSIONS

Objective One: Examining the Impact of Customized Warehousing on the Performance of E-commerce Firms

The first objective of this study was to assess the impact of customized warehousing on the performance of e-commerce firms. Customized warehousing involves tailoring storage practices to meet the specific needs of e-commerce firms, which may include inventory management, order fulfilment, and the strategic location of warehouses to optimize the supply chain. This objective was analysed through both descriptive and inferential statistics to

understand how customized warehousing practices influence the overall performance of these firms.

Descriptive Analysis

The study gathered data on various aspects of customized warehousing, including inventory control, order fulfilment efficiency, and the strategic location of warehouses. Table 12 below shows the distribution of responses regarding the impact of customized warehousing practices on firm performance.

Table 1: E- commerce Firms Response on the Impact of Customized Warehousing Practices

Potential Items	Strongly Agree	Agree	Neutral	Disagree	Strongly Agree	Mean	Std
Customized warehousing reduces stockouts	8 (27%)	17 (57%)	4 (13%)	1 (3%)	0 (0%)	4.03	0.834
Faster order processing due to warehousing	9 (30%)	16 (53%)	4 (13%)	1 (3%)	0 (0%)	4.13	0.712
Strategic warehouse location improves delivery	8 (27%)	15 (50%)	5 (17%)	2 (7%)	0 (0%)	4.03	0.742

Composite Mean and Std: 4.06 | 0.763

The result in Table 1 show that respondents highly agree that customized warehousing has a significant positive impact on e-commerce performance, The mean for the item “Faster order processing due to customized warehousing” was the highest at 4.13, indicating that respondents believe customized warehousing practices are key to improving order fulfilment speed. Similarly, the mean for “ Customized warehousing reduces stock outs” was 4.03, reflecting the importance of managing inventory effectively to avoid stockouts and meet customer demands.

The overall composite mean of 4.06 suggest that customized warehousing practices are seen as a crucial factor in improving the operational efficiency and overall performance of e-commerce firms. The standard deviations (ranging from 0.712 to 0.834) are relatively low, indicating consistency in the respondents’ views on the impact of warehousing practices.

Inferential Analysis

To assess the statistical significance of the relationship between customized warehousing and firm performance, a correlation analysis was conducted. This analysis sought to examine how customized warehousing practices are related to the overall performance of e-commerce firms. The correlation matrix presented in Table 10 (previously discussed) indicates a high positive correlation of 0.880 between warehousing (X_2) and firm performance (Y), suggesting a strong relationship between customized warehousing and firm performance. This finding is significant, as it supports the view that better warehousing practices, such as effective inventory management and strategic location planning, directly contribute to improved performance.

Further, a regression analysis was conducted to determine the degree to which customized warehousing practices predict firm performance. The regression result are shown in Table 13.

Table 2: Regression Analysis on Customized Warehousing's Impact on Firm Performance

Independent Variable	Coefficient (β)	Standard Error (SE)	t-value	p-value	R ²
Customized Warehousing (X ₂)	0.475	0.091	5.22	0.000	0.88
Constant (a_0)	0.360	0.203	1.77	0.082	

R² = 0.88 (Indicating that 88% of the variance in firm performance is explained by customized warehousing practices). The regression coefficient for customized warehousing (X₂) is 0.475, which indicates that customized warehousing practices have a significant positive effect on firm performance. The t-value of 5.22 and the p value of 0.000 suggest that this relationship is statistically significant at the 0.05 level. The R² value of 0.88 indicates that 88% of the variation in firm performance can be explained by customized warehousing practices, which suggests that improvements in warehousing lead to significant improvements in e-commerce firm performance.

One interviewee discussed the role of strategic warehouse locations in enhancing logistics efficiency:

“Our company’s warehouse is strategically located close to key transportation hubs. This has drastically reduced our delivery times. However, we still face challenges with storage management during peak seasons.” (ID 5)

This feedback corroborates findings from Bhandari, (2014), who emphasized that warehouse location is a key factor in reducing delivery times and enhancing performance. The insight reveals that while strategic location is beneficial, capacity management remains a challenge.

Another participant shared concerns regarding inventory management:

“Even with customized warehousing, managing stock during high demand periods is difficult. We need more automated systems to track inventory in real time and avoid stockouts.” (ID 13)

This reflects the ongoing issues with inventory control, which (Grant et al., 2015) noted as a challenge in the supply chain. The participants comment aligns with findings from (Garcia-Buendia et al., 2022) suggesting that automation is essential for improving warehousing efficiency, particularly during high demand periods.

The analysis of customized warehousing practices revealed a positive correlation with firm performance ($r = 0.880$), indicating that better warehousing management practices significantly contribute to operational success. However, qualitative feedback points to ongoing challenges with inventory management and peak season storage. These insights suggest that while warehouse location and layout are crucial, the next step for firms is integrating more advanced inventory management technologies, such as real time tracking and automation as (Elfirdoussi et al., (2020) suggested.

Objective Two: Assessing the Impact of Lean Logistics on the Performance of E-commerce Firms

The second objective of this study was to assess the impact of lean logistics practices on the performance of e-commerce firms. Lean logistics is a supply chain management strategy focused on reducing waste, optimizing resources, and improving the efficiency of logistics operations. This objective was analyzed using both descriptive statistics and inferential statistics, with an emphasis on understanding how lean logistics practices, such as value stream mapping, pull production and continuous improvement, influence the operational success and overall performance of e-commerce firms.

Descriptive Analysis

The study gathered data on various aspects of lean logistics, including the elimination of waste, optimization of resources, and the continuous improvement of logistics process. Table 14 below shows the distribution of responses regarding the impact of lean logistics practices on firm performance.

Table 3: E – commerce Firms Response on the Impact of Lean Logistics Practices

Potential Items	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	Std
Lean logistics reduces non-value-added activities	11 (37%)	15 (50%)	3 (10%)	1 (3%)	0 (0%)	4.21	0.731
Lean logistics optimizes resource allocation	9 (30%)	16 (53%)	4 (13%)	1 (3%)	0 (0%)	4.13	0.742
Continuous improvement sustains competitive advantage	10 (33%)	14 (47%)	4 (13%)	2 (7%)	0 (0%)	4.03	0.812

Composite Mean Std: 4.12 | 0.762

The results in Table 3 suggest that respondents strongly agree that lean logistics practices have a significant positive impact on e-commerce performance. The item “Lean Logistics reduces non – value added activities” received the highest mean score of 4.21, indicating that firms highly value the role of lean logistics in eliminating waste and improving operational efficiency. Similarly, “Lean logistics optimizes resource allocation” and “Continuous improvement sustains competitive advantage” were also positively rated, with mean scores of 4.13 and 4.03, respectively.

The overall composite mean of 4.12 and standard deviation of 0.762 indicate that lean logistics practices are considered a crucial factor in improving the performance of e-commerce firms. The relatively low standard deviations across the responses reflect a high level of agreement among respondents about the impact of lean logistics on firm performance.

Inferential Analysis

To assess the significance of the relationship between lean logistics practices and firm performance, correlation analysis was performed. This analysis examined the strength and direction of the relationship between lean logistics (X_3) and firm performance (Y). The results, as shown in Table 4 (previously discussed), indicate a strong positive correlation of 0.870 between lean logistics (X_3) and firm performance (Y). This suggests that improvement in lean logistics, such as reducing waste, optimizing resource allocation, and promoting continuous improvement are strongly associated with higher e-commerce firm performance. The positive correlation indicates that the adoption of lean logistics practices contributes significantly to enhancing firm efficiency and competitiveness in the e-commerce sector.

To further examine the relationship between lean logistics and firm performance, a regression analysis was conducted. The results of the regression analysis are shown in Table 4.

Table 4: Regression Analysis on Lean Logistics Impact on Firm Performance

Independent Variable	Coefficient (β)	Standard Error (SE)	t-value	p-value	R ²
Lean Logistics (X ₃)	0.427	0.095	4.49	0.000	0.87
Constant (α_0)	0.360	0.203	1.77	0.082	

$R^2 = 0.87$ (Indicating that 87% of the variance in firm performance is explained by lean logistics practices). The regression coefficient for lean logistics (X₃) is 0.427, indicating that lean logistics has a significant positive effect on firm performance. The t-value of 4.49 and the p-value of 0.000 suggest that this relationship is statistically significant at the 0.05 level. The R^2 value of 0.87 indicates that this relationship is statistically at the 0.05 level. The R^2 value of 0.87 indicates that 87% of the variation in firm performance is explained by lean logistics practices, demonstrating the at lean logistics plays a substantial role in improving the efficiency and competitiveness if e-commerce firms. One participant noted the impact of waste reduction in lean logistics:

“We have implemented several lean practices to minimize waste, for instance, we streamlined our packaging process, which has significantly reduced materials costs. However, the lack of employee training on lean techniques has slowed the process.” (ID 2)

This feedback reflects McKinnon, (2010) findings on the importance of training in the successful implementation of lean practices. The participants highlights that while waste reduction techniques have been successful, employee training remains a crucial factor in fully realizing the benefits of lean logistics. Another respondent provided insight into the role of continuous improvement in lean logistics:

“Continuous improvement is central to our operations. However, the process sometimes faces resistance from staff who are not used to changing their workflow.” (ID 8)

This resonates with Ali, (2024), who observed that continuous improvement in logistics processes is key to sustaining competitive advantage, but it often encounters resistance due to entrenched practices.

Lean logistics practices, particularly waste reduction and resource optimization, showed a strong positive correlation with firm performance ($r = 0.870$), suggesting that lean practices are effective in improving efficiency and cutting costs. However, the qualitative insights highlight that employee resistance and the lack of training are barriers to fully implementing lean logistics. This aligns with Ghabish & Amuthakkannan, (2024), who argued that organizational culture and training are critical factors for success of lean initiatives.

Conclusions

The findings demonstrate that customized warehousing has also been shown to enhance order processing accuracy, reduce stock outs and improve delivery outcomes through strategic inventory placement. Lean logistic practices were found to contribute to operational efficiency by minimizing waste and optimizing resource use. In addition, the integration of technologies such as automation, real time tracking and data analysis emerged as a critical driver of enhanced logistics decision making and overall performance. Statistical analysis confirmed strong positive correlations between each of the 5PL practices and firm performance.

Recommendations

Based on the findings, it is recommended that e-commerce firms increase investment in route optimization technologies, which have been shown to reduce transportation costs and enhance delivery reliability. Scalable warehousing solutions should also be adopted, particularly those that incorporate automated inventory tracking systems to minimize stockouts and

accommodate fluctuating customer demand. Employee training should be prioritized to facilitate the adoption of lean logistics strategies and address resistance to operational changes.

Suggestions for Further Studies

This study focused in 5PL practices and their impact on e-commerce firm performance within Nairobi City County, future research could broaden the scope by including multiple counties or examining urban – rural logistics differences. Additionally, a longitudinal study tracking the implementation of 5PL practices over time would provide deeper insight into long term performance effects.

Further studies could also explore the role of government regulation in shaping 5PL adoption, as well as the impact of emerging technologies such as artificial intelligence and blockchain in logistics management.

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