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INVENTORY MANAGEMENT PRACTICES AND PERFORMANCE OF LOGISTIC FIRMS IN NAIROBI CITY COUNTY, KENYA

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ABSTRACT

Proper inventory management technique plays an important function on firm performance a. Majority of logistics companies suffer from the inability to use inventory management as a competitive weapon to secure and maintain customer loyalty and thereby affecting the delivery of goods and service. The logistics performance index currently ranks Kenya at 68th out of 160 worldwide, down from 42nd in the previous index. The study general objective was to examine the effect of effect inventory management practices on performance of logistics firms in Nairobi City County, Kenya. The specific objectives were to examine effect of demand forecasting and cross docking on performance of logistics firms in Nairobi City County, Kenya. The study adopted a descriptive survey research design. The study targeted 100 logistics firms in Nairobi City. The unit of observation was the procurement, warehouse, and finance managers from each firm hence 300 respondents were targeted. The study sample of 171 staff was calculated using Yamane sampling formula. The study used stratified random sampling method to categorize the respondents according to the departments. The study collected primary data using questionnaires. The pilot test was done on a sample of 10% of the respondents hence 17 managers that were not used in the final study. This study used content and construct validity. Cronbach's Alpha was used as the means to measure reliability. Quantitative data obtained from questionnaires were coded and analyzed with the use of a computer in Statistical Package for Social Sciences (SPSS) Version 28 program. Data was analyzed using both descriptive statistics (frequency, percentage, mean) and inferential statistics that include Pearson correlation and regression. Findings were tabulated. Findings show that; there is a strong significant relationship between demand forecasting and performance of logistics firms ($r=0.530$, $p=0.000$), and a strong significant relationship between cross docking and performance of logistics firms ($r=0.820$, $p=0.000$). The recommendations are that; firms should adopt forecasting methods that will enable them to accurately forecast the demand patterns and adopt Transportation Management System to provide oversight and metrics to help stay organized and amplify efficiency across your cross-docking process.

Key Words: Inventory Management Practices, Demand Forecasting, Cross Docking, Performance, Logistics Firms

Background of the Study

Inventory management is mainly about specifying the size and placement of stocked goods. Inventory management is required at different locations within a facility or within multiple locations of a supply network to protect the regular and planned course of production against the random disturbance of running out of materials or goods (Vessils, 2020). Inventory management enables the coordination of purchasing, manufacturing and distribution in order to meet the marketing needs of ensuring that products are availed to a consumer when and as needed (Muhayimana, 2015).

Srour (2021) stressed that there are three motives for holding inventories, which are transaction, precautionary and speculative motives. The transaction motive is said to occur when there is a need to hold stock to meet production and sales requirements. A firm might also decide to take precaution to hold extra amounts of stock to cover the possibility that it may have under estimated its future production and requirements. Ikekwem (2020) noted that proper inventory management technique plays an important function on firm performance and there is a positive relationship between the processes of managing inventories include and company performance. Inventory Management is an important corporate function as it's essential to the successful operation in the organizations. This is majorly due to the fact that the amount of money invested in inventory is significant and also that inventories do have a great impact on daily operations of an organization.

Statement of the Problem

Logistics firms has a great potential on promoting economic growth in Kenya. The logistics industry in Kenya account for 7.9% of the GDP in Kenya. In addition, at least 5 million jobs are involved in logistics in Kenya. According to Njoroge (2018), the logistics sector serves as an important tax collection point as value added tax is gathered at all levels. In Kenya, 75% of cargo is transported by road while 25% is transported by rail. However, since the launching of the Standard Gauge Railway, logistics firms are increasing shifting to rail transport due to its perceived advantages over road transport. Firms operating in the transport and logistics sector have made significant progress in their adoption of new technologies, particularly the use of IT to track cargo and fleet using electronic cargo tracking system and information sharing between members of a supply chain (Baraza, 2021). However, despite these changes many firms in the logistic industry are still underperforming.

Gachui (2020) noted that about 83% of logistics companies suffered from the inability to use inventory management as a competitive weapon to secure and maintain customer loyalty and thereby affecting the delivery of goods and service. According to the World Bank (2020), transport permits are the biggest obstacle to efficient logistics implementation of port facilities, as 54% of permit time is spent obtaining permits. This result in time consuming trade deals at The Nairobi Inland Container Depot (ICD) which resulted in high logistics costs in Nairobi. The Kenya Economic Survey (2021) indicates that the performance of Kenyan logistics firms is weak as evidenced by the decline in growth rate from 5.7% in 2020 to a 4.3% in 2021. The logistics performance index currently ranks Kenya at 68th out of 160 worldwide, down from 42nd in the previous index. Among the East African countries, Tanzania is ranked the highest at position 88 while Kenya dropped in ranking to position 122 in 2022 (World Bank, 2022). In addition, studies show that government procedures account for 31% of the main factors during stay in the warehouses. Gicheru and Moronge (2019) indicate that customer satisfaction in logistics firms in Kenya experienced a decrease from 78% in 2018 to 76% in 2019. Further, delivery time for goods decreased by 3% during the period between 2019 and 2020. The transport time at the port takes an average of 5 days, below the internationally recognized standard for a maximum stay of 3 days. Consequently, logistics performance remains a challenge for ICD because logistics companies find it difficult to improve customer satisfaction, improve operational efficiency, reduce operational costs, reduce transaction times, and provide competitive advantages.

There exist several studies on inventory management in Kenya; Ngugi, Kimutai, and Kibet (2019) examined effect of inventory management systems on performance of manufacturing companies in Eldoret Town, Kenya and found out that inventory management systems affect manufacturing companies' performance. Chebet and Kitheka (2019) study on effect of inventory management system on Firm Performance found that inventory management and gross profit had a positive relationship. Mulandi and Ismail (2019) on effect of inventory management practices on performance of commercial state corporations in Kenya concluded that inventory management has positive and significant relationship with the performance of commercial state corporations in Kenya. Munyao and Omulo (2015) examined the role of inventory management practices in the performance of the production department found out that manufacturing firms used various inventory management techniques such as just-in-time, material requirement planning and economic order quantity. These studies focused on general inventory management implying that there is study limitation on inventory management practices on performance of logistics in Kenya. This study aimed at filling the research gap by examining the effect of inventory management practices on performance of logistics firms in Nairobi City County, Kenya.

Specific Objectives

i. To establish effect of demand forecasting on performance of logistics firms in Nairobi City County, Kenya.
ii. To establish effect of cross docking on performance of logistics firms in Nairobi City County, Kenya.

LITERATURE REVIEW

Theoretical Review

Just in Time Theory (JIT)

Just in Time Theory (JIT) was developed by Taiichi Ohno in 1970. Just in time is a system that focuses on waste reduction and continuous improvement to achieve operational excellence. In a manufacturing context, JIT involves a manufacturing system where the parts needed to complete finished products are produced or delivered at the assembly site as required. JIT is said to be based on a number of principles. These principles, though somewhat varied depending on the research focus, almost always list two factors: elimination of waste and total employee involvement; with researchers sometimes including other factors such as supplier participation, total quality control and workplace organization (Telsang, 1998). JIT theory is the cornerstone of the business inventory management. Proper handling of materials will ensure that there is no wastage and firm resources are utilized effectively.

JIT encourages creating product just when needed to fulfill orders, instead of making and keeping inventories in advance. This reduces carrying costs, which might include interest on credit used to develop inventories. If one aspect of the supply chain, such as the capacity to get materials or labor, is disrupted, this might be a costly undertaking (McWatters & Fullerton, 2013). JIT procedures aid in the elimination of waste caused by an unstructured work space, unscheduled downtime, and machine performance unpredictability. JIT's purpose is to continuously maintain, enhance, and optimize the quality and efficiency of equipment by including every personnel, from senior management to ground employees (Chase & Aquilano, 1992). The theory supports the variable on demand forecasting and cross docking. Accurate forecasting will enable the firm to adequately prepare for demand rise and control production if they anticipate decline in demand of certain products.

Resource-Based View Theory

The Resource-Based View (RBV) theory, pioneered by scholars Jay Barney and Birger Wernerfelt, provides a theoretical framework for understanding the sources of competitive advantage within firms (Barney, 1991; Wernerfelt, 1984). At its core, the RBV posits that a firm's competitive advantage stems from the unique bundle of resources and capabilities it

possesses. Resources encompass tangible and intangible assets, while capabilities refer to the firm's ability to deploy and leverage these resources effectively to achieve superior performance.

Cross docking, as a logistical strategy, introduces a unique set of resources and capabilities within a firm's operational framework (Peteraf, 1993). By investing in infrastructure, technology, and organizational processes tailored to facilitate the seamless flow of goods through the supply chain, firms can develop a distinctive configuration of resources (Barney, 2001). Operational efficiencies inherent in cross docking, including reduced inventory holding costs and streamlined handling processes, represent valuable resources that contribute to a firm's competitive position (Helfat & Peteraf, 2003).

However, critiques of the RBV theory suggest limitations in its application to dynamic environments such as the logistics industry (Barney, 1991; Ketchen & Hult, 2007). Critics argue that the RBV's focus on static resources may overlook the importance of dynamic capabilities – the ability to adapt and innovate in response to changing market conditions (Teece, Pisano, & Shuen, 1997). While cross docking enhances operational efficiency, its long-term sustainability as a source of competitive advantage depends on the firm's ability to continuously innovate and refine its logistical practices (Eisenhardt & Martin, 2000).

Moreover, the RBV's reliance on resource heterogeneity and immobility as sources of competitive advantage may not fully capture the complexities of the modern logistics landscape (Barney, 1991; Peteraf, 1993). In rapidly evolving markets such as Nairobi City County, Kenya, where infrastructure and regulatory environments are subject to change, firms must navigate dynamic challenges that extend beyond the possession of valuable resources (Teece, 2007). The ability to leverage cross docking effectively may hinge not only on the firm's resource endowment but also on its agility in responding to market dynamics and technological advancements (Winter, 2000).

Therefore, Resource-Based View (RBV) theory provides a valuable lens through which to understand the significance of cross docking in inventory management practices and logistics performance within Nairobi City County, Kenya. In the context of logistics, cross docking represents a strategic resource allocation that enables firms to streamline the flow of goods through their supply chains, thereby enhancing operational efficiency and responsiveness to market demands. By investing in cross docking infrastructure, developing cross docking capabilities, and optimizing operational performance in cross docking activities, firms can create a distinctive competitive advantage based on their ability to effectively manage inventory and logistics operations. Through the RBV lens, cross docking emerges as not only a logistical strategy but also a critical resource that contributes to the firm's overall performance and success in navigating the dynamic business environment of Nairobi City County, Kenya.

Conceptual Framework

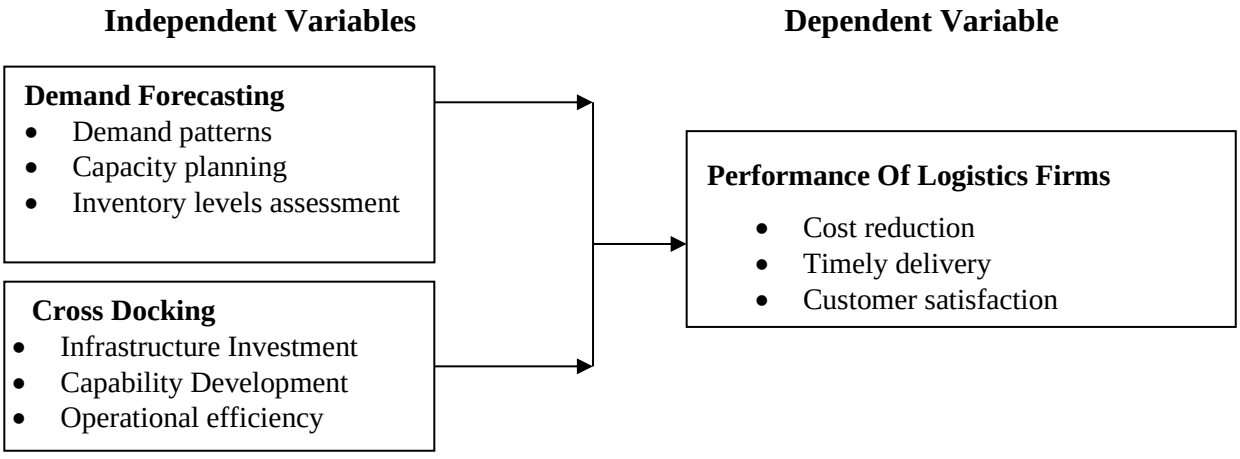

Figure 2. 1: Conceptual Framework

Demand Forecasting

Demand forecasting refers to the process of predicting the quantity of goods and services that will be demanded by consumers at a future point in time. The methods of demand forecasting entail using predictive analytics to estimate customer demand in consideration of key economic conditions (Abbasimehr, Shabani, & Yousefi, 2020). Abolghasemi et al. (2020) proposes forecasting approaches including time series analysis, regression modeling, and causal frameworks. The method chosen is determined by the type of the commodities, market dynamics, and available data. Similarly, the accuracy of demand forecasting is essential, as it impacts various aspects of the supply chain, including inventory management, production planning, and order fulfillment. Characteristics of products and industries play a significant role in demand forecasting as it distinguishes between functional products and their demand forecasting challenges, varying depending on their position in the supply chain.

Companies use forecasting models to understand consumer needs and expectations. The main aim of demand forecasting is to understand consumer preferences and behavior. Companies may engage in the extraction of similar behavior from given historical data to establish customer cluster segments. Clustering is important as it enhances the accuracy of demand forecasting since predictions are established for every segment that contains similar consumers (Seyedan & Mafakheri, 2020).

In order to determine its target inventory level, each stage of the supply chain must forecast both the expected demand and the standard deviation of demand. Demand forecasting employs both quantitative and qualitative methods. Quantitative methods rely on historical data, mathematical models, and statistical techniques to extrapolate trends. Qualitative methods, on the other hand, incorporate expert opinions, market research, and subjective insights to account for factors that may not be captured by data alone. Demand forecasting covers various time horizons, ranging from short-term forecasts that aid in day-to-day operational decisions to long-term forecasts that guide strategic planning and investment. Demand forecasting recognizes that markets are dynamic and subject to change. External factors such as economic fluctuations, technological advancements, and shifts in consumer preferences constantly influence demand patterns (Mohan & Lokesh, 2023).

Companies use forecasting models to understand consumer needs and expectations. As a result, a lot of research goes into the analysis of consumer preferences and behavior using forecasts often obtained from transaction records and consumer data. All of these seek to manage a product in the supply chain in the correct manner. Companies may engage in the extraction of similar behavior from given historical data to establish customer cluster segments. Clustering is important as it is enhancing the accuracy of demand forecasting since predictions are established for every segment that contains similar consumers (Seyedan & Mafakheri, 2020

Cross Docking

Cross docking involves the direct transfer of goods from inbound to outbound transportation vehicles with minimal storage time. Instead of relying on buffer stocks to bridge supply-demand gaps, cross docking ensures a continuous flow of goods through the supply chain, reducing the risk of stockouts and improving responsiveness to customer demand (Woods, 2022). Cross docking revolutionizes inventory management practices through infrastructure investment, capability development, and operational performance. Cross docking optimizes supply chain efficiency by minimizing storage time and streamlining the flow of goods.

Infrastructure Investment in cross docking facilities is paramount for seamless operations (Lee et al., 2020). Firms invest in specialized docking infrastructure, such as loading docks and sorting systems, to facilitate direct transfers between inbound and outbound transportation vehicles. This strategic allocation of resources enhances the firm's logistical capabilities and contributes to improved inventory management practices (Lee et al., 2020).

Capability Development is essential for effective cross docking implementation (Christopher, 2016). Firms must cultivate cross-functional skills and knowledge among employees to coordinate inbound and outbound logistics seamlessly. Training programs and organizational initiatives play a crucial role in developing these capabilities, ensuring efficient cross docking operations and maximizing supply chain performance (Christopher, 2016).

Operational Performance metrics provide tangible indicators of cross docking effectiveness (Lapide, 2008). Key performance indicators (KPIs) such as dock-to-dock time, inventory turnover rate, and order fulfillment speed offer insights into operational efficiency and responsiveness. By monitoring and optimizing these metrics, firms can continuously enhance their cross-docking practices, driving improvements in inventory management practices and logistics performance (Lapide, 2008). Therefore, through strategic investments in infrastructure, development of organizational capabilities, and monitoring of operational performance metrics, firms can leverage cross docking to optimize inventory management practices and enhance overall logistics performance.

Empirical Review

Demand Forecasting and Logistic firm Performance

Ding et al. (2019) investigated the determinants of competitive advantage in dairy supply chains in China. Data was collected using questionnaires. Findings showed that production behaviour is a crucial determinant of competitive advantage through quality assurance of dairy products. Demand planning must consider production to ensure quality assurance in production. Abdul (2019) assed effectiveness of demand forecasting for inventory management. The study was conducted using case study method. The demand data for one of the series products was collected. Results showed that demand forecasting allows retailers to make better decisions about which prices to adjust and when, which products to promote, and what promotional tactics to deploy, in order to achieve objectives. The benefits are significantly more profound and productive than a simple sales forecast. The best-informed decisions help to increase profits, sales or market share.

Badr and Ahmed (2023) investigated the importance of accurate demand forecasting in optimizing supply chain management processes in Fast-Moving Consumer Goods (FMCG) firm in the Saudi retail sector. The study adopted a qualitative research approach. Data was collected from secondary sources. The research revealed significant findings for demand planning and forecasting, particularly in the development of an improved demand model. Also, key factors influencing the adoption of advanced forecasting techniques include applied KPIs and the potential benefits of switching to ABC/XYZ categorization to enhance accuracy and service levels, as per study recommendations

Ikechukwu (2019) assessed the impact of supply chain management responsiveness on organizational performance in the Democratic Republic of the Congo. A survey research design was adopted and 30 key respondents were sampled. The results showed that accurate demand forecasting and the use of lean strategy helps to increase productivity. Ngatuni (2018) examined factors affecting inventory management in Unga Group Limited in Kenya. a descriptive design was adopted and the target was 41 respondents. The findings revealed that demand forecasting has a positive impact on inventory management in the manufacturing industry. Ogola and Ndeto (2021) studied effect of demand forecast updating on inventory management at the Brookside Dairies Limited. The target was 303 staff of Brookside Dairies Limited based in the head office in Nairobi City, Nairobi County. The study utilized primary data collected using questionnaires. Findings showed that the use of demand forecasting updating have a significant influence on inventory management. Kiplagat (2024) aimed to explore how demand forecasting systems impact the performance of manufacturing firms in Kenya. The study employed a descriptive survey research design to ensure minimal bias and enhance reliability. Managers from manufacturing firms under the Kenya Association of Manufacturers (KAM), which represented 903 firms as of 2017, formed the target group. A

sample of 90 respondents was selected from the KAM membership. Primary data was gathered through self-administered semi-structured questionnaires. The study found that the demand forecasting system accounted for 7.6% of the variance in the performance of manufacturing firms in Kenya

Cross Docking and Logistic firm Performance

Dudukalov et, al. (2020) did a study on the impact of cross docking on transportation and distribution efficiencies, while focusing on role of cross docking to reduce warehousing cost. 1073 Respondents from the logistic industry were selected through restricted probability sampling, for crawling the perceptions/ responses on the proposition of this research while the 1000 responses were filtered and recorded for evaluating the hypotheses and extracting the empirical findings on the impact of cross docking on improving distribution efficiencies and reducing warehousing cost. The responses to gauge the propositions / hypotheses of the study were collected from the respondents belong to logistic industry from four major Asian countries including China, Pakistan, India and Sri Lanka, while, the respondents were contacted through their LinkedIn and Facebook profiles. The findings confirmed that 1% improvement in cross docking reduces 32.4% warehousing cost and improves 35.6% distributions efficiencies significantly.

Apte, Uday and Viswanathan (2020) did a study on effective cross docking for improving distribution efficiencies. Cross docking is a warehousing strategy that involves movement of material directly from the receiving dock to the shipping dock with a minimum dwell time in between. Cross docking can effectively bring substantial reductions in the transportation cost without increasing the inventories while simultaneously maintaining the level of customer service. Cross docking can also lead to the reduction of order cycle time, thereby improving the flexibility and responsiveness of the distribution network. This paper provided a framework for understanding and designing cross docking systems and discusses techniques that can improve the overall efficiencies of the logistics and distribution operation.

Chen and Yan (2018) delved into the effects of cross docking on supply chain performance, with a particular focus on inventory turnover and order fulfillment speed. Through empirical analysis of data collected from logistics firms operating in the United States, the study uncovered significant improvements attributed to cross docking practices. Specifically, the research revealed that firms implementing cross docking observed notable increases in inventory turnover rates and accelerated order fulfillment processes. This enhancement in supply chain efficiency not only reduced inventory holding costs but also improved responsiveness to customer demands, underscoring the strategic importance of cross docking in logistics operations.

In a related study, Song and Dong (2019) explored the influence of cross docking on transportation efficiency and cost savings within the maritime logistics sector. By analyzing data from container terminals in major seaports, the researchers examined the impact of cross docking practices on key performance indicators. The findings demonstrated that facilities adopting cross docking observed reduced transportation lead times and overall logistics costs. Through streamlined cargo handling and minimized dwell times, cross docking emerged as a catalyst for enhancing the efficiency of maritime logistics operations, thereby contributing to cost savings and competitive advantages in the industry.

Furthermore, Govindan, Fattahi, and Keyvanshokooh (2020) delved into the environmental sustainability implications of cross docking in supply chain operations. Through a comprehensive review of literature and case studies, the researchers assessed the environmental impact of cross docking practices. The study highlighted how cross docking contributes to reducing carbon emissions, energy consumption, and environmental footprint in supply chain operations. By optimizing inventory holding times and transportation routes, cross docking not only enhances supply chain efficiency but also aligns with sustainability goals, demonstrating

its potential to drive positive environmental outcomes while improving logistics firm performance.

RESEARCH METHODOLOGY

The study adopted a descriptive survey research design. The study targeted the logistics firms in Nairobi City. According to Kenya International Freight and Warehousing Association (KIFWA, 2023), there are 100 logistics firms in Nairobi City which formed the study's unit of analysis. The unit of observation was the procurement, warehouse, and finance managers from each firm hence 300 respondents were targeted. These respondents enabled the researcher to capture the most recent and conclusive data and to provide sufficient variables to assist in establishing the effect of inventory management practices on firm performance in Kenya. The study sample of 171 was calculated using Yamane sampling formula. The study used stratified random sampling method to categorize the respondents according to the departments. In every department, the researcher randomly selected 57 managers. This ensured that the logistics firms were well represented in the study. The study collected primary data using questionnaires. The pilot test was done on a sample of 10% of the respondents hence 17 managers that were not used in the final study. Data was organized to facilitate analysis. Quantitative data obtained from questionnaires were coded and analyzed with the use of a computer in Statistical Package for Social Sciences (SPSS) Version 28 program. Primary data was analyzed using both descriptive statistics (frequency, percentage, mean) and inferential statistics that included Pearson correlation and regression.

RESEARCH FINDINGS AND DISCUSSION

The study respondents were the procurement, warehouse, and finance managers in the logistics firms in Nairobi County. The sample size was 171 respondents and 17 were used for piloting and did not take part in the actual study. Questionnaires were hence administered to 154 respondents and 134 questionnaires were successfully answered hence a response rate of 87%. This is an adequate response rate as recommended by Fincham (2008) that a response rate of 60% and above should be the target of every social science researcher. The high response rate was due to researchers'' efforts to closely monitor the data collection process and creating a rapport with the sampled respondents.

Demand Forecasting

The first objective aimed at establishing effect of demand forecasting on performance of logistics firms in Nairobi City County, Kenya. The managers were asked to tick on the extent to which they agree/disagree with statements related to demand forecasting. Findings are presented in Table 1.

Table 1: Demand Forecasting

Key: SD=Strongly disagree, D=Disagree, NS=Not Sure, A=Agree, SA= Strongly agree, M=Mean.

Statements	SD		D		N		A		SA		M
	F	%	F	%	F	%	F	%	F	%	
The firm makes accurate demand forecasts for required inventory to be supplied on time	4	2.9	28	20.9	9	6.7	15	11.2	78	58.2	4.08
Firm makes accurate demand forecasts that match customer demands	86	64.2	15	11.2	8	6.0	12	9.0	13	9.7	1.89
Forecasting leads to a reduction in inventory holding in the firm	17	12.7	2	1.5	9	6.7	42	31.3	64	47.8	4.00
Wrong forecast results to increased cost of managing stock	6	4.5	10	7.4	11	8.2	38	28.4	69	51.5	3.93
Forecasting reduces out of stock situations along the supply chain.	11	8.2	5	3.7	5	3.7	52	38.8	61	45.5	4.10
Forecasting helps the firm to predict demand and fulfill the customer orders as and when they arise	21	15.7	17	12.7	9	6.7	38	28.4	49	36.6	3.43
Forecasting demand reduces the instances of shortages in this firm	5	3.7	5	3.7	9	6.7	16	11.9	99	73.9	4.49
Forecasting demand leads to reduction of time used in the management of inventory	7	5.2	2	1.5	2	1.5	42	31.3	81	60.4	4.40

N=134

Findings show that majority of the managers agreed that forecasting demand reduces the instances of shortages in this firm (M=4.49), and forecasting demand leads to reduction of time used in the management of inventory (M=4.40). The managers further agreed that; forecasting reduces out of stock situations along the supply chain (M=4.10), the firm makes accurate demand forecasts for required inventory to be supplied on time (M=4.08), Forecasting leads to a reduction in inventory holding in the firm (M=4.00), wrong forecast results to increased cost of managing stock(M=3.93), and forecasting helps, and the firm to predict demand and fulfill the customer orders as and when they arise(M=3.43). Results further show that the managers disagreed that the firm makes accurate demand forecasts that match customer demands (M=1.89).

Findings imply that demand forecasting plays a pivotal role in logistics firms. The firms analyze freight data that enables them to predict the volume of goods that may be needed to be transported over a certain period. Demand forecast also enables the firms to optimize fleet management and scheduling ensuring that transportation resources are used efficiently. accuracy in demand forecasting has greatly enabled the firms to reduce inventory costs since they are thy are able to plan early and optimize the storage systems. Majority of the firms have however been unable to accurately predict customers' demands which may lead to customer dissatisfaction. Findings are in support of Abdul (2019) that demand forecasting allows

retailers to make better decisions about which prices to adjust and when, which products to promote, and what promotional tactics to deploy, in order to achieve objectives.

Cross Docking

The third objective sought to establish effect of cross docking on performance of logistics firms in Nairobi City County, Kenya. The managers were asked to tick on the extent to which they agree/disagree with statements related to cross docking. Findings are presented in Table 2.

Table 2: Cross Docking

Key: SD=Strongly disagree, D=Disagree, NS=Not Sure, A=Agree, SA= Strongly agree, M=Mean.

Statements	SD		D		N		A		SA		M
	F	%	F	%	F	%	F	%	F	%	
Goods are transferred directly from inbound to outbound vehicles with minimal storage time	8	6.0	18	13.4	2	1.5	14	10.4	92	68.7	4.22
Our organization has invested in specialized infrastructure for efficient logistics operations	19	14.2	9	6.7	4	3.0	19	14.2	83	61.9	4.03
We have optimized our transportation processes to minimize dwell times and improve efficiency	22	16.4	9	6.7	4	3.0	20	14.9	79	59.0	3.93
Our order fulfillment speed has improved due to streamlined logistics practices	21	15.7	8	6.0	2	1.5	43	32.1	60	44.8	3.84
We actively monitor inventory levels to prevent stockouts and optimize supply chain performance	9	6.7	13	9.7	3	2.2	20	14.9	89	66.4	4.25
Our inventory holding costs have decreased as a result of improved logistics management	5	3.7	8	6.0	2	1.5	14	10.4	105	78.4	4.54
We have developed capabilities to adapt quickly to changes in demand and optimize logistics operations	20	14.9	2	1.5	5	3.7	24	17.9	83	61.9	4.10

N=134

Findings show that the managers strongly agreed that; the inventory holding costs have decreased as a result of improved logistics management (M=4.54), the companies actively monitor inventory levels to prevent stockouts and optimize supply chain performance (M=4.25), and goods are transferred directly from inbound to outbound vehicles with minimal storage time (M=4.22). Findings also show that the managers agreed that the firms have developed capabilities to adapt quickly to changes in demand and optimize logistics operations (M=4.10), have invested in specialized infrastructure for efficient logistics operations (M=4.03), have optimized transportation processes to minimize dwell times and improve efficiency (M=3.93), and order fulfillment speed has improved due to streamlined logistics practices (M=3.84).

Findings imply that the logistics firms have been able to reduce inventory costs through cross docking. This is achieved through ensuring that goods are transferred directly from inbound to outbound vehicles with minimal storage time which reduces storage costs. The companies also closely monitor the inventory levels to ensure that there is optimum stocks in the storage systems. The firms have also adopted modern transport infrastructure that enables them to transport goods within shortest time possible. Cross-docking enables faster replenishment, reduced middle- and last-mile shipping costs by positioning inventory closer to the end customer. By eliminating or minimizing warehouse storage costs, space requirements and inventory handling, cross-docking streamline supply chains and help them move goods to market faster and more efficiently. The results concur with Chen and Yan (2018) that firms implementing cross docking observed notable increases in inventory turnover rates and accelerated order fulfillment processes. This enhancement in supply chain efficiency not only reduced inventory holding costs but also improved responsiveness to customer demands, underscoring the strategic importance of cross docking in logistics operations.

Logistic Firm performance

Respondents were asked to tick on the extent to which they agree/disagree with statements related to performance of real estate projects in Nairobi City County, Kenya. Findings are presented in Table 3.

Table 3: Logistic Firm performance

Key: SD=Strongly disagree, D=Disagree, NS=Not Sure, A=Agree, SA= Strongly agree, M=Mean.

Statements	SD		D		N		A		SA		M
	F	%	F	%	F	%	F	%	F	%	
The operation costs have been reducing over time	23	17.2	2	1.5	5	3.7	12	9.0	92	68.7	4.10
The goods are always delivered on time	90	67.2	2	1.5	9	6.7	16	11.9	17	12.7	2.01
Customers' needs met and satisfied	54	40.3	23	17.2	28	20.9	11	8.2	18	13.4	2.37

N=134

Findings show that the managers agreed that the operation costs have been reducing over time (M=4.10). Managers disagreed that the goods are always delivered on time (M=2.01), and customers' needs met and satisfied (M=2.37). The findings imply that although the firms' operation costs have been reducing, the firms face challenges n transportation which have resulted to more complaints from the customers. Findings support Gicheru and Moronge (2019) that customer satisfaction in logistics firms in Kenya experience a decrease and there is delay in the transport time which is below the internationally recognized transport time.

Correlation Analysis

Correlation analysis was conducted to establish the strength of relationship between the independent and dependent variable. The significance level for significant relationship was <=0.05. Correlation results are presented in Table 4.

Table 4: Coefficient of Correlation

Variables		Firm performance	Demand forecasting	cross docking
Firm performance	Pearson Correlation	1		
	Sig. (2-tailed)			
Demand forecasting	Pearson Correlation	.530**	1	
	Sig. (2-tailed)	.000		
Cross docking	Pearson Correlation	.820**	.391	1
	Sig. (2-tailed)	.000	.000	

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

Findings show that; there is a strong significant relationship between demand forecasting and performance of logistics firms (r=0.530, p=0.000), a strong significant relationship between cross docking and performance of logistics firms (r=0.820, p=0.000). Findings concur with scholars who also established a positive significant relationship between demand forecasting, cross docking and firm performance. Ngatuni (2018) that demand forecasting has a positive impact on inventory management in the manufacturing industry, Apte, Uday and Viswanathan (2020) cross docking positively affect firm performance ,

Regression Analysis

Table 5: Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
Constant/Y Intercept	2.913	.344		8.471	.000
Demand forecasting	.364	.054	.280	6.702	.000
Cross docking	.695	.048	.625	14.387	.000

As per the SPSS generated in Table 5,

Firm performance = 2.913 + 0.364(demand forecasting) + 0.695 (cross docking)

The findings revealed that a unit change in demand forecasting would cause a positive unit change in performance of logistic firms in Nairobi in Kenya ($\beta1$=0.364, p value= 0.000), a unit change in cross docking would cause a positive unit change in performance of logistic firms in Nairobi in Kenya ($\beta1$=0.695, p value= 0.000). According to t statistics, cross docking had the greatest effect on firm performance (14.387), followed by demand forecasting (6.702). Findings are in agreement with Chelangat and Musau (2023) found that inventory cost management significantly affected financial performance of firms. Okumu and Bett (2019) also added that inventory management influences firm performance positively.

Conclusion

The firms have adopted suitable demand forecasting methods which has helped them to save on inventory costs and improve firm performance. Accurate demand forecasting will help the logistics firms to establish when to expect high orders and when to expect low orders and can effectively plan their warehouse and transportation systems. Accurate forecasting reduces the time used in the management of the inventory and reduces stock shortage as well. The firms however have a challenge in matching customer demands which may lead to customer dissatisfaction.

The management recognize the pivotal role cross-docking plays in managing inbound goods efficiently. By avoiding long-term storage, the firms significantly cut down on warehousing

expenses, mitigating concerns related to storage space, labour costs, and inventory management. Logistics firms have successfully embraced cross docking which has enabled them to save on warehousing costs. The firms have improved on transport infrastructure for efficient logistics efficiency. The transport process has also been optimized to minimize dwell times and improve efficiency. Streamlining logistics practices has improved order fulfilment speed and firms are able to process more orders and serve more customers. They are hence able to make more sales and realize more profits.

Recommendations

The firms should adopt demand forecasting methods that will enable them to accurately forecast the demand patterns. These forecasting methods include historical data method, market research and delphi method, the demand sensing method, and predictive methods. the firms also need to equip the marketing team to ensure that they are well conversant with the market and accurately predict market patterns.

The firms should adopt a Transportation Management System or a Warehouse Management System (WMS) to provide oversight and metrics to help stay organized and amplify efficiency across your cross-docking process. They should also design a cross-docking facility layout that to minimize travel time and streamline material flow. The docks areas should be well organized for efficient loading and unloading operations, segregate inbound and outbound traffic, and allocate adequate space for sorting and staging areas.

Areas for Further Study

The researcher recommends the following:

A similar study focusing on another county in Kenya to ascertain if findings will differ or be similar to these findings.

A similar study focusing on other firms since this study only focused on logistics firms

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