

**EFFECT OF LOGISTICS MANAGEMENT SYSTEMS ON THE
RELATIONSHIP BETWEEN URBAN LOGISTICS AND SUPPLY CHAIN
PERFORMANCE OF SELECTED E-COMMERCE FIRMS IN NAIROBI**

BY

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DECLARATION

Declaration by Student

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DEDICATION

I dedicate this thesis to my family for wishing me well and being patient during the development of this thesis. May the Almighty God bless and uplift you.

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I thank the Almighty God for his care and grace. In particularly profound sense of gratitude and indebtedness to my Supervisors Dr. Diane Uyoga, Dr. Collins Kapkiyai and lecturers at the School of Business and Economics-Moi University for their invaluable and untiring guidance, constructive suggestions and continuous encouragement all through the development of my thesis. I am indebted to my family and my dear parents, for their support and encouragement. In addition, I appreciate my colleagues in the Masters journey for their assistance and encouragement.

ABSTRACT

Supply chain performance is a critical determinant of an organization's overall efficiency, competitiveness, and customer satisfaction. The study sought to determine the moderation effect of logistics management systems on the relationship between urban logistics and supply chain performance for e-commerce firms. The study specifically sought to determine the effects of urban demand, urban freight distribution and accessibility on supply chain performance, and the moderating effect of logistics management systems on each of the relationships. Explanatory research design was used, where Primary data were collected using questionnaires from a sample size of 281 respondents. Correlation results indicate that urban demand, urban freight distribution and accessibility are positively and significantly correlated to supply chain performance. Regression results indicate that urban demand ($\beta=0.218$, $p<0.05$), urban freight distribution ($\beta=0.169$, $p<0.05$) and Accessibility ($\beta=0.123$, $p<0.05$) are significant and positively related to supply chain performance. The conditional effect regression results indicate that logistics management systems moderate the relationship between; urban demand ($\beta=0.03$, $\Delta R^2=0.001$, $p<0.05$), urban freight distribution ($\beta=0.10$, $\Delta R^2=0.009$, $p<0.05$), and accessibility ($\beta=0.04$, $\Delta R^2=0.002$, $p<0.05$) on supply chain performance. To optimize performance, e-commerce firms should invest in technology to capture data on customer backgrounds, demands, and preferences, enabling them to understand and satisfy customer expectations.

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ACRONYMS AND ABBREVIATIONS

EDI:	Electronic data interchange
GPRS:	General Packet Radio Services
ICT:	Information Communication Technology
KAM:	Kenya Association of Manufacturers
LMS:	Logistics Management Systems
MNC:	Multinational Companies
RFID:	Radio Frequency Identification
SC:	Supply Chain Management
SME:	Small and Medium Enterprises
TMS:	Transportation Management System

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

According to Beaulieu and Bentahar (2021), supply chain performance is a measure of how well supply chains function to satisfy the demands of final buyers, including prompt delivery of goods and responsive availability of essential inventory. According to Huan, Sheoran, and Wang (2019), the auditing firm's supply chain processes—including product delivery, lead time, responsiveness, flexibility in production, total cost of logistics management, inventory days of supply, and asset turns—are used to determine these metrics. SC performance measures can thus be limited to cost, speed, reliability, and customer satisfaction viewpoints by analyzing these metrics (Beamon, 2019). In the end, these performance indicators assist businesses in evaluating their position in the market and pursuing operational effectiveness to maximize the possibility of future operational success (Lambert & Cooper, 2020). Because of the difficulties that the urban environment presents to a company's logistics department when it comes to supply chain performance, the relationship between supply chain performance and urban logistics continues to be of interest to many researchers.

Logistics, as defined by Frydinger et al. (2021), is the planning, execution, and management of the efficient and successful transportation of goods, services, and related data between locations to satisfy customer needs. All the material and information flows within an organization are included in logistics. It covers every aspect of moving a product or providing a service, managing incoming raw materials, producing the finished product, storing it, delivering it to the client, and providing after-sales support (Muogboh & Ojadi 2018). The operation of contemporary urban economies depends on urban logistics. Urban areas are hubs of consumption that

depend on regular supply of groceries and retail items, expedited delivery services for enterprises, and a rapidly expanding home delivery sector. Urban logistics provides a vital connection between businesses and suppliers, as well as ensuring the availability of goods in stores for consumers (Mutuku, 2021). Thus, urban logistics plays a crucial role in a city's economic health. In addition, a city's role as a production hub involves a lot of freight movement because of its place in international supply chains. The logistics management system is important in this regard.

Logistics management system is a computer-based information system (IS) that supports all aspects of logistics management including the coordination and management of various activities such as fleet scheduling, inventory replenishment and flow planning (Yin, et al., 2020). Instead of using human analysis and relying on the accumulated experience of people, LMS supports various automated decision-making processes that produce fewer human errors and lower costs as well as more accurate results, hence increasing the overall profitability and operational efficiency of logistics management (Helo & Rouzafzoon, 2021). The moderating effect of LMS relates to the work to create internal efficiency through inter-departmental collaboration and the construction of supply chain efficiency through inter-corporate collaboration. Firms, through the moderating effect of LMS, can save costs through the efficient use of resources, achieve efficiency through the elimination of overlapping resources, perform a proper rearrangement of resources, and attain efficiency in processes (Helo & Rouzafzoon, 2021).

Salome et al. (2021) claim that LMS improves time-based delivery and fosters collaboration among supply chain participants, increasing supply chain performance and supply chain visibility. Various stakeholders along the supply chain can quickly make the right decisions with the right information, visibility, and communication

between various logistics operations and shareholders. This leads to an improvement in the efficiency of logistics management. Accordingly, Abidin (2021) found that the relationship between supply chain performance and logistics management is moderated by the logistics management system. Modern, highly developed ICT—like RFID, GPRS, wireless mesh networks, and smart sensors—can provide real-time tracking data on moving objects, enabling logistics companies to improve their logistics management by increasing delivery accuracy. The successful integration of information within an organization is a powerful enabler for reduced costs, increased productivity; and improved customer service.

Globally, as the population increases, city life is becoming the norm for most people. It is predicted that 68% of the world's population will live in urban areas by 2050 (Ritchie and Roser, 2018). Today, megacities like New York (metropolitan areas with more than 10 million residents) are causing congestion and presenting logistical challenges. What can shippers do to adapt to these changes? Urban consumers now live in densely populated, connected and dynamic environments (Meadows et al., 2018). They make impulsive purchasing decisions and have a wide range of products, which is why they quickly abandon slow deliveries and turn to faster service instead. Successful information integration in multinational corporations (MNCs) has proven to be a strong cost driver; Increased productivity; and improved customer service. Logistics planning and operations have adopted advances in information technology early and widely as they rely on pieces of information for effective operations (Bardaki, Kourouthanassis, & Pramatar, 2021).

Early applications include systems used for inventory replenishment, order entry, order processing, electronic data interchange (EDI), vehicle routing and scheduling, and more (Wang, Lai, & Zhao, 2008). Having efficient information technology (IT) has become

essential to supporting logistics operations (Li, Yang, Sun & Sohal, 2019). IT has facilitated the use of intermediate supply chain activities, like distribution, by automating numerous routine logistics tasks, freeing up managers, particularly those at multinational corporations, to concentrate on strategic matters and core competencies (Bardaki, et al., 2021). Gu, Goetschalckx and McGinnis (2020) examined a heuristics model to resolve issues with forward reserve allocation in the order picking system for the warehouse. This was discovered to significantly improve firm performance and logistics management in Taiwan. To assist the decision-making process of a freight transportation network, Wang et al. (2020) introduced an effective optimization- based heuristics model based on real-time information. This improved the performance of Chinese retail firms and logistics management. The logistics industry uses seven different types of LMS, which are widely used due to the perceived benefits of using them to support daily operations: load planning system (LPS), vendor selection system (TeMS), warehouse management system (WMS), financial management system (FMS), electronic customer relationship management (eCRM), and transportation management system (TMS).

Companies in African nations are now prepared to use data efficiently on a regional scale. Examples of this include transportation management systems, storing data on the locations of critical supply chain assets like products or vehicles, and warehouse management systems, which provide data on key customer ordering patterns and supplier/customer warehouse inventory levels. (Njuguna & Ndolo, 2021). Through integration of these systems, global inventory visibility is achieved, leading to reduced lead times, improved shipment and inventory accuracy, and shortened shipping and receiving cycle times. These benefits ultimately reduce costs and enhance customer services. (Chandak et al., 2019). The concept of urban logistics has especially gained

route among the 3rd Party Logistics companies especially those in the retail e-commerce platforms where online transacting and warehousing of products define the main operations by these companies.

Buoyed by the burgeoning middle class who can afford smartphones and the internet, Africa's digital economy is on an upward trajectory. Although retail e-commerce accounted for about 2% of the global aggregate, the total number of shoppers continues to multiply by 18% yearly since 2014, which is higher than the global average growth of 12% (Ibam, Boyinbode, & Afolabi, 2018). The research further shows there were at least 21 million online shoppers in the continent in 2017, with Kenya, Nigeria, and South Africa accounting for nearly half. Also, it assessed the continent's B2C digital economy to be worth about \$5.7 billion, though this was only 13% of Africa's internet users. The internet, which has been identified as a key driver for e-commerce, can be used as an indicator of the actual or potential digital economy. Africa, with a population of over 1.3 billion, has the third-highest internet users in the world at 11.2% (Internet World Stats, 2019). Despite this, e-commerce is not in tandem with internet subscription numbers, signifying that challenges are affecting the uptake of e-commerce in Africa. Online shoppers in Africa and Latin America accounted for about 2% of global internet shoppers, with less than 5% of the population engaging e-commerce compared to 70% in developed countries according to the study by UNCTAD (2018). As a result, McKinsey (2015), noted that the continent's internet Gross Domestic Product (iGDP) stood at 1%, though it is projected to rise to 10% by 2025 (Nkwo, Orji, Nwokeji, & Ndulue, 2018).

Kenya fared better than most African countries at 2.9% according to the research and was ranked 7th in readiness to support the uptake of e-commerce primarily due to a substantially high proportion of Kenyans with bank accounts, coming in after

economies such as Mauritius, Nigeria, and South Africa which were the top three in the continent. The report further classified Kenya as the 4th highest proportion of online shoppers, totaling 2,614,000. While Kenya is ranked among the top e-commerce markets in Africa, it lags significantly at 89th position globally, behind its peers in the middle-income countries 'category based on World Bank (2018) such as Georgia (49) Moldova (54) and Mongolia (58). The Internet, being a foundation for e-commerce, is a good indication of a country's preparedness to embrace the digital economy. According to the Communication Authority (2018), Kenya's mobile phone subscriptions (the most preferred internet access platform) increased by 16% to 49.5 million in 2018, with a 103% increase in cellular penetration due to access to multiple mobile providers to leverage competing for voice and data packages. Additionally, the report indicated that Internet Service providers in Kenya rose by 17.4% to 257 in 2018, driven by fiber optic cable demand across the country. It is estimated that Kenya 's e-commerce market could range between KES70 billion-120 billion in the medium term and KES400 billion the long-term, while social media sites like as Facebook, Instagram and Twitter are said to contribute 15% of the e-commerce spend (Kitukutha, & Oláh, 2018).

This progress in interconnectivity has key drivers to the development of 3rd party providers who are the main companies locally having to deal with urban logistics to fulfill customer demands. They are responsible for ensuring efficient supply chains of products ordered by customers online and hence they have had to invest in the logistics management systems. Research on how these systems have, however, benefited these firms is still unclear. It is therefore against this background that the study will aim to assess the logistics management systems moderation effects on urban logistics and supply chain performance.

1.1.1 Concept of Supply Chain Performance

Supply chain performance can be defined as the extent to which operations in the supply chain successfully and efficiently ensure the achievement of organizational goals and objectives. Simchi-Levi & Kaminsky (2018) define supply chain performance as the ability to operate with excellence in order to deliver a superior customer experience. Organizational factors that are both internal and external have an impact on a supply chain's performance. Metrics used in supply chain management (SCM) can be broadly categorized into two groups: quantitative metrics such as lead time, response time, flexibility, resource utilization, and delivery performance, and qualitative metrics like customer satisfaction and product quality. According to Leong et al. (2018), the system's primary goal should be to create value for its end users. The authors contend that to assess effective performance, the conventional performance metrics of cost, revenue, and profitability are no longer adequate. They found that an organization's supply chain performance is determined by four key areas, and e-commerce companies are not an exception. These included financial performance, operational effectiveness, care quality, and environmental adaptation.

Getting vital data in a timely manner is essential to running a successful day-to-day logistics operation (Leong et al., 2018). Receiving transportation milestones almost instantly lowers operational risks, particularly when handling exceptions. By analyzing the best delivery routes and making sure that orders are fulfilled from the most effective locations, cloud shipping software can give you faster shipping times (Meredith Flora, 2022). Delivering goods on time helps your business build a positive reputation and attract happy clients. The financial performance of the firm is very important. Firms aim at minimizing costs and increasing profitability. Logistics automation and outsourcing are some of the ways a firm can reduce its costs. Erroneous data or

duplicate orders are examples of human errors that automation reduces or eliminates. This results in a more accurate, cost-effective, and lean supply chain (Rachel Hand, 2022).

1.1.2 Concept of Urban Demand

Rural-urban migration has been on the rise due to imbalanced rural and urban development which has led to increased government services and economic growth in cities, drawing in migrants from rural areas (Selod, 2021). Urbanization therefore brings about challenges that business practitioners require to develop new strategies to address the already existing challenges and those that lie ahead. Logistics scholarship offers little investigation of the urban context itself, even though the physical balancing of the supply and demand of goods and services within urban areas has long been recognized as a challenge for businesses and cities alike (Blaine 2021; Browne and Gomez 2020). Thus, there are still a lot of chances to enhance urban logistics (Savelsbergh and Van Woensel 2021).

According to (Fox et al., 2018, the transition from a dispersed population to one that increasingly resides in densely populated settlements where non-agricultural economic activities are predominant is known as urbanization. High population density areas are characterized with overcrowding, diversity of cultures, ethnicity, religions and norms (A Wineman 2020). The high population in cities and urban centers brings about a high demand for goods and services in such areas .Demand means the various quantities of goods that would be purchased per time period at different prices in a given market (Hibdon, 2018) and according to (Mayers, 2020) the demand for goods is schedule of the amounts that buyers would be willing to purchase at all possible prices at any one instant of time. Therefore, demand is the desire supported by willingness and ability to buy.

Demand changes according to changes in income, product prices, availability of substitutes, change in taste and preferences among many others. Advertising, for example is a factor determining demand for a product, its persuasive ability and having the intended message get to the right market segment will have a positive impact on sales. Due to the availability of internet connectivity which allows consumers access to lots of information, they become more knowledgeable, and their demands increase. They set the bar of what is considered quality service (Shippr, 2019).

Logistics entities rely on consumer satisfaction for a competitive edge and remain aware that they can be replaced if they do not comply with consumer needs and expectations (Lans, 2019). Frequent complaints by customers due to stock outs are a bad performance indicator caused by a demand forecast. A more accurate depiction from a demand forecast would ensure organisations have the right products and quantities, where unnecessary inventory will be eliminated (Jungels, 2023). To keep customer service at its best a good relationship should be established to allow for a better flow of information across the supply chain.

1.1.3 Concept of Urban Freight Distribution

The concept describes the optimization of transport activities in urban areas (Taniguchi et al 2019). Urban freight distribution has been defined as a process and a system to collect, transport, and distribute goods within urban areas (Zhangyuan He, 2020). This has to do with properly organizing how products are distributed throughout a city, managing and regulating freight movements, and taking stakeholder integration and coordination into account (Morfoulaki et al., 2018).The challenges of urban transportation, such as increased traffic and congestion (Blaine 2021; Figliozzi 2020), limited vehicle accessibility (Anderson and de Palma 2019; McDermott 2020), and increased pollutant emissions and noise (Lindholm and Blinge 2020), are nothing new

to logistics practitioners and researchers. Freight volumes complicate urban freight as transportation system needs to accommodate other roadway users like public transit, bicycles and pedestrians. High volumes brings about congestion and the driving speed as well as frequent distribution is lowered hence affecting the reliability of the firm (D Baker, 2023). The nature of freight distribution pose challenges especially when dealing with the cold chain and home deliveries which require special equipment for both handling and delivery. The lack of large storage spaces within the cities will force firms to make frequent and repetitive movements to and from the distribution centers raising concern on environmental issues, social issues due to freight interference. (Jean-Paul Rodrigue, 2020) From a regulatory perspective urban areas are highly constrained with a variety of rules related to zoning, emissions and even access conditions to roads and terminals. High population densities imply a low tolerance for infringements and disturbances brought by freight distribution and are thus prone to regulatory pressures. However, recent coinciding trends including the return of consumers to urban locations, the rise of e-commerce (Savelsbergh and Van Woensel 2021; Wang and Zhou 2020; Weber 2020), the increased focus on sustainability and technological advancement (Dablanc 2019; Durand, Mahjoub, and Senkel 2020), and rapid urbanization in developing countries (Rao et al. 2020; Saslavsky and Shepherd 2020) have reinvigorated a focus on urban logistics in the twenty first century. Many cities have started early on defining smart cities from a technological perspective, by looking at traffic, lighting, or waste management but this will be of no use without looking at the urban ecosystem as a whole (Yiqian Zhang, 2021). According to studies by (Himanshu Raj, 2021) China's Suzhou Municipal Government has been building an intelligent public information service platform as part of an active search for innovative ways to manage urban freight. Using route optimization algorithms, loading/unloading heat

maps, and vehicle charging demand maps, this platform enables effective delivery vehicle monitoring and the identification of logistics operation hot spots (Raj and Vigran, 2020). This makes it easier for various public administrations to collaborate and integrate data about things like delivery information, charging infrastructure, and vehicle parking. These platforms facilitate data exchange throughout the supply chain and enable the city to conduct big data analysis to make well-informed decisions.

1.1.4 Concept of Accessibility

Physical accessibility refers to the ability to get goods, services and to reach a destination. When it comes to the location of logistics companies, motor carriers, third-party logistics service providers, and the logistics operations of manufacturers, retailers, and distributors in urban areas, accessibility plays a significant role. Reduced transportation costs and a shorter time to market are the outcomes of improved accessibility (Springer, 2019), which have a direct impact on the cost and service level that logistics operations enjoy. Therefore, logistics employment is expected to be concentrated in areas that are highly accessible. Hence, improvements to the road network significantly affect the location of a mass of logistics firms (Taniguchi et al., 2018), that logistics clusters in the US are primarily developed close to major airports and seaports.

Web accessibility according to (Wadhwa, 2021) is the creation of web content, design and tools that everyone can use regardless of their ability. This refers to the use of a product, service, framework or resource in an efficient, effective and satisfying way by everyone. The principles of web accessibility include perceivable, operable, understandable and robust (W3C Web Accessibility Initiative 2023). Every website user must be able to process or perceive the given web content. Where someone is visually impaired, sound can be used. The websites should be easily controlled by users,

navigate easily and find information that they require. The websites should allow for the use of various browsers, be compatible with current and future user tools.

E commerce businesses need both physical and web accessibility to fulfill the flow of information, goods and services. Last mile delivery includes everything associated with getting products to the nearest hub to the customer or at their doorstep. This calls for the use of physical infrastructure and networks which affects the speed, reliability and cost of the delivery (Sainuk, 2021). Web connectivity on the other hand allows for faster flow of information from the customer placing an order to the firm then back to the customer. The secret to the success of your e commerce storefront lies in the hands of everyone. Therefore, if your website is easy to operate using different gadgets, have readable content and easy to understand, there will be more traffic and satisfied customers will eventually turn to loyal customers (Wadhwa, 2021).

1.1.5 Concept of Logistics management Systems

Logistics is a diverse and dynamic function as the products, companies and systems in which it is applicable differ and therefore, logistics as a function changes according to constraints and demands imposed on it and in respect to the changes in the environment it operates in (Allan Rushton et al. 2010). The continuous changes in technology impacts on logistics activities and there are reports that increasing use of IoT and other emerging technologies accelerates connected logistics adoption and it is estimated to grow by 17.5% by 2026 according to Vinod,(2021). The roles played by technology in urban logistics include accurately managing orders, tracking of deliveries, communication and sharing of information with other stakeholders and finding the right routes for their shipments (Business.com, 2013).

Logistics management systems (LMS) are a combination of software tools that optimize all processes of forward and reverse logistics (Altynpara, 2022). Supply chain disruptions pose great challenges to retail and e-commerce firms in affected areas, hence affecting their performance. Digitalization of logistics functions will allow for an elevated customer experience, delivery of more value to partners and consequently creating an effective ecosystem for the supply chain providers (Bertsch, 2022). This study aims to determine the moderating effects of LMS on the relationship between urban demand and supply chain performance.

Order processing is the workflow that ensures customer orders are well prepared and delivered to the right place. It is a process that can be done in warehouses or at distribution centers involving picking, sorting and packing done sequentially by either an individual or small groups (Jenkins, 2021). Order management, as indicated by Thomas et al. (2015), begins when a customer places an order and ends when the customer receives the good or service that was ordered. The order fulfillment process requires accuracy and reliability to keep customers satisfied and even retain them in the long term for better performance of the firm. The continuous growth of a firm leads to complexity in order processing and manual processing may not be suitable hence the need to adopt order management software (OMS) which streamlines processes, automate tasks, reduces errors and increases responsiveness.

A system of gathering and organizing product data is called "product tracking," which aims to facilitate consumers' ability to locate their purchases (Shamsuzzoha et al., 2013). The distribution of products from the point of origin to the intended destination should be monitored to ensure that the products are in the right quantity, quality and delivery is done in good time. Location tracking involves subsequent reports in a real-time, vehicle-position database (Snow, 2012). In order to gain full visibility into product

movements, clients are provided with access to an online portal that monitors shipment on the road, alerting to any transit exceptions or unforeseen delays. The package tracking aims to report the arrival or departure of the object and record the object identification, exact location, the time, and the status. The advantages of product tracking include reduced errors, reduced cost increased customer satisfaction among many others (Kandel et al., 2011).

The process of evaluating and enhancing a supplier's performance to better meet the demands of the company is known as supplier optimization. Creating a more effective and efficient supply chain that can deliver higher-quality goods and services at cheaper prices is the aim of supplier optimization (Mujkić et al. 2019). The current global market requires products to be introduced quickly while still maintaining high quality and low costs. To accomplish this goal in a timely and efficient manner companies are considering the power of collaborating with suppliers. According to a survey done by (Nair, 2023), 79% of surveyed companies that use supply chain optimization techniques were seen to have improved revenue. Supplier optimization can be done through finding a supplier that can handle the capacity of inventory your firm needs, negotiating with suppliers to get a balance between good quality and affordable rates, use of 3PL firms to reduce shipping cost and having the best resources in place (staff, systems & technologies) to ensure best performance in all aspects (Hall, 2019)

The process of returning goods from end users back to the manufacturer or retailer via the supply chain is known as reverse logistics (Grabara, 2022). The processes can be because of damaged or flawed items needing to recycle, refurbish or dispose of products when the end of the product life cycle has been reached (Grabara, 2022). Returns management is a logistically challenging process and therefore, there's needed to use Reverse Logistics Systems (RLS) to help streamline the process. Returns logistics

services include Information tracking on product location and the reason for return, returns status through giving customers visibility into their returns in the return's portal or via SMS and emails and quality assurance tracking when quality issues arise and products need to be quarantined, recalled, or repaired (Matthew Wilson et al. 2021). Some of the advantages of an effective and efficient reverse logistics include Lowering costs through use of the right processes, tools and people, better brand reputation through friendly return policies, reduced risks through recall of faulty items, improved sustainability, higher profits and happier customers (Dutta et al. 2021; Roy et al. 2020).

1.2 Statement of the Problem

Most people are attracted to urban centers and have migrated to cities, increasing the pressure for better logistics within these environments for better service delivery. The urban environment is characterized by scarcity of access. For instance, the effectiveness and caliber of urban logistics operations are limited by clogged roads, spatial restrictions, and infrastructure limitations. (Hesse and Rodrigue, 2018). Population, proximity of buildings, poor GIS, encroachment and other urban challenges also make identification of premises difficult. Poor infrastructure instigates delays among freight vehicles due to cumbersome road frameworks, and loading and unloading remains challenged by minimal parking spaces (Quak, 2007). All these create supply chain delays, increase costs of operations and impact product quality on transit.

Despite efforts to address these challenges of logistic operations, in Kenya, research illustrates that approximately 50% of logistical processes of firms conduct their affairs manually (Miheso, 2018). Specific LMS technologies such as GIS have hardly been incorporated. Key LMS components like RFID, GPRS, wireless mesh networks, and smart sensors that can provide real- time tracking information on moving objects are absent. According to Muhalia, Ngugi, and Moronge (2021), a sizable portion of Kenyan

businesses are still lagging behind in the integration of information technology into logistics management and are ignorant of its significance in conducting business, even in this day of globalization. These have affected E-commerce firms such as Jumia, Kilimall, Jambo Shop among many others.

Chege (2018) pointed to unfavorable patterns brought on by structural problems, such as e-commerce companies' supply chains' structural inefficiencies and low productivity. According to the World Bank's 2019 Enterprise Survey, one of the largest issues facing Kenyan urban sector delivery companies, for example, is the high supply chain costs, which account for 40% of total costs. However, KAM (2014) restates that supply chain bottlenecks, particularly in urban environments, are the primary cause of e-commerce companies' inefficiencies. According to Odhiambo (2020), most logistics companies in Africa may be able to reduce their supply chain costs and inefficiencies by nearly 40% by implementing electronic logistics management (Odhiambo, 2020). Because these businesses are lagging most other economies in the world in taking advantage of the opportunities associated with emerging technologies, they are essentially failing to realize the full potential benefits of technology adoption. One efficient way to manage logistics is to use supply chain performance management systems, as fast-moving consumer goods have a short lifespan that can lead to increased waste.

This study will add to the body of knowledge in research by Wacuka (2015) who explored the relationship between urban logistics and supply chain performance, Wambui (2015) who focused on the relationship between e-commerce logistics and supply chain performance as well as Onyango (2017), who concentrated on the connection between supply chain performance and functionality in Nairobi County and inventory management techniques. The studies are premised on logistics concepts but have not yet connected logistics management systems to the supply chain process in

urban settings. It is therefore against this background that the study will aim to assess the logistics management systems moderation effects on urban logistics and supply chain performance.

1.3 Research Objectives

1.3.1 General objective

To determine moderation effects of Logistics management systems on relationship between urban logistics and supply chain performance for e-commerce firms in Nairobi.

1.3.2 Specific objective

1. To determine the effect of urban demand on supply chain performance for selected e-commerce firms in Nairobi.
2. To evaluate the effect of urban freight distribution on supply chain performance for selected e-commerce firms in Nairobi
3. To evaluate the effect of accessibility on supply chain performance for selected e-commerce firms in Nairobi.
4. To establish the moderating effects of logistics management systems on urban logistics and supply chain performance for selected e-commerce firms in Nairobi.
 - a. To determine the moderating impact of logistics management systems on the relationship between urban demand and supply chain performance for selected e-commerce firms in Nairobi.
 - b. To assess the moderating effects of logistics management systems on the relationship between urban freight distribution and supply chain performance for selected e-commerce firms in Nairobi.

- c. To assess the moderating effects of logistics management systems on the relationship between accessibility and supply chain performance for selected e-commerce firms in Nairobi.

1.4 Hypothesis of the Study

H₀₁: There is no significant relationship between urban demand and supply chain performance for selected e-commerce firms in Nairobi.

H₀₂: There is no significant relationship between urban freight distribution and supply chain performance for selected e-commerce firms in Nairobi.

H₀₃: There is no significant relationship between accessibility and supply chain performance for selected e-commerce firms in Nairobi.

H₀₄: There is no significant relationship between the moderating effects of logistics management systems on urban logistics and supply chain performance for selected e-commerce firms in Nairobi.

H_{04a}: There is no moderating effect of logistics management systems on the relationship between urban demand and supply chain performance for selected e-commerce firms in Nairobi.

H_{04b}: There is no moderating effect of logistics management systems on the relationship between urban freight distribution and supply chain performance for selected e-commerce firms in Nairobi.

H_{04c}: There is no moderating effect of logistics management systems on the relationship between accessibility and supply chain performance for selected e-commerce firms in Nairobi.

1.5 Significance of the Study

The study will be of great importance to stakeholders. First, the study will be of great importance to the e-commerce suppliers in Nairobi. They will understand the importance of logistical information systems in enhancing their supply chain performance in an urban setting. The study will allow the suppliers to be able to identify the logistical issues they face in urban setting and how they can enhance operational effectiveness. All other e-commerce suppliers across the country will also benefit from the study.

The study will also be important to all other SMEs as they will understand how information systems can assist manages the procurement function to ensure that the supply chain performance is enhanced. This is key in ensure effectiveness of the supply chain function.

Further, policy makers will benefit from the findings of the study as they will understand the importance of creating ICT policy that is favorable to all businesses including those facing unique challenges such as the urban logistical problems. Further, the study will be pivotal to scholars and academicians as they will apply the study findings in gaps that exist in the study.

1.6 Scope of the Study

The study delimits itself to three main urban logistics including, urban demand, urban freight distribution and accessibility which formed the independent variables. Supply chain performance formed the dependent variable while logistics management system was the moderating variable. The institutional scope was delimited to the e-commerce firms in five sectors namely:

Agriculture, Tourism, Transport, ICT and Healthcare in Nairobi. These are the firms that have urban logistics to deal with since Nairobi is the capital city and most of the city dwellers make a large part of online customer base. The study targeted the firms of the identified sectors and a sample of 281 firms was used. Primary data was collected through the use of questionnaires.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter reviewed the concept of supply chain performance, the concept of urban logistic and further reviewed; the theories that govern the study and the theoretical foundations as per the research objectives. Finally, it presented the empirical review and the conceptual framework that governed the study.

2.1 Urban Demand and Supply Chain Performance

Businesses often function well in some areas more than others. Studies indicate that decentralization aspects are less critical than those focusing on centralization. The latter impact how supply and demand are operationalized in urban areas. In this case, an urban center often has a higher concentration of these services to ensure that surrounding areas purchase them from this point of contact (Bonamy and Valeyre, 2020; Esparza and Krmenec, 2020; Shearmur and Alvergne, 2018). The utilization of services in specific areas could be the product of supply, which is more superior than demand and other forces, such as population, industrial districts, and purchasing power. Nonetheless, the interactions between supply and demand may differ and remain dependent on the nature of the business (Bonamy and Valeyre, 2020; Esparza and Krmenec, 2020; She armor and Alvergne, 2018).

The literature proves a higher affinity for service businesses in some regions over others. Some cites, countries, and urban areas are more attractive to the service industry due to decentralized forces making it easier for operations. Indeed, the phenomenon about these factors are more complicated than what is perceived at face value, since the economy alone is insufficient to ensure the influx of service businesses in some areas (Marshall, Damesick and Wood, 2021; Coffey and Pole'se, 2021). Previous studies

show that urban centers or regions are attractive to service businesses due to spatial elements. Market aspects, infrastructure, and the economy growth and stability in these places attract the right individuals. Factors such as the presence of an international profile and the standardization of services may also play a role in how these businesses operate. The area should also have a productive profile based on its history since this contributes to service delivery, client access, and the availability of public and private services (Marshall, Damesick and Wood, 2021).

The type of service business available in a specific area is often determined by the economic and industrial complexes available for use. For instance, the influx of tourists in an area will attract more real estate services to accommodate newcomers. Similarly, a region with more manufacturing services will be home to engineering and production businesses. Businesses in the service industry are attracted to economically busy regions. Moreover, other heterogeneous elements attract service businesses to specific areas, and few are often centered in idle places without much production (Marshall, Damesick and Wood, 2021). Other such factors may include the image of the region, economic bracket, reputation, traffic usage, property costs, and environmental aspects. Evidence from multiple sources illustrates that business centers are attractive to services, making urban areas ideal for professional services (Marshall, Damesick and Wood, 2021).

Contrarily, back offices and operational business services, as well as some extremely sophisticated ICT and R&D focused business services, frequently select locations outside of the business city center. The cost of land and other inputs is the secondary cause, with the quality of the business and residential environments playing a major role. Due to the costs of traffic and other constraints on the agglomeration economies, a central location would offer fewer benefits. A location in a secondary city or in a

conurbation near a major city is typically not chosen from a supply standpoint with the intention of obtaining a local market within that secondary urban area. This could be as a result of the local supply being present in a particular area. This could be the case because the presence of a local supply in a given location has no effect on how the demand behaves. At the intra-urban and inter-urban levels, interactions occur more frequently than within individual cities. However, once a supplier is situated in a specific area, new connections may be made with prospective local customers. The importance of each of these explanatory variables is contingent upon the features of the particular business services as well as the particular region. This could be the case because the presence of a local supply in a given location has no effect on how the demand behaves. At the intra-urban and inter-urban levels, interactions occur more frequently than within individual cities. However, once a supplier is situated in a specific area, new connections may be made with prospective local customers. The importance of each of these explanatory variables is contingent upon the features of the particular business services as well as the particular region. (Coffey and Pole`se, 2021).

Regional variations exist in urban planning, economic conditions, infrastructure, cost of living, and environmental issues. The concentration of certain UK business service companies in Oxfordshire and other south-east regions of England is due, in part, to different factors than in other cases. Secondary cities that are closer to the capital are more significant in nations like Germany, Austria, and the United Kingdom than they are in nations like Spain, France, or Belgium, where the international capital cities of Madrid, Paris, and Brussels play a very dominant role in the business service economy (Rubalcaba and Gago, 2018). However, given the lack of significant secondary "autonomous" cities in the same area, conurbations and secondary cities adjacent to the

capital city may also be important in these latter countries.. Nothing prevents more dependent and neighboring cities to play their part.

It is generally accepted that the market and the firm's attributes—such as size, organization, strategy, activity, and competition—have a major impact on the demand for business services. Only local factors (economic growth, infrastructure) can make using business services easier. The role of supply is less clear, though. To ensure that many business services are provided at a reasonable price and quality, a certain level of supply in a particular regional area is essential. The majority of advanced (like some IT, R&D, and consulting services) and operational (like call centers) business services that are contracted by big, multinational companies are still the only ones that can be provided over long distances. (Coffey and Pole`se, 2021).

A significant role in the provision of local business services is anticipated to continue, even though global trends will develop long-distance services everywhere (Europe is still increasing exports of IT and call center services to India and China). Depending on the kind of services provided, the location, and the business profile, the effect of supply and demand will vary. Services that gain from frequent and close "face-to-face" interactions, like some professional services, still depend on supply in a particular area. Main cities, conurbations, and main secondary cities within a region are examples of places where physical distances are not too great for co-producing a business service using ICT and staff periodic mobility. To cut costs and facilitate a more straightforward interaction, business service clients will undoubtedly select providers who are closer to them, if at all possible. This occurs even in cases where suppliers present comparable prices and perceived quality. Selecting a provider to contract out a service in a particular location is not a unique problem. It comes after two earlier decisions: outsourcing (as

opposed to in-house provision) and using a service (as opposed to not using that service, if that is possible)(Barcet and Bonamy, 2020).

A dynamic urban market for business services will stimulate both the use and the outsourcing of business services, but not necessarily the local presence of suppliers and the trend to decentralization or concentration. The decision to externalize certain services is based on factors such as transaction costs, potential costs, quality and expertise, production organization, market penetration or government intervention (Perry, 2020; Barcet and Bonamy, 2020; Beyers and Lindahl, 2020; among others). These kinds of factors largely depend on the urban market conditions, but they are also unaffected by the physical distance within a given region. According to conventional economic theory, prices should drop and competition should drive improvements in quality if there is sufficient supply, transparency, and competition in a particular market. As a result, there will be more benefits to outsourcing business services there than there will be elsewhere with fewer suppliers, less competitive, or less transparent markets. Trends to outsource services will increase, since the possible negative costs linked to externalization may be reduced. Clients of business services will therefore value having access to the urban market, which offers favorable conditions for competition. For customers, the supply location is still important.

2.2 Urban Freight Distribution and Supply Chain Performance

In today's fast-paced markets, the flow of goods is crucial and accounts for a sizable portion of operating expenses in social economic activity. According to a report by the American Council of Supply Chain Management Professionals (CSCMP), the entire cost of logistics in the United States increased to \$1.33 trillion in 2020, or 8.5 percent of the GDP. In contrast, China's GDP-to-logistics ratio increased to 18% in 2020 (Dablang, 2019). Roughly half of the total cost of logistics was made up of the transport

expenses. On the other hand, freight vehicles inevitably worsen traffic congestion, collisions, and noise in urban areas. According to Marcucci and Danielis (2019), freight transportation accounts for 16% to 50% of air pollution emissions from transportation activities in cities. According to (Dablan, 2019), the supply of effective logistics services is insufficient to meet the rapidly increasing demand. Many attempts have been made in recent decades to improve the efficiency of various industry-specific logistics systems. A number of logistics planning techniques have been put forth to enhance the effectiveness of goods transport services in metropolitan settings.

Crainic et al. (2018) developed an infrastructure of technology and organization for the coordinated management of urban freight transportation, along with some planning concerns. Several logistics systems that control freight transportation and are commonly found in European cities were categorized and put to the test with predetermined objectives (Russo and Comi, 2019). For Special Economic Trade Zones, a logistics hub model and system framework were created and examined by Trappey et al. (2020). On the other hand, a lot of effort has been made to decrease the size of the freight fleet by making better use of the vehicles, loading them more fully and reducing the number of empty trips. Ala-Risku et al. (2018) evaluated the suitability of merge-in-transit operations for distribution operations. The suitability of current agent-based approaches for logistics transportation management was verified by Davidson et al. (2018). Muñuzuri et al. (2020) created a new trip generation model for urban freight transport that can be used to project daily vehicle flows for freight deliveries.

The value of truck freight in urban areas was added to the urban mobility report (Eisele, 2020) to give decision-makers and trucking stakeholders additional information. Furthermore, there have been some fresh initiatives investigated to support the current freight logistics network. The idea of an Urban Consolidation Center has gained traction

in a number of cities recently. According to a study by Allen et al. (2020), the right uses of these centers can enhance supply chain efficiency and lessen the negative social and environmental effects of freight transportation. Arnäs et al. (2020) introduced the use of smart goods in logistics management, and their research demonstrated that this new tactic could simultaneously benefit transport-buying.

Meanwhile, local and regional policies pertaining to freight transport include economic, environmental, and transportation planning. It is also possible for cities to forbid trucks from entering certain local areas or using particular routes, which makes it more challenging for logistics companies to deliver goods (Visser et al. 2019). In contrast to the traditional dedicated freight vehicle, systems for sharing passengers and freight have gained popularity in recent years. The flow of people and freight together offers the chance to further boost efficiency gains. Present share-a-ride tactics for freight services mostly make use of the urban rail network and the operating taxi systems.

According to Dinwoodie (2019), with well-designed projects, rail freight developments could lessen the number of lorry movements and encourage sustainable urban distribution. According to Motraghi and Marinov (2020), the rail freight system can compete in the urban freight service market due to its ability to save costs and mitigate environmental harm, particularly in the current climate where energy efficiency is becoming increasingly important. Li et al. (2020) suggested a model for the share-a-ride taxi system in which the same taxi network handles both passengers and parcels in an integrated manner; however, passengers will inevitably encounter numerous stops and delays. Therefore, it is debatable if using taxis to transport goods is a good idea. Attempts have been made to complete the freight transport tasks using alternative modes of transportation. For example, cycle freight is already widely used in Europe

(Lenz and Riehle, 2020), but it only functions well if city and transportation planning give this type of delivery more attention.

2.3 Accessibility and Supply Chain Performance

Accessibility, which refers to the ease of reaching a destination, has become a significant factor in urban logistics as it affects the delivery time, cost, and reliability of goods and services. The effect of accessibility as an urban logistic on supply chain performance has been the subject of many empirical studies. Taniguchi and Thompson (2018), study titled, the impact of accessibility on logistics efficiency by used a survey of logistics companies in Japan to examine the relationship between accessibility and logistics efficiency. The findings indicated that better accessibility led to improved logistics efficiency. The study recommended that policymakers and logistics companies should prioritize improving accessibility to improve logistics efficiency.

Another study titled, "Accessibility and logistics performance in urban areas" by Aditjandra, Cao, and Wong (2019), examined the relationship between accessibility and logistics performance in urban areas. The study used a survey of logistics companies in Hong Kong to measure the impact of accessibility on logistics performance. The findings showed that accessibility has a significant impact on logistics performance. The study concluded that policymakers should prioritize improving accessibility in urban areas to enhance logistics performance. Further, Song and Yao (2017) conducted a study on the impact of accessibility on supply chain efficiency in urban areas" used a case study of a Chinese logistics company to examine the impact of accessibility on supply chain efficiency in urban areas. The findings showed that accessibility improvements led to an increase in supply chain efficiency. The study recommended that policymakers and logistics companies should prioritize improving accessibility to enhance supply chain efficiency in urban areas.

A study titled "Accessibility and freight transport productivity" was conducted by Browne et al. (2017), examined the relationship between accessibility and freight transport productivity. The study used a cross-sectional analysis of data from multiple countries to measure the impact of accessibility on freight transport productivity. The findings showed that better accessibility leads to improved freight transport productivity. The study concluded that policymakers should prioritize improving accessibility to enhance freight transport productivity. Also, Du and Mulley (2018) conducted a study on accessibility and transport mode choice for freight distribution in urban areas and examined the relationship between accessibility and transport mode choice for freight distribution in urban areas. The study used a survey of freight carriers in Australia to measure the impact of accessibility on transport mode choice. The findings showed that better accessibility leads to increased use of sustainable transport modes for freight distribution. The study recommended that policymakers and logistics companies should prioritize improving accessibility to encourage the use of sustainable transport modes for freight distribution.

Choi et al. (2018) conducted a study titled the impact of accessibility on supply chain resilience in urban areas and used a case study of a South Korean supply chain to examine the impact of accessibility on supply chain resilience in urban areas. The findings showed that accessibility improvements led to increased supply chain resilience. The study recommended that policymakers and logistics companies should prioritize improving accessibility to enhance supply chain resilience in urban areas. Schröder and Stepanova (2019) conducted a study on accessibility and the adoption of green logistics practices in urban areas and by examined the relationship between accessibility and the adoption of green logistics practices in urban areas. The study used a survey of logistics companies in Germany to measure the impact of accessibility on

the adoption of green logistics practices. The findings showed that better accessibility leads to increased adoption of green logistics practices. The study recommended that policymakers and logistics companies should prioritize improving accessibility to encourage the adoption of green logistics practices.

Finally, a study titled, "Accessibility and the efficiency of urban freight distribution" was conducted by Woxenius et al. (2019), examined the relationship between accessibility and the efficiency of urban freight distribution. The study used a case study of a Swedish city to measure the impact of accessibility on the efficiency of urban freight distribution. The findings showed that accessibility improvements led to increased efficiency of urban freight distribution. The study recommended that policymakers and logistics companies should prioritize improving accessibility to enhance the efficiency of urban freight distribution.

2.3 Logistics Management System and Supply Chain Performance

Optimal information integration within a company is a pivotal factor in cost savings, productivity gains, and enhanced customer support. Because logistics planning and operations depend on information for effective operations, they have been early and widespread adopters of information technology advancement (Bardaki, Kourouthanassis & Pramatar, 2020). Early examples of usage include order entry and processing systems, electronic data interchange (EDI) systems, vehicle routing and scheduling systems, and inventory replenishment systems. (Wang, Lai, & Zhao, 2019). Logistics processes now require the use of effective information technology (IT) to be supported (Li, Yang, Sun & Sohal, 2019). IT has helped managers focus on strategic issues and core competencies by automating many routine logistics tasks. It has also supported the use of intermediate supply chain activities like distribution (Bardaki, et al., (2020).

Fleet scheduling, inventory replenishment, and flow planning are just a few of the many activities that can be coordinated and managed with the help of a logistics management system, which is a computer-based information system (IS) (Chang & Lee 2019). The overall profitability and operational efficiency of logistics management are increased when automated decision-making processes, such as those supported by LMS, are used in place of human analysis and human experience. These processes result in fewer human errors, lower costs, and more accurate results. (Hofenk, Schipper, Semeijn and Gelderman, 2020). In their 2019 study, Gu, Goetschalckx, and McGinnis tackled a heuristics model designed to address forward reserve allocation issues in the context of warehouse order picking. According to research, this significantly improved firm performance and logistics management in Taiwan (Guet al. 2020). In order to support the decision-making process of a freight transportation network, Shi, Cheung, Xu, and Lai (2020) introduced an effective optimization-based heuristics model based on real-time information. This improved the performance of Chinese retail firms and logistics management. Seven types of LMS are commonly used in the logistics industry due to the perceived benefits of using them to support daily operations: vendor selection systems, load planning systems (LPS), terminal management systems (TMS), and warehouse management systems (WMS); vendor selection system; warehouse management system (WMS); financial management system; electronic Customer Relationship Management; and transportation management system (TMS)(Shi et al.2020).

Optimal logistics management can be achieved through transparent networks for suppliers and customers, facilitated by good information communication and cooperation throughout the supply chain. This is made possible by LMS.. According to Zhang, Goh, and Meng (2020), LMS increases supply chain visibility through

collaboration among supply chain members via real-time data sharing (Golicic, Davis, McCarthy & Mentzer, 2018) and enhance time-based delivery (Iyer, Germain & Frankwick, 2018) thus increasing firm performance. With sufficient information and with increased visibility and communication between various logistics operations and shareholders, different parties along the supply chain can promptly make appropriate decisions which in turn improve efficiency in logistics management.

Consequently, Gu et al. (2020) found that the relationship between logistics management and firm performance is moderated by the logistics management system. Actually, modern, highly developed ICT—like RFID, GPRS, wireless mesh networks, and smart sensors—can provide real-time tracking data on moving objects, enabling logistics companies to improve their logistics management by increasing delivery and tracking accuracy. (Bardaki, Kourouthanassis & Pramadari, 2020). The successful integration of information within an organization is a powerful enabler for reduced costs; increased productivity; and improved customer service.

2.4 Theoretical Review

The study was grounded by Institutional theory, Transaction cost theory and Resource based view theory.

2.4.1 Institutional Theory

Institutional theory was developed by Meyer and Rowan in 1977. It is a sociological theory that seeks to explain how organizations, as well as other social structures, are shaped by and conform to the norms and values of their institutional environment. According to institutional theory, organizations are not only influenced by the actions of other organizations and external factors but also by the wider social, cultural, and political context in which they operate. It suggests that organizations must comply with

the expectations and demands of their institutional environment to gain legitimacy and survival. Institutional pressures, such as cultural norms, regulations, and social expectations, guide organizations in what they do and how they do it. Organizations that fail to conform to these pressures risk being penalized or excluded from their environment (Sandhu, 2022).

In relation to the study, Institutional theory has been used to explain the dependent variable, supply chain performance. In the context of supply chain management, institutional theory can be applied to understand how external institutional pressures influence the performance of supply chains. These pressures can come from various sources, such as government regulations, industry associations, customer demands, and environmental concerns. For example, if there is a new regulation that requires supply chains to use sustainable materials or practices, this institutional pressure can drive supply chain managers to adopt more sustainable practices to gain legitimacy and meet stakeholder expectations. Similarly, if there is an industry association that promotes best practices for supply chain management, this institutional pressure can encourage firms to adopt those practices to gain legitimacy and approval from the association. The extent to which institutional pressures influence supply chain performance depends on the organization's internal characteristics, such as its culture, structure, and resources. Organizations that are more flexible and adaptable may be better able to respond to institutional pressures and improve their supply chain performance. Overall, institutional theory provides a useful framework for understanding how external institutional pressures can influence the performance of supply chains and how organizations respond to those pressures to gain legitimacy and approval from stakeholders.

Institutional theory identifies three main types of institutional pressures that influence organizations: Coercive pressures: Organizations are often forced to conform to regulations and laws that are imposed on them by external authorities. Failure to comply with these coercive pressures can result in legal or financial penalties. Another is normative pressures: These refer to the expectations and values of a particular culture or society. Organizations may adopt certain practices or norms to align themselves with these expectations, and this can lead to increased legitimacy and acceptance in the community. Finally, Mimetic pressures: Organizations may imitate the practices and behaviors of other successful organizations within their institutional environment to gain legitimacy and reduce uncertainty. Institutional theory helps to explain why organizations within the same industry often exhibit similar patterns of behavior and practice, even when there are differences in their size, structure, or goals. It also highlights the importance of understanding the broader institutional environment in which organizations operate and the impact this has on their behavior and survival (Aksom, & Tymchenko 2020).

Key assumptions of institutional theory include; Organizations are embedded in wider social, cultural, and political systems: Institutional theory assumes that organizations do not exist in isolation but are part of a larger social system that includes cultural norms, legal regulations, and other institutional pressures. Organizations are guided by normative, coercive, and mimetic pressures. Further, organizations seek legitimacy and survival. Further, organizations exhibit isomorphism: Institutional theory suggests that organizations within the same industry often exhibit similar patterns of behavior and practice, even when there are differences in their size, structure, or goals and finally, organizations are subject to change. These assumptions underpin the core concepts and

arguments of institutional theory and provide a framework for understanding the behavior and practices of organizations in different contexts (Peters 2022).

Like any theory, institutional theory has been subject to critique. Some of the main critiques of institutional theory include lack of attention to agency: One of the main critiques of institutional theory is that it tends to overlook the agency of individuals and organizations. Institutional theory focuses on the constraints and pressures that organizations face from their institutional environment, but it pays less attention to the ways in which organizations can resist or challenge these constraints. Further there is overemphasis on conformity. There is also limited explanatory power. Critics argue that the theory provides a broad framework for understanding organizational behavior and change, but it does not offer detailed explanations for specific phenomena or processes. Institutional theory has been accused of being deterministic in its view of organizational behavior and change. Critics argue that the theory assumes that organizations are passive and reactive to their institutional environment, and that it does not account for the agency of individuals and organizations in shaping their environment. Overall, these critiques suggest that institutional theory has its limitations and should be used in conjunction with other theoretical perspectives to provide a more complete understanding of organizational behavior and change (Sahin & Mert, 2022).

2.4.2 Transaction Cost Theory

Transaction cost theory was developed by Ronald Coase, a British economist, in the 1930s and 1940s and was further developed by other economists such as Oliver Williamson. It is an economic theory that seeks to explain why companies exist and why some economic transactions occur within organizations rather than in the marketplace. According to transaction cost theory, organizations incur transaction costs, which include the costs of searching for information, negotiating contracts, and

enforcing agreements. These costs can make it more efficient for firms to perform certain transactions within their own boundaries rather than in the marketplace. Transaction cost theory suggests that the decision to perform a transaction within a firm rather than in the marketplace depends on the relative costs of performing the transaction through these different channels. Firms will choose to perform transactions internally if the transaction costs associated with using the market are higher than the transaction costs associated with internal coordination. Overall, transaction cost theory provides a useful framework for understanding why firms exist and how they make decisions about organizing economic activity (Cuypers, Hennart, Silverman & Ertug, 2021). In other words, firms exist because they can reduce transaction costs by coordinating economic activity within the organization (Cuypers, Hennart, Silverman & Ertug, 2021).

In relation to the study, this theory explains the independent variable urban logistics. Transaction cost theory can be applied to the field of urban logistics, which involves the movement of goods within and between urban areas. In this context, transaction costs can arise from a variety of sources, including the costs of finding suitable transportation providers, negotiating prices and contracts, and coordinating deliveries. In some cases, firms may choose to organize their logistics activities within their own boundaries, rather than using external logistics providers, in order to reduce transaction costs. This can involve investing in transportation and warehousing infrastructure, hiring specialized logistics personnel, and implementing sophisticated logistics management systems. By internalizing their logistics activities, firms may be able to reduce the costs of searching for suitable transportation providers, negotiating contracts, and monitoring and enforcing service level agreements. However, internalizing logistics activities can also involve significant costs, such as the capital

investment required to build and maintain transportation and warehousing infrastructure, and the need to hire and train specialized personnel. In addition, internalizing logistics activities can limit a firm's flexibility and may make it difficult to respond to changes in demand or market conditions. Transaction cost theory suggests that firms will choose to organize their logistics activities internally when the transaction costs associated with using external logistics providers are high, relative to the costs of internalizing these activities. The specific decision will depend on factors such as the nature of the goods being transported, the frequency and volume of shipments, and the availability of suitable transportation providers in the local market. Overall, transaction cost theory provides a useful framework for understanding the decision-making process involved in organizing logistics activities in urban areas. By considering the costs and benefits of different options, firms can make informed decisions about how to best manage their logistics activities in order to achieve their goals.

Transaction cost theory makes several assumptions, including: Rationality: The theory assumes that economic agents are rational and act in their self-interest. Opportunism: The theory assumes that economic agents are opportunistic and may act in ways that are not in the best interests of their trading partners. Uncertainty: The theory assumes that economic agents face uncertainty and may not have complete information about the costs and benefits of different transactions. Asset specificity: The theory assumes that some assets are specific to certain transactions and cannot be easily redeployed to other uses. Frequency of transactions: The theory assumes that the frequency of transactions affects the costs of using the market versus organizing economic activity within a firm. Contract incompleteness: The theory assumes that contracts are incomplete and may not specify all of the contingencies that may arise in a transaction.

Bounded rationality: Some versions of the theory assume that economic agents have limited cognitive abilities and may not be able to process all of the information necessary to make optimal decisions. These assumptions provide a framework for understanding why economic agents may choose to organize transactions within firms rather than using the market. The theory suggests that the costs associated with searching for a suitable trading partner, negotiating contracts, and enforcing agreements may be lower within a firm than in the market, depending on the specific circumstances of the transaction (Rindfleisch, 2020).

While transaction cost theory has been influential in explaining why firms exist and how they make decisions about organizing economic activity, it has also faced some critiques. Here are some of the key criticisms of transaction cost theory: Narrow focus on efficiency: The theory tends to focus narrowly on efficiency and may overlook other factors that influence economic behavior, such as social norms, cultural values, and power dynamics. Simplistic assumptions: The theory's assumptions about rationality and opportunism may oversimplify human behavior and fail to account for the complexities of real-world decision-making. Lack of predictive power: While the theory provides a useful framework for understanding economic behavior, it may not have strong predictive power in all cases, as transaction costs can be difficult to measure and vary across different contexts. It ignores non-economic factors: The theory may overlook non-economic factors that influence decision-making, such as emotional attachment, personal relationships, and ethical considerations. It ignores innovation: The theory tends to assume that economic activity is static and does not account for the role of innovation and entrepreneurship in creating new opportunities for trade and reducing transaction costs. Limited scope: The theory may have limited applicability outside of certain industries or contexts, as it assumes that transactions are relatively

simple and homogeneous, which may not be the case in complex, heterogeneous industries. Overall, while transaction cost theory has been a useful framework for understanding economic behavior, it is important to consider its limitations and supplement it with other theories and perspectives to gain a more comprehensive understanding of economic activity (Schmidt & Wagner, 2019).

2.4.3 Resource Based View

Resource Based View (RBV) was developed by Barney in 2001. The theory aspired to explain the internal sources of a firm's sustained competitive advantage (Kraaijenbrink & Spender, 2020). These resources were priceless, uncommon, special, and hard to replace. Resources that could aid in the development or execution of plans that enhanced performance, took advantage of business opportunities, or eliminated potential threats were seen as valuable (Barney & Clark, 2019). The two underlying presumptions of RBV theory are that resources and capabilities are imperfectly mobile and heterogeneously distributed among firms, resulting in stable differences between firms over time. (Karia, & Wong, 2020). Each firm has unique resources and capabilities that set it apart from other firms. These variations set one company apart from another, and a company's success was a result of its unique (idiosyncratic) resources. (Karia, & Wong, 2020). In light of this, the organization's individual resources, competencies, and capabilities were a collection of the firm's resources, or the core of the resource-based view (Karia & Wong, 2020). A resource, for example, is defined as a fundamental component or prerequisite for the development and operation of logistics and is necessary for enhancing a firm's capabilities in the logistics industry (Aldin, et al., 2018).

Unlike industrial organization economics, which concentrated on the external opportunities and threats facing businesses, the resource-based view (RBV) of firms

placed more emphasis on their internal strengths and weaknesses Shang & Marlow (2018), because when the external environment is unstable, a firm's own resources and capabilities may be easier to control (Shang & Marlow, 2018). The resource focused perspective contends that a firm was a collection of tangible and intangible resources. This collection was unique to each firm so that each firm could be considered different (heterogeneous) from each other within the same industry i.e. no two companies possess the same experiences, or had acquired the same assets or skills or built the same organizational culture (Barney & Clark, 2019). Such differential endowment of resources among firms was the ultimate determinant of strategic decisions (Shang & Marlow, 2018).

Ganotakis and Love (2019) used the RBV to explain the importance of logistics management to a firm. According to Ganorakis and Love, (2019), logistics flexibility and efficiency was a source of competitive advantage for entrepreneurial firms. Ownership of firm specific assets enabled a company to develop a competitive advantage. They also found out that a company's competitive advantage was derived from the company's ability to assemble and exploit an appropriate combination of resources (Ganotakis & Love 2019). In their study, Wong and Karia, (2019), confirmed that, RBV focused on the idea of costly-to-copy attributes of the firm as sources of business returns and the means to achieve superior performance and competitive advantage.

The RBV had been used in strategic literature for the analysis of business performance. It was important to highlight that the RBV had recently been employed in logistics management studies to examine the logistics resources and capabilities on logistics performance (Lai, et al., 2019; Yang, et al., 2019). Lai et al., (2019) from logistics literature, argued that the RBV theory was an appropriate theory for supply chain and

logistics management research. These studies found logistics resources and capabilities to be significantly positive related to firm performance. Some literature used RBV theory to examine the impact of information flow on 3PL providers competitive advantage (Lai et al., 2019) while others examined the effects of logistics capabilities on firm performance (Yang et al., 2019). Therefore the RBV provided a theoretical foundation for this research to examine the relationship between logistics resources and capabilities and logistics management systems on achieving firm performance in Kenya.

In the context of logistics management systems, a firm's resources and capabilities may include things like transportation infrastructure, information technology systems, logistics personnel, and specialized logistics knowledge. Successful logistics management systems require the integration of these resources and capabilities in order to achieve optimal performance. For example, a firm may use its transportation infrastructure to minimize delivery times, while leveraging its information technology systems to track and monitor shipments in real-time. The firm may also rely on specialized logistics personnel to manage the logistics process and apply their knowledge and expertise to optimize performance.

Resource-based theory suggests that firms that are able to leverage their unique resources and capabilities to create superior logistics management systems will have a competitive advantage over firms that are not able to do so. This can lead to benefits such as lower costs, improved service levels, and increased customer satisfaction. However, the challenge for firms is to identify and develop the resources and capabilities that are most important for achieving competitive advantage in logistics management systems. This requires a deep understanding of the logistics industry and the ability to invest in and manage the resources and capabilities that are most critical

for success. Overall, resource-based theory provides a useful framework for understanding the role of resources and capabilities in achieving competitive advantage in logistics management systems. By leveraging their unique resources and capabilities, firms can develop logistics management systems that are more effective, efficient, and responsive to customer needs.

2.9. Empirical Review

2.9.1 Logistics management systems on the relationship between Urban Demand and Supply

Chain Performance

The Michigan State University study (GLRT at Michigan State University 2020) especially revealed how firms used logistics management to achieve competitive superiority by consistently meeting customer expectations. Armistead and Mapes (2020) in their study on supply chain integration and firm performance in UK found that an increasing level of supply chain integration corresponded with increased manufacturing performance. Liu and Luo, (2019) examined the effect of logistics capabilities on the manufacturing firms performance in China. They classified logistics capabilities as customer-focused capabilities and information-focused capabilities. The study indicated that customer-focused capabilities and information-focused capabilities respectively significantly affected firm performance directly and indirectly.

Morash and Clinton (2018) investigated the creation of customer value through the logistics/supply chain integration alternatives of collaborative closeness and operational excellence. They illustrated models identifying logistics as the unifying link intra- organizationally between the production and marketing functions and inter-organizationally between suppliers and customers. Analyzing data from almost 2,000 firms in the USA, Australia, Japan, and Korea, they found that efficient logistics exhibit

firm operational excellence. In their study, Tracey and Tan (2018) examined the influence of supplier selection and involvement, customer satisfaction and firm performance. The study was based on the perspective of 53 manufacturing firms across United States. The empirical result confirmed that customer satisfaction and firm performance was directly and positively influenced by suppliers with ability to provide quality components and reliable delivery.

2.9.2 Logistics Management System on relationship between Urban Freight Distribution and Supply Chain Performance

A study on logistics performance and the influence it had to firm performance, done in USA by Fugate, et al., (2019) on 150 firms revealed that increase in logistics efficiency, effectiveness, and differentiation decreased expenses, inventory, cash requirements and increased inventory availability, timely delivery, on-time and damage-free deliveries, line item fill rates and sales (Fugate et al, 2019), which improved net margin and asset turnover, which improved return on assets and overall firm performance. According to Zhao et al. (2020), the study shows that logistics management practices like technology adoption, collaboration with stakeholders, and real-time tracking can moderate the relationship between urban freight distribution and supply chain performance. The study findings indicate that companies with advanced logistics capabilities reported better performance metrics when managing urban freight challenges.

Keebler and Plank (2019) in their case study examined the impacts logistics performance had within the US firms and found seven factors that had demonstrated impact for manufacturing firms (Bobbitt, 2018; Tontini & Zanchett, 2019) empirically investigated the link between logistics performance and organizational performance in US manufacturing sector. Evidence collectively revealed that the logistics function strived to minimize the ratio of resources utilized against derived results (efficiency),

accomplish pre-defined objectives (effectiveness), gain superiority when compared to competitors (differentiation) Fugate, et al, (2019) and ability to meet customer satisfaction (quality). All this confirmed influence logistics had on firm performance.

Green Jr., et al., (2019) in their research on the US firms on the impact of logistics performance on organization performance in supply chain context revealed that a success of logistics performance brought about manufacturing performance, future growth and new product introduction. Therefore, the competition in the manufacturing industry was within the radius of supply chain competence which consisted of logistics strategy. Rosenzweig (2019) examined the operational and logistical performance in measuring manufacturing performance in US firms which included the aspect of quality, cost of production, finish goods delivery and in addition considered the inventory level of work in production goods. In his study, he related supplier selection and involvement tactics impact and manufacturing performance. As a result, he confirmed that logistics performance had provided a significant influence in achieving manufacturing and business goals. Toyli, et al., (2019) did research of logistics performance on financial performance of Finish SMEs. The results were that logistics performance had positive link to financial performance of firms. In their study, Vijayaraghavan and Raju, (2019), examined the relationship existing among logistics capabilities, logistics performance and firm financial performance in India. The results were positive that, both logistics capability and performance had a direct influence on the finance performance.

Se zhiyan and Nambi rajan, (2019), examined various aspects and variables on management of logistics capabilities and firm performance in India. Firm performance was regressed against logistics capabilities and the results indicated that the predictive variable had positive and significant effect on firm performance.

In his study on the effects of logistics measurement capability on performance, Kuo Chung Shang (2018) findings revealed that general measurement capability on logistics played a very critical role in not only facilitating firms' benchmarking capability but also enhancing firms superior performance in Taiwan. (Ellinger, Daugherty, & Keller, 2018), Further confirmed in his empirical research that, logistics performance reflected a key success on firm financial performance, thus, logistics performance was seen to affect financial performance directly.

2.9.3 Logistics Management System on relationship between Accessibility and Supply Chain Performance

In recent days, several researchers had confirmed that improved information exchange could have a substantial impact on overall firm performance and efficiency (Closs & Savitskie, 2018). A study carried out by Tim (2019) confirmed that using communication tools, such as the web sites, industrial organizations could build value in their supply chain relationships. A study done by Hyvönen (2019), on information technology and logistics management in Finland confirmed that information technology innovations when applied to logistics/supply chain management led to increased customer satisfaction.

Zhang, and Lim, (2018), examined the impact of logistics flexibility on manufacturing firm's customer satisfaction. This was done through a survey of 273 manufacturing firms in the USA and the results indicated that logistics flexibility had significant, positive and direct impact on the customer satisfaction. This confirmed that firms could achieve customer satisfaction by developing logistics flexibility which enabled quick replenishment of incoming materials and rapid delivery of finished products to customers (Zhang, et al, 2018).

Sa'nchez, and Pe'rez, (2018), did an Empirical survey of a representative sample of 126 Spanish automotive suppliers during the months of September and October 2018 to analyze the relationship between logistics flexibility dimensions and firm performance dimensions, and between logistics flexibility dimensions and environmental uncertainty dimensions. A multivariate analysis studied the determinants of logistics flexibility. This research found a positive relation between a superior performance in flexibility capabilities and firm performance, although flexibility dimensions were not equally important for firm performance. On the other hand, the results showed that companies enhanced more the basic flexibility capabilities (at the shop floor level) than aggregate flexibility capabilities (at the customer-supplier level). However, aggregate flexibility capabilities were more positively related to firm performance than basic flexibility capabilities. Thus, companies could miss opportunities to improve competitiveness by underestimating customer-supplier flexibility capabilities.

2.9 Conceptual Framework

A conceptual framework is a graphical representation of the theorized interrelationships of all the study variables. It defines the appropriate objectives of the research and maps out how they come together to draw clear conclusions (Swaen & George, 2022). In this study, the independent variables are the constructs of urban logistics among them, Urban Demand, Urban Freight Distribution and Accessibility. The moderating variable is Logistics Management Systems, and the dependent variable is Supply Chain Performance.

In this study, Institutional Theory (Meyer & Rowan, 1977) shows that firms face many pressures from the external environment, and they must counter the external forces for their survival. Such pressures include those from the Government and civil Authorities, from the society and those from other successful firms in the industry. For positive

supply chain performance, the firms need to be adaptable. Transaction cost theory (Ronald Coase, 1930s) explains that firms exist because they can reduce transaction costs by coordinating economic activity within the organization (Cuypers et. al 2021). Decisions are made based on cost-benefit analysis and firms choose to organize their logistics activities internally when the transaction costs associated with using external logistics providers are high.

In Resource based view theory (Barney, 2001), it is indicated that the internal sources of a firm's sustained competitive advantage is what differentiates a firm from others (Spender, 2020). By leveraging their unique resources and capabilities, firms can develop logistics management systems that are more effective, efficient, and responsive to customer needs.

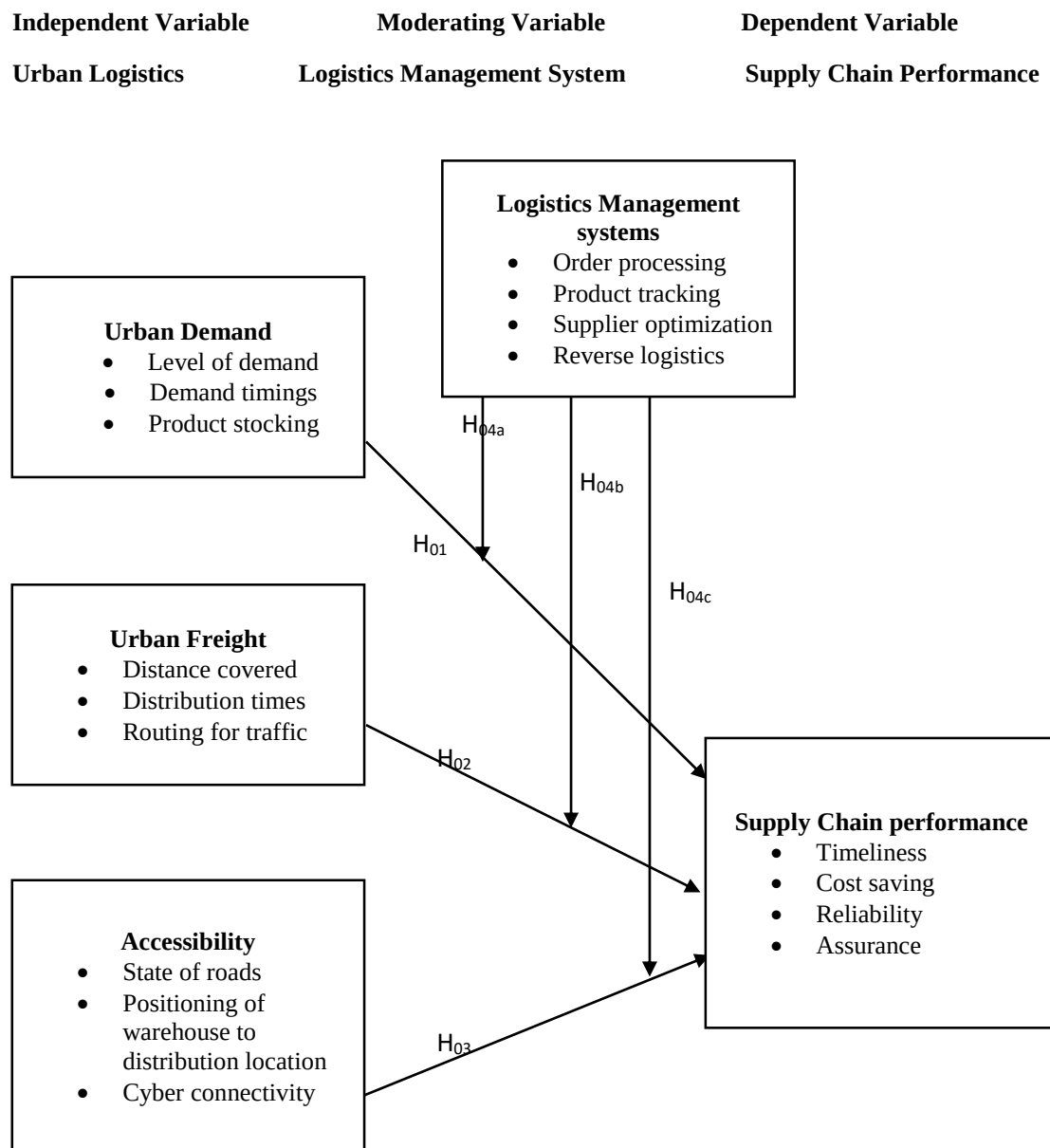


Figure 2.1: Conceptual Framework

Source: Researcher (2024)

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter presented the research design, study area, study population, sampling design and procedure, data collection and research instruments, measurement of variables, piloting, data analysis and ethical considerations.

3.1 Research Design

The study utilized an explanatory research design to test hypotheses by measuring variable relationships and analyzing data using statistical techniques. This design was apt as it focused on quantifying relationships or comparing groups to identify cause-effect links. The explanatory survey research approach helped advance variable relationships by collecting data on how human resource management practices affect service quality, moderated by organizational culture. As Saunders et al. (2021) note, explanatory designs are used for studies establishing causal relationships, making this design fitting for the study.

3.2 Study Area

The study was conducted on e-commerce firms in Agriculture, Tourism, Transport, ICT and Healthcare sector. These are all located in Nairobi which is an urban area. Nairobi is the capital and largest city in Kenya. Nairobi County is one of the 47 counties of Kenya. It was founded in 2013 on the same boundaries as Nairobi Province, after Kenya's 8 provinces were subdivided into 47 counties. Nairobi has experienced one of the most rapid growths in urban centers. This is unlikely to slow down any time soon because the population in Kenya increases by an average of about 3%.

3.3 Study Population

Tabachnick and Fidell (2021) observed that target population refers to that reference population for which the researcher wishes to draw generalizations and from which the study population is drawn. The study was conducted in e-commerce firms from the following sectors: Agriculture, Tourism, Transport, ICT and Healthcare. These are the documented, incorporated e-commerce firms within Nairobi excluding the personal online firms. This is according to the licensing department at the county government of Nairobi. One employee at the managerial level in the headquarters of these firms was selected to participate in the study to form a target population of 939 respondents.

Table 3.1 Target population

Sector	Target population
ICT	247
Agriculture	137
Tourism	160
Healthcare	231
Transport	164
Total	939

(Source: Licensing Department, County government of Nairobi, 2022,)

3.4 Sampling and Sampling Procedure

A sample is described as being a representative if certain known percentage, frequency distributions of element characteristics within the sample is similar to the corresponding distributions within the whole population (Kasomo, 2019). Sampling is the process of selecting several individuals for a study in such a way that the individuals selected represent the larger group from which they were selected (Cooper & Schindler, 2019). The sample size and sampling procedure that was used in this study is discussed below.

3.4.1 Sample Frame

A sampling frame depicts the list of all population units from which the sample was drawn from (Cooper & Schindler, 2019). This indicates the distribution of the

population from which a sample is drawn. In this study, the sampling frame was a list of 281 staff of the commerce firms from the five sectors in Nairobi. The sampling frame included one staff at the managerial level of each firm who has worked for one year or more. This is because one year is appropriate and is a justification for an officer to must have understood the urban logistics needed for efficient operations.

3.4.2 Sample Size

A sample is a portion or part of the population of interest. The purpose of sampling was to gain an understanding about some features or attributes of the whole population based on the characteristics of the sample. Sampling involved drawing of a target population for observation. It is appropriate when it is not feasible to involve the entire population under study. Using Yamane's (1972) sample size formula at 95% confidence level, $P = 0.5$, the sample size of employees was computed as below:

$$n = \frac{N}{1 + N(e)^2}$$

Where;

n = the sample size,

N = the population size,

e = the acceptance sampling error

$$n = \frac{939}{1 + 939(0.5)^2} = 281 \text{ respondents}$$

From the target population a sample size of 281 respondents was selected. A response rate of over 80% is considered sufficient for the study as recommended by Wagana (2017) and Mugenda (2021).

Table 3.2: Sample Size

Carder/department	Target population	Sample Size ($n/N*n$)
ICT	247	74
Agriculture	137	41
Tourism	160	48
Healthcare	231	69
Transport	164	49
Total	939	281

(Source: Researcher 2024)

3.4.3 Sampling Procedure

The sample of the study was identified using stratified sampling technique. The sampling technique was used to sample the required respondents. In the first stage, the identified firms were sampled using simple random sampling to ensure that all the firms are represented in the study. Simple random sampling is appropriate as it enables the researcher to represent not only the overall population but a sub-group of the population. The technique also provided a better comparison across strata (Saunders et al., 2019).

Simple random sampling was used as a major sampling technique because each respondent had an equal chance of inclusion in the sample. It was appropriate because the entire population was relatively large, diverse and sparsely distributed, hence random sampling technique helped to achieve the desired objective. This technique was appropriate for the study as it was cost effective and efficient in administration. The sampling technique gave each respondent in the population an equal probability of being included in the sample.

3.5 Data Collection and Research Instruments

3.5.1 Data types and sources

The main data type was the primary sources of data collection. Specifically, questionnaires were used in the study to collect data from the sample respondents.

3.5.2 Data collection instruments

Data collection was done through instruments developed by the researcher adopted from research sources. The choice of data collection instrument is often decisive to the success of a research and thus when determining an appropriate data collection method, a researcher has to take into account the complexity of the topic, response rate, time and the targeted population (Mwangi, 2015). In this study, the data collection was through use of questionnaires.

Questionnaires are set of questions which gives answers of the research participants in a set of ways. According to Kombo and Tromp (2019), a questionnaire is a research instrument that gathers data over a large sample. Most questionnaires are designed to gather already structured data and so include a set of answers which the respondent can choose from, although some may include more open-ended questions which allow the respondent to answer the questions in their own way; others give a provision where all the participants are asked the same questions in the same order and using the same wording and have the same set of answers to choose from (Matthews & Ross 2020).

Kothari (2020) notes that questionnaires are generally free from interview bias as responses are in the respondent's own words, allowing adequate time for thoughtful answers. Orodho (2019) considers questionnaires efficient research tools, enabling researchers to obtain personal insights from respondents and standardize responses for data comparison. Additionally, Matthews and Ross (2020) highlight that questionnaires

allow participants to express their opinions on the subject matter. The questionnaire was tailored to meet specific objectives, self-administered, and featured closed-ended questions consistent with the research design. Responses were collected using a 5-point Likert scale, with options ranging from strongly disagree to strongly agree. This quantitative approach was appropriate for the study, as emphasized by Makhamara (2017).

3.5.3 Data collection procedure

In this study questionnaires were designed to address specific objectives. The questionnaires were self-administered and had closed ended items, consistent with the requirements of the research design. Responses to closed ended questions were elicited on a 5-point likert scale with 1- signifying strongly disagree, 2-disagree, 3-neutral, 4–agree and 5-strongly agree. This technique was appropriate for the study since the instrument used were qualitative in nature hence an acceptable method. Before the actual data collection exercise took place, permission was sought from the National Commission for Science and Technology innovation for a research permit.

The permit was then presented to the selected e-commerce firms who gave it a go ahead. Data was collected using questionnaires. The collection of data from employees was done by trained research assistants on behalf of the researcher using the drop and pick method under close supervision by the researcher. A period of two weeks was given for the employees to fill in the questionnaires after which the filled questionnaires were picked.

A total of 14 questionnaires were pilot tested in one logistics firm in Kiambu. The purpose of the pilot study was to enable the researcher to ascertain the reliability and validity of the instruments, and to familiarize with the administration of the

questionnaires and therefore improve the instruments and procedures. Appropriate corrections were made based on the results of the pilot study.

3.6 Measurement of Variables

Table 3.3: Measurement of Variables

Variable	Variable Type	Items	Measurement Scale	Source
Urban Demand	Independent	5	5-point likert scale	Frank H. Fulle et al., 2014
Urban Freight Distribution	Independent	5	5-point likert scale	Diana, Marco & Pirra, Miriam & Woodcock, Andrée. (2020).
Accessibility	Independent	5	5-point likert scale	Abdullah, et al.. (2021).
Logistics management system	Moderator	5	5-point likert scale	Wambui · 2021; Zhang · 2022
Supply Chain Performance	Dependent	5	5-point likert scale	Joby George and V. Madhusudanan Pillai 2019 J. Phys.: Conf. Ser. 1355 012018

3.7 Piloting

A total of 14 questionnaires were pilot tested in a logistics companies in Kiambu. The purpose of the pilot study was to enable the researcher to ascertain the reliability and validity of the instruments and to familiarize with the administration of the questionnaires and therefore improve the instruments and procedures. Appropriate corrections were made based on the results of the pilot study.

3.7.1 Validity

Validity is as truthfulness and is a measure of how well a conceptualized idea about reality matches the actual reality (Bolarinwa, 2015). Factor analysis was done to validate the quantitative instrument (questionnaire). The content validity according to Bolarinwa (2015) is the judgment made based on scientific approach on whether the indicator used measures the required construct. Content validity is the degree of which

the instrument measures the required construct (Sangoseni, Hellman & Hill, 2021). Sabgoseni et al., (2021) contend that an instrument can only achieve content validity if it undergoes a rational analysis by raters (experts) who have familiarity with the academic scope of study. The content validity of the instrument was determined using expert judgment.

The researcher asked the supervisors to critically examine the items measuring specific constructs with a view to ascertaining whether the full content pertaining to any given construct represent in the items and whether such content is justified with evidence from literature. On close scrutiny, various suggestions for correction were made and the final document was then produced. With regards to the qualitative aspects of the study, authenticity of the findings was considered primal. This as noted by Zohrabi (2021) relates to the fairness, balance and honesty exhibited by respondents on topical issues.

The study further used by use of Kaiser-Meyer-Olkin (KMO) to measure sample adequacy and Bartlett's test of sphericity to test validity and a value greater than 0.05 and a p value less than 0.05 was acceptable.

3.7.2 Reliability

Reliability is a measure of how dependable or consistent the instrument is in measuring the required construct (Bolarinwa, 2015). Reliability is the extent to which a measure produces similar results after repeated trials. The questionnaire incorporates closed-ended questions to facilitate proper capturing and analysis of the variables of the study.

The reliability of the questionnaires was verified through examination of internal consistency of the measures. Reliability was computed on data collected after piloting

the developed questionnaire among employees. Interpretation of the coefficients was based on the following threshold (Kinoti, 2021).

Cronbach's Alpha Coefficient was used to determine the reliability of the research instrument. A reliability coefficient of 0.7 and above was assumed to reflect the internal reliability of the instruments (Fraenkel & Wallen, 2018). The entire questionnaire was deemed reliable after all the constructs all the items collectively met the 0.7 threshold confirming that it is sufficient to be used in the main study. Construct validity was achieved through anchoring of the constructs to the theory from which they were derived. With regards to the qualitative aspects of the study, authenticity of the findings was considered primarily. This note by Zohrabi (2021) relates to the fairness, balance and honesty exhibited by respondents on topical issues.

3.8 Data Analysis

After all data had been collected, the researcher conducted data cleaning, which involved identification of incomplete or inaccurate responses then correcting them to improve the quality of the responses. They were coded and keyed into SPSS V.27 computer software and analyzed. The data analysis included descriptive statistics of the data, reliability estimation, factor analysis, correlation analysis and multiple regression analysis.

3.8.1 Descriptive Statistics

Descriptive statistics is the term given to the analysis of data that helps describe, show or summarize data in a meaningful way such that, for example, patterns might emerge from the data. Descriptive statistics enabled the researcher to present the data in a more meaningful way, which allowed for simpler interpretation of the data. Descriptive statistics included analyzing data using measures of central tendency including

frequencies, percentages, means, and standard deviations for all the items in the questionnaire.

3.8.2 Inferential Statistics

To examine how independent variables affect the dependent variable as indicated by the null hypotheses, this study employed inferential statistics using hierarchical multiple regression analysis. Additionally, moderated hierarchical multiple regression models were utilized to identify the direction and magnitude of the moderator variable's effect on each independent variable, as well as its overall impact on the dependent variable (Wagana, 2017). The process involved first determining the relationships between independent, moderating, and dependent variables through hierarchical regression.

Hierarchical Regression

$$SP = \beta_0 + C + \varepsilon$$

$$SP = \beta_0 + \beta_1 UD + \beta_2 UF + \beta_3 AS + \varepsilon$$

$$SP = \beta_0 + \beta_1 UD + \beta_2 UF + \beta_3 AS + \beta_4 * LM + \varepsilon$$

$$SP = \beta_0 + \beta_1 UD + \beta_2 UF + \beta_3 AS + \beta_4 * LM + \beta_5 UD * LM + \varepsilon$$

$$SP = \beta_0 + \beta_1 UD + \beta_2 UF + \beta_3 AS + \beta_4 * LM + \beta_5 UD * LM + \beta_6 UF * LM + \varepsilon$$

$$SP = \beta_0 + \beta_1 UD + \beta_2 UF + \beta_3 AS + \beta_4 * LM + \beta_5 UD * LM + \beta_6 UF * LM + \beta_7 AS * LM + \varepsilon$$

Where:

SP: Represent: Supply Chain Performance

UD: Represent: Urban Demand

UF: Represent: Urban Freight Distribution

AS: Represent: Accessibility

LM: Moderator variable

β_0 : Represent: Constant

$\beta_1 - \beta_6$: Represent: Regression coefficients

$\beta_5 \text{UD} * \text{LM}$, $\beta_6 \text{UF} * \text{LM}$, $\beta_7 \text{AS} * \text{LM}$: Interaction terms

ϵ : Represent: Error term

3.9 Assumptions of Regressions

The assumptions of regression identified as of primary concern in the research include; linearity, homo scedasticity, normality, and correlation.

3.9.1 Normality

Normality assumption is based on the shape of normal distribution and gives the researcher knowledge about what values to expect (Keith, 2019). The researcher tested this assumption using visual inspection of data plots and P-Plots (Osborne & Waters, 2018). Normality was further checked through the histograms of the standardized residuals.

3.9.2 Linearity

Linearity is established using multiple regressions to estimate the relationship between dependent and independent variables when the relationship is linear in nature (Osborne & Waters, 2018). Examination of the residual plots showing the standardized residuals vs. the predicted values was useful in detecting violations in linearity (Stevens, 2020). Residual plots showing the standardized residuals and the predicted values was used to establish linearity.

3.9.3 Homoscedasticity

The assumption of homoscedasticity refers to equal variance of errors across all levels of the independent variables (Osborne & Waters, 2018). This means that the study

assumed that errors are spread out consistently between the variables (Keith, 2019). Homoscedasticity was checked using the standardized residual scatter plot.

3.9.4 Multicollinearity

Multi-correlation occurs when several independent variables correlate at high levels with one another, or when one independent variable is a near linear combination of other independent variables (Keith, 2019). Tolerance and VIF statistics was used to carry out the diagnosis (Keith, 2019). A multiple linear regression model was adopted to study the linear relationships among the various variables under study. A multiple linear regression analysis is a multivariate statistical technique used to estimate the model parameters and determine the effect of individual independent variables (IVs) on the dependent variable (DV). A multivariate analytical approach was appropriate for this study because the conceptual model used three indicators/measures for Urban Logistics (independent variables) and Logistics management system (moderating variable) to predict supply chain performance outcome (dependent variable).

Urban Logistics (independent variables) and Logistics management system (moderating variable) to predict supply chain performance outcome (dependent variable).

3.10 Ethical Considerations

Research ethics refers to moral code of conduct to be observed by a researcher. The main ethical principles in research include honesty, integrity, objectivity, and confidentiality among many others as indicated by David B. Resnik, (2020). In this study this was taken into consideration.

The researcher first obtained an introductory letter from Moi University which was presented to obtain a research permit from National Commission for science,

technology and innovation (NACOSTI) to conduct the study. The researcher explained to the respondents the purpose of the study and all the respondents were assured of the confidentiality of the information they would give. It was ensured that all respondents gave the information voluntarily and were allowed to withdraw if they were not willing to continue.

CHAPTER FOUR

DATA ANALYSIS, INTERPRETATION AND PRESENTATION

4.1 Introduction

This chapter presents the results of data collected from the study and its analysis. The objective of the study was to determine the effects of logistics management systems on supply chain performance of selected ecommerce firms in Nairobi. The chapter consists of the pilot study results, descriptive statistics and correlation analysis.

4.2 Response Rate

The sample population consisted of 281 ecommerce firms in Nairobi and the results of how they responded are as shown below.

The table 4.1 shows that 281 questionnaires were issued. Only 252 of the questionnaires were dully field and returned. This is 89% as shown in table 4.1 above. Such a response is regarded to be sufficient response to determine the existence of a phenomenon. A response rate of 80% and above can be used to represent the total population and generalize the findings of the study (Wagana (2017).

Table 4.1 Response Rate

Response Rate	Frequency	Percentage
Responded	252	89
Not responded	29	11
Total	281	100

(Source: Researcher 2024)

4.3 Reliability

4.3.1 Reliability Results

This section shows the reliability of the research instrument .The presentation of reliability test results of the pilot study are as shown in table 4.2 below. Urban Demand had a Cronbach's Alpha of 0.804, Urban Freight Distribution has a Cronbach's Alpha

of 0.822, Accessibility had a Cronbach's Alpha of 0.818, Logistics management Systems had a Cronbach's Alpha of 0.820 and Supply Chain Performance had a Cronbach's Alpha of 0.813. All the variables in the study have a Cronbach's Alpha coefficients above 0.7 which shows that the research instrument was reliable.

Table 4.2 Reliability Test Constructs

	Test Items	Cronbach's Alpha
Urban Demand	5	0.804
Urban Freight Distribution	5	0.822
Accessibility	5	0.818
Logistics Management Systems	5	0.820
Supply Chain Performance	5	0.813

(Source: Researcher 2024)

4.4 Validity Results

Both content and construct validity were examined following recommendations by Cooper et. al. (2014). From literature, existing scales were identified and used to develop the data collection instrument. The questionnaire was administered to the supervisors who are more knowledgeable and the modifications from them were used to better the questionnaire. The study used Kaiser- Meyer-Olkin (KMO) to measure sample adequacy and Bartlett's test of sphericity and the findings were as presented in table 4.3 below

4.4.1 Factor Analysis

Factor analysis was done on 25 items which were used to measure all the constructs. Principal component analysis and varimax rotation method was used. Table 4.3. show the results of Kaiser- Meyer-Olkin (KMO) measure of sampling adequacy of 0.7 and Bartlett's test of sphericity Chi- Square (χ^2) of 2600.8 at a significance level of $p=0.000$

, $df = 300$. It also shows how the 25 items were loaded and a total of 5 components. The first component has a Eigen value of 4.308 explaining a variance of 17.23%. The component was named Logistics management systems since its 4 items were loaded on it as shown in table 4.3. Component 2 had a Eigen value of 2.999 and a variance of 11.995% and it was named Urban Freight Distribution after all its 4 items were loaded in it. Also, the findings show that component 3 had Eigen value of 2.441 and it explains a variance of 9.765% and it was named urban demand because 3 of its items loaded in it. Component 4 resulted in having Eigen value of 2.077 and a variance of 8.31%. This component was named Accessibility after all its 5 items being loaded in it. Lastly, component 5 had Eigen value of 1.857 explaining a variance of 7.482% and it was named Supply Chain Performance having a loading of its 4 items in it.

Table 4.3: KMO and Variance Results

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.7	
Bartlett's Test of sphericity	Approx. Chi-Square	2600.8	
Df		300	
Sig.		0.000	
Items of factors extracted	Eigen values	Variance %	Total %
Component 1	4.308	17.234	17.234
Component 2	2.999	11.995	29.229
Component 3	2.441	9.765	38.994
Component 4	2.077	8.310	47.304
Component 5	1.857	7.482	54.732

(Source: Researcher 2024)

(Source: Researcher 2024)

Table 4.4: Factor Loadings

Items	Factor loadings				
	1	2	3	4	5
Product delivery is monitored in real-time	0.867				
There are strong collaborations with suppliers	0.855				
There's a transparent network for suppliers and customers	0.829				
There's a system for customers to return faulty products	0.624				
Distance covered to deliver products does not affect reliability of delivery		0.869			
Restricted zones in the city do not affect loading/offloading		0.859			
Deliveries are never delayed due to traffic		0.828			
There is easy access to the airport		0.564			
Demand forecasting is done annually			0.764		
Advertising is the major cause of increase in demand.			0.748		
Close customer relations have been established.			0.684		
Delivery truck drivers use already established route maps.				0.750	
Freight trucks are suitable for different terrains in the city				0.688	
Transport cost has reduced as a result of easy access to destinations				0.682	
Information on company website is easy to read and understand				0.609	
Transport cost has reduced as a result of easy access to destinations				0.552	
Products have never been damaged during delivery					0.771
There are no complaints of late deliveries					0.722
The company delivery costs are cheap					0.699
There is high responsiveness to changes in demand					0.626

(Source: Researcher 2024)

4.5 Background information of Firms

This part contains the bio data of respondents in relation to the study. These include:

The numbers of years the firms have been in operation, sector, industry, firm size and number of employees.

Table 4.5: Background information of Firms

Demographic characteristics	Attributes	Number of Respondents	Response %
Years in operation	Under 5 Years	68	27
	5-10 years	59	23.4
	10-15 years	46	18.3
	15-20 years	35	13.9
	Over 20 years	44	17.5
Sector	ICT	65	25.8%
	Agriculture	36	14.3%
	Tourism	47	18.7 %
	Healthcare	61	24.2%
	Transport	43	17.1%
Industry	Manufacturing	27	10.7%
	Service	30	11.9%
	Retail	137	54.4%
	Shipping	31	12.3%
	Wholesale	27	10.7%
Firm Size	Micro	19	7.5
	Small	68	27
	Medium	86	34.1
	Large	63	25
	Macro	16	6.3
No. of Employees	Below 10	65	25.8
	10-50	60	23.8
	50-150	50	19.8
	150-250	39	15.5
	Above 250	38	15.1

(Source: Researcher 2024)

4.5.1 Years in operation

This part shows how long the ecommerce company has been in business since it was started. The study findings indicate that majority 68 of 252(27%) of the ecommerce firms were established less than 5years ago while the least 35(13.9%) have been in operation between 15- 20years.

4.5.2 Sector

This section presents the information on the sector in which the ecommerce company operates. Firms from five sectors were under study and the findings are presented in table 4.5 Majority of ecommerce firms were from both ICT 65(25.8%) and Healthcare

61(24.2%) sector. Agriculture had the least number of firms with a total of 36 (14.3%). Transport and Tourism had 43(17.1%) and 47 (18.7%) respectively

4.5.3 Industry

The section gives information on the industry in which the ecommerce company operates. There were five industries under study and the findings are as shown in table 4.5 above. Many companies were from the Retail industry 137(54.4%) followed by shipping 31(12.3%) then Service 30(11.9%). Both manufacturing and wholesale had 27(10.7%) each.

4.5.4 Firm Size

This section shows how big or small a firm is and there were five categories: micro, small, medium, large and macro. Based on the findings shown in table 4.5, majority of the e-commerce companies are medium in size 86(34.1%) while the least number of companies are macro in size 16(6.3%).

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4.5.7 No. of employees

The section presents findings on the number of employees each e-commerce company has. Most of the firms have less than 10 employees 67(26.6%), those with a range of 150-250 and above 250 takes up the least percentage 39(15.5). Those firms with a range of 10-50 employees are 56(22.2%) and those with 50-150 employees are 51(20.2%).

4.6 Descriptive Statistics

This section presents data in terms of frequencies percentages and standard deviation for all the items in the questionnaire. The items include urban demand, urban freight, accessibility, Logistics management system and supply chain performance which is the dependent variable. A five Likert scale was used where; 1 = Strongly Disagree 2 =Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree.

4.6.1 Urban Demand

The study sought to determine the effect of urban demand on supply chain performance for selected e-commerce firms in Nairobi. Table 4.6 shows the findings of the study and a high percentage 83 (32.9%) of respondents disagree on stock outs never affecting demand and a small percentage 16(6.3%) strongly agree having a mean of 2.568 and standard deviation of 1.207. Majority of the respondents 100 (39.7%) disagree that culture has never affected demand for products while 23(9.1%) strongly agree that culture has affected demand which is supported by a mean of 2.694 and a standard deviation of 1.296. The findings also show that majority of the respondents 114 (45.2%) agree that advertising is the major cause of increase in demand while only 4(1.6%) strongly disagree supported by a mean of 3.853 and a standard deviation of 1.013. On demand forecasting, majority of the respondents 136(54%) agree that demand forecasting is done annually while 7(2.8%) strongly disagree with a mean of 3.619 and a standard deviation of 0.878. Respondents gave their view on customer relations and

majority of them 147(58.35) agreed to having close customer relations while 7(2.8%) strongly disagree having close customer relations supported by a mean of 3.960 and a standard deviation of 0.878.

Table 4.6 Urban Demand descriptive statistics

ITEMS		SD	D	N	A	SA	MEAN	σ
Stock outs have never occurred due to high demand for products.	F	54	83	49	50	16	2.5675	1.2073
	%	21.4	32.9	19.4	19.8	6.3		
Culture has never affected demand for products	F	46	100	14	69	23	2.6944	1.2958
	%	18.3	39.7	5.6	27.4	9.1		
Advertising is the major cause of increase in demand.	F	4	31	33	114	70	3.8532	1.013
	%	1.6	12.3	13.1	45.2	27.8		
Demand forecasting is done annually.	F	7	16	68	136	25	3.6190	0.8548
	%	2.8	6.3	27	54	9.9		
Close customer relations have been established.	F	7	11	27	147	60	3.9603	0.8783
	%	2.8	4.4	10.7	58.3	23.8		
VALID N				252				

(Source: Researcher 2024)

4.6.2 Urban Freight Distribution

The study sought to assess the effect of urban freight distribution on supply chain performance for selected e-commerce firms in Nairobi. The findings are as shown on table 4.7. Majority of the respondents 121(48%) disagree that deliveries are never delayed due to traffic while 22(8.7) strongly agree that deliveries are never delayed and is supported by a mean of 2.381 and a standard deviation of 1.223. On distance covered, 107(42.5%) of the respondents disagree that on distance covered not affecting reliability and on the other hand 21(8.3%) strongly agree that distance covered affects reliability of deliveries having a mean of 2.341 and a standard deviation of 1.235. It was also found out that 95(37.7%) disagree on restricted zones in the city not affecting loading/offloading, 74(29.4%) strongly disagree, 40(15.9%) agree while 20(7.9%) strongly disagree with a mean of 2.353 and a standard deviation of 1.271. Majority of

the respondents 121(48%) agree, 51(20.2%) are neutral,34(13.5%)strongly agree, 29(11.5%) dis agree while 17(6.7%) strongly disagree that distribution vehicles suit the nature of the freight with a mean of 3.500 and a standard deviation of1.077.Regarding easy access to the airport, 103(40.9%) agree, 44(17.5%) are neutral, 39(15.5%)disagree, 39(15.5%)strongly agree and 27(10.7%)strongly disagree that there is easy access to the airport supported by a mean of 3.349 and a standard deviation of 1.223.

Table 4.7 Urban freight distribution descriptive statistics

ITEMS		SD	D	N	A	SA	MEAN	σ
Deliveries are never delayed due to traffic.	F	57	121	17	35	22	2.3810	1.2230
	%	22.6	48	6.7	13.9	8.7		
Distance covered to deliver products does not affect reliability of delivery.	F	67	107	24	33	21	2.3413	1.2347
	%	26.6	42.5	9.5	13.1	8.3		
Restricted zones in the city do not affect loading/offloading.	F	74	95	23	40	20	2.3532	1.2711
	%	29.4	37.7	9.1	15.9	7.9		
Distribution vehicles suit the nature of freight	F	17	29	51	121	34	3.500	1.0767
	%	6.7	11.5	20.2	48	13.5		
There is easy access to the airport	F	27	39	44	103	39	3.3492	1.2227
	%	10.7	15.5	17.5	40.9	15.5		
VALID N						252		

(Source: Researcher 2024)

4.6.3 Accessibility

To evaluate the effect of accessibility on supply chain performance for selected e-commerce firms in Nairobi statistics were done and the findings are as shown on table 4.8. Majority of the respondents 128(50.8%) strongly agree 108(40.9%) agree that information on the company website is easy to read and understand and 16(6.3%)are neutral. On the other hand, only 5(2%) disagree and none strongly disagree that information on their website is easy to read and understand supported by a mean of 4.405 and a standard deviation of 0.699. Regarding the question on established route maps, 56(22.2%) strongly disagree, 48(19%) disagree, 44(17.5%) are neutral,

64(25.4%) agree and 40(15.9%) strongly agree that delivery truck drivers use already established route maps with a mean of 2.937 and a standard deviation of 1.404. Majority of the respondents 88(34.9%) agree, 29(11.5) strongly agree that freight trucks are suitable for different terrains in the city while 50(19.8%) disagree, 40(15.9%) strongly disagree and 45(17.9%) are neutral on trucks being suitable for the city terrains with a mean of 3.064 and a standard deviation of 1.283. The highest number of respondents 128(50.8%) strongly agree that communication is easy due to availability of internet connectivity while only 3(1.2%) strongly disagree with a mean of 4.270 and a standard deviation of 0.961. On the question about transport cost, 109(43.3%) of the respondents strongly disagree on transport cost reducing as a result of easy access to destinations on the other hand, only 7(2.8%) strongly agree with a mean of 1.845 and a standard deviation of 0.972.

Table 4.8: Accessibility

ITEMS		SD	D	N	A	SA	MEAN	σ
Information on company website is easy to read and understand.	F	0	5	16	103	128	4.405	0.699
	%	0	2	6.3	40.9	50.8		
Delivery truck drivers use already established route maps.	F	56	48	44	64	40	2.937	1.404
	%	22.2	19	17.5	25.4	15.9		
Freight trucks are suitable for different terrains in the city.	F	40	50	45	88	29	3.064	1.283
	%	15.9	19.8	17.9	34.9	11.5		
Communication is easy due to availability of internet connectivity	F	3	22	7	92	128	4.270	0.961
	%	1.2	8.7	2.8	36.5	50.8		
Transport cost has reduced because of easy access to destinations.	F	109	98	27	11	7	1.845	0.972
	%	43.3	38.9	10.7	4.4	2.8		
VALID N				252				

(Source: Researcher 2024)

4.6.4 Logistics management System

The study sought to establish the moderating effects of logistics management systems on urban logistics and supply chain performance for selected e-commerce firms within Nairobi and the findings were as shown in table 4.9 below. The findings show that majority of the respondents 142(56.3%) agree that order processing is accurate and

reliable while the least number of the respondents 9(3.6%) strongly disagree with a mean of 3.698 and a standard deviation of 0.895. On the question about product delivery being monitored in real time, most of the respondents 91(36.1%) agree, 36(14.3%) strongly agree while 57(22.6%) disagree, 21(8.3%) strongly disagree and 47(18.7%) are neutral with a mean of 3.254 and a standard deviation of 1.197. Regarding transparent networks for suppliers and customers, the findings show that 107(42.5%) agree to having transparent networks while 3(1.2%) strongly disagree having a mean of 3.484 and a standard deviation of 1.008. Majority of the respondents 126(50%) strongly disagree that there's a system for customers to return faulty products while the least 5(2%) strongly agree having a mean of 1.960 and a standard deviation of 1.153. On the question about the existence of strong collaborations with suppliers the finds were: 6(2.4%) strongly disagree, 40(15.9%) disagree, 49(19.4%) neutral, 111(44%) agree and 46(18.3%) strongly agreed by a mean of 3.599 and a standard deviation of 1.034.

Table 4.9 Logistics management system descriptive statistics

ITEMS		SD	D	N	A	SA	MEAN	σ
Order processing is accurate and reliable	F	9	14	54	142	33	3.698	0.895
	%	3.6	5.6	21.4	56.3	13.1		
Product delivery is monitored in real-time	F	21	57	47	91	36	3.254	1.197
	%	8.3	22.6	18.7	36.1	14.3		
There's a transparent network for suppliers and customers	F	3	51	55	107	36	3.484	1.008
	%	1.2	20.2	21.8	42.5	14.3		
There's a system for customers to return faulty products		126	51	39	31	5	1.960	1.153
		50	20.2	15.5	12.3	2		
There are strong collaborations with suppliers	F	6	40	49	111	46	3.599	1.034
	%	2.4	15.9	19.4	44	18.3		
VALID N				252				

(Source: Researcher 2024)

4.6.5 Supply Chain Performance

The study sought to find out the effects of urban logistics on Supply Chain Performance and the findings are as shown in table 4.10. It is shown that the majority of 15(46.5%) of the respondents agree that products are delivered within 24hours and 18(7.1%) strongly disagree having a mean of 3.389 and a standard deviation of 1.078. Regarding the question of there being no complaints of late deliveries, the majority 110(43.7%) of the respondents disagree, 37(14.7%) strongly disagree, 64(25.4%) neutral, 47(18.7%) agree and 8(3.2%) strongly agree having a mean of 2.631 and a standard deviation of 0.9914. Also, most of the respondents 151(59.9%) agree that there is high responsiveness to changes in demand, 24(9.5%) strongly agree, 43(17.1%) neutral 25(9.9%) disagree while 9(3.6%) strongly disagree having a mean of 3.619 and a standard deviation of 0.9178. On the question of products never being damaged during delivery, the findings were as follows: 37(14.7%) strongly disagree, 122(48.4%) disagree, 41(16.3%) neutral, 40(15.9%) agree and 12(4.8%) strongly agree having a mean of 2.476 and a standard deviation of 1.073. Lastly, the responses about the cost of delivery were: A majority of 103(40.9%) agree, 8(3.2%) strongly agree that the costs of delivery are cheap 66(26.2%) neutral while 68(27%) disagree and 7(2.8%) strongly disagree being supported by a mean of 3.147 and a standard deviation of 0.948.

Table 4.10 Supply chain performance descriptive statistics

ITEMS		SD	D	N	A	SA	MEAN	σ
Products are delivered in the city within 24 hours.	F	18	35	57	115	27	3.3889	1.0784
	%	7.1	13.9	22.6	46.5	10.7		
There are no complaints of late deliveries.	F	23	110	64	47	8	2.6310	0.9914
	%	9.1	43.7	25.4	18.7	3.2		
There is high responsiveness to changes in demand.	F	9	25	43	151	24	3.6190	0.9178
	%	3.6	9.9	17.1	59.9	9.5		
Products have never been damaged during delivery.	F	37	122	41	40	12	2.4762	1.0728
	%	14.7	48.4	16.3	15.9	4.8		
The company delivery costs are cheap.	F	7	68	66	103	8	3.1468	0.9480
	%	2.8	27	26.2	40.9	3.2		
VALID N				252				

(Source: Researcher 2024)

4.7 Regression Assumptions

The study tested Normality, Auto correlation, Linearity, Homoscedasticity and multicollinearity.

4.7.1 Normality test

To test how normally distributed the data was histogram was used. The result is as shown in Figure 4.1 below.

The curve on the histogram is bell shaped having a residual value of between -3 and +3 at the x axis. A high frequency is seen at (y=35) and (x=0) which depicts a high mound on the distribution curve. From these observations, it can be said that the data is normally distributed.

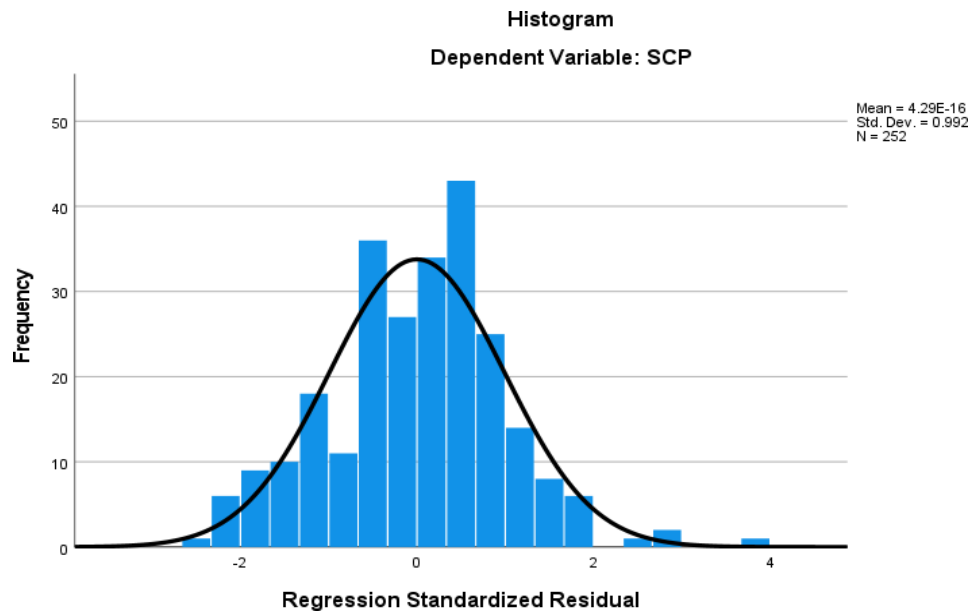


Figure 4.1: Histogram

(Source: Researcher 2024)

4.7.2 Linearity Test

Linearity test is done to estimate the relationship between dependent and independent variables (Osborne & Waters, 2018). Multiple-Linear Regression was performed to check the residual plots as shown in Figure 4.2.

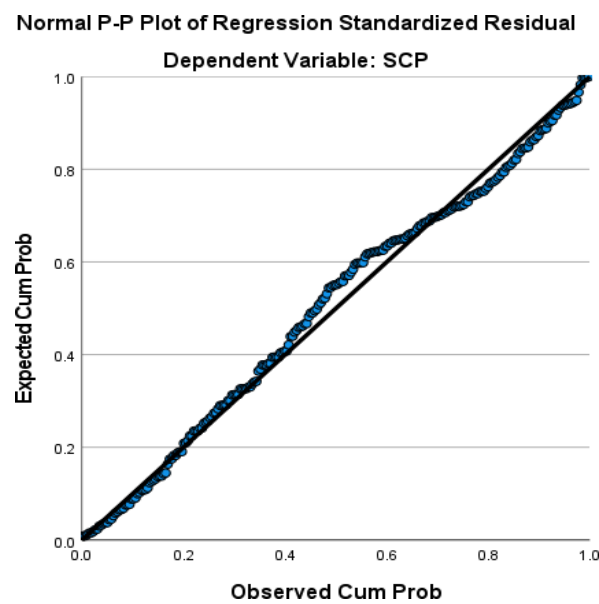


Figure 4.2: Normal P-P Plot

Source: Researcher 2024

4.7.3 Homoscedasticity Test.

Homoscedasticity means that the study will assume that errors are spread out consistently between the variables (Keith, 2019). A scatterplot was used to check for this assumption and the findings are as shown in figure 4.3. The standardized residual is concentrated at the center (around 0) and a rectangular shape is depicted hence confirming that the homoscedasticity assumption has been met.

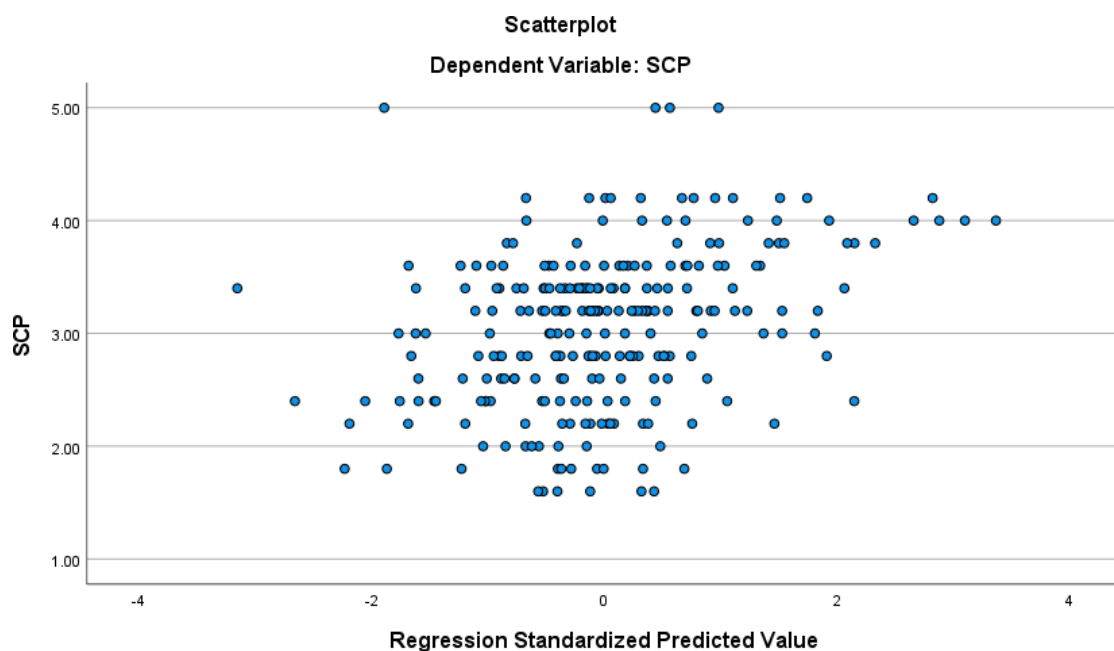


Figure 4.3. Scatter Plot

Source: Researcher 2024

4.7.4 Multicollinearity Test

This test was done to check whether independent variables are near linear combination of other independent variables. Tolerance and Variance Inflation Factor (VIF) statistics were used to carry out the diagnosis. When the VIF value is > 10 , there is a significant multi correlation of independent variables (Keith, 2019). The table 4.11 below shows both the tolerance and variance inflation factor for the following variables: Urban demand (tolerance=0.957, VIF=1.045) , Urban Freight Distribution(Tolerance=0.973, VIF=1.028) , Accessibility(Tolerance=0.939, VIF=1.065) and Logistics Management

systems(Tolerance=0.951,VIF = 1.052). All the tolerance values are >0.1 and VIF values are <10 implying that there is no multicollinearity.

Table 4.11: Multicollinearity Test

Variables	Collinearity statistics	
	Tolerance	VIF
Constant		
Urban Demand	0.957	1.045
Urban Freight Distribution	0.973	1.028
Accessibility	0.939	1.065
Logistics Management System	0.951	1.052

(Source: Researcher 2024)

4.8 Inferential Statistics

4.8.1 Correlation

Correlation was used to determine whether there exists a mutual relationship between variables. The findings of the study are as shown in table 4.12 below.

Correlation coefficient ranges between -1.00 and +1.00. A value of 0.00 means there is no relationship, -1.00 means there's a perfect negative correlation while a value of +1.00 signifies a perfect positive correlation (Cramer, 2016).

The findings show that urban demand is statistically significant and positively correlated to supply chain performance at ($r=0.216$, $p=0.000$). Urban freight distribution was also found to be statistically significant and positively correlated to supply chain performance at ($r=0.20$, $p=0.001$). Further, Accessibility and Logistics Management Systems were both found to be statistically significant and positively correlated with supply chain performance at ($r=0.161$, $p=0.010$) and ($r=0.164$, $p=0.009$) respectively.

The findings show that urban demand, urban freight distribution, accessibility and Logistics management systems all contribute to supply chain performance in the following respective percentages 21.6%, 16.1% and 16.4%.

Table 4.12 Correlation Results

	Supply Chain Performance	Urban Demand	Urban Freight Distribution	Accessibility	Logistics Management System
Urban Demand	0.160**	1			
Urban Freight Distribution	0.131**	0.055	1		
Accessibility	0.078**	0.032	0.216**	1	
Logistics Management System	0.216**	0.210**	0.161*	0.164**	1
Supply Chain performance	1	0.160**	0.131**	0.078**	0.216**

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

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

(Source: Researcher 2024)

4.9 Direct Effect Regression Results

4.9.1 Model Fit

The reliability test was done before running hierarchical regression. The cronbach's alpha analysis shows that urban demand =0.703, urban freight distribution = 0.797, accessibility=0.725, Logistics management systems=0.796 and supply chain performance=0.735. All the variables meet the threshold of $\alpha=0.7$. A multi linear regression analysis of 95% confidence level was employed. Table 4.13 below presents the findings of the analysis, and it shows that it has a good fit: $F(3,248) = 10.458$, $p < 0.001$, $R^2 = 0.112$ and $R^2 \text{ Change} = 0.112$. This implies that Urban Demand, Urban Freight Distribution and accessibility explains 11.2% improvement of Supply Chain Performance.

Table 4.13 Model fit findings

Model R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					
				R Square Change	F Change	df1	df2	Sig. F Change	
1	.335 ^a	.112	.102	.66285	.126	10.458	3	248	.000

(Source: Researcher 2024)

4.9.2 Analysis of Variance

Table 4.14 indicates the findings on analysis of variance. It indicates that the model is significant and the predictor variables (Urban Demand, Urban Freight Distribution and Accessibility) are good predictors of Supply Chain Performance. The findings give the values of $F=10.458$ and $P=0.000$, which is less than the significance level of $p=0.005$.

Table 4.14 ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	13.785	3	4.595	10.458	.000 ^b
	Residual	108.963	248	.439		
	Total	122.749	251			

a. Dependent Variable: SCP

b. Predictors: (Constant), A, UFD, UD

(Source: Researcher 2024)

4.9.3 Regression Coefficients

The regression coefficients on table 4.15 Shows that urban demand has a positive and a significant influence on supply chain performance ($\beta=0.218$, $p=0.000$) which shows that a unit increase in urban demand increases supply chain performance by 0.218 units. It was also found out that urban freight distribution has a significant positive influence on supply chain performance ($\beta=0.169$, $p=0.006$), a unit increase in urban freight distribution increases performance by 0.169 units. Finally, the regression coefficients of Accessibility indicate that it is both statistically significant and positively influencing Supply chain performance ($\beta=0.123$, $p=0.004$) increase in Accessibility by one-unit results in increased performance by 0.123 units. The implication of the findings is that

there is a positive significant relationship between urban logistics constructs and supply chain performance.

Table 4.15: Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1(Constant)	1.600	0.272		5.892	0.000
U D	0.212	0.059	0.218	3.566	0.000
U F	0.132	0.047	0.169	2.783	0.006
AS	0.115	0.056	0.123	2.045	0.042

(Source: Researcher 2024)

The regression model without the moderator is as follows:

$$SP = 1.600 + 0.218UD + 0.169 UF + 0.123AS$$

SP: Represent: Supply Chain Performance

UD: Represent: Urban Demand

UF: Represent: Urban Freight Distribution

AS: Represent: Accessibility

4.10 Moderation Effect Hierarchical Regression Results

The objective of the study was to establish the moderating effects of logistics management systems on urban logistics and supply chain performance for selected e-commerce firms in Nairobi. The summary of the findings is presented in table 4.16.

Findings of the study show that the interaction between logistics management systems and urban demand, urban freight distribution and accessibility resulted in positive beta coefficients. The table 4.16 also indicates that there were significant changes of R^2 all through the models as follows: model 1 $R^2=0.112(11.2\%)$, model2 $R^2=0.126(12.6\%)$, model 3 $R^2=0.127(12.7\%)$, model 4 $R^2=0.136(13.6\%)$ and model 5 $R^2=0.138(13.8\%)$.

This led to changes in the value of R^2 change in every model. The R^2 change in between model 1 and model 2 was 0.014(1.4%), between model 2 and model 3 was 0.001 (0.1%), between model 3 and model 4 was 0.008(0.8%) and between model 4 and 5 was 0.002(0.2%). There were also observations that the adjusted R^2 changed from one model to the other. In the first model Adjusted. $R^2=0.102$ (10.2%), in the second model Adjusted. $R^2=0.112$ (11.2%), in the third model Adjusted. $R^2=0.110$ (11%), in the fourth model Adjusted. $R^2=0.115$ (11.5%) and in the last model Adjusted. $R^2=0.113$ (11.3%). These changes show that logistics management systems have a positive impact on the model in general.

4.11 Hypothesis testing

Hypothesis was tested by use of regression analysis whereby a decision on whether to accept or reject the null was determined by the p values of the variables. If p-value is less than 0.05, the null hypothesis is rejected and if p-value is more than 0.05 the null hypothesis is accepted. The findings from the study are discussed below.

The first objective of the study was to determine the effect of urban demand on supply chain performance for selected e-commerce firms within Nairobi. This was based on the null hypothesis as shown below.

H_{01} : There is no significant relationship between urban demand and supply chain performance for selected e-commerce firms in Nairobi. The analysis shows that Urban Demand had a positive effect on Supply Chain Performance ($\beta=0.218$, $t=3.566$, $p=0.001$). Hence the null hypothesis was rejected.

The second objective of the study was to assess the effect of urban freight distribution on supply chain performance for selected e-commerce firms in Nairobi. The null hypothesis was that :

H₀₂: There is no significant relationship between urban freight distribution and supply chain performance for selected e-commerce firms in Nairobi. From the analysis, Urban Freight Distribution had a positive effect on Supply Chain Performance ($\beta=0.169$, $t=2.783$, $p=0.006$) which is contrary to what was hypothesized therefore rejecting the null hypothesis.

The third objective was to evaluate the effect of accessibility on supply chain performance for selected e-commerce firms in Nairobi. The tested hypothesis was:

H₀₃: There is no significant relationship between accessibility and supply chain performance for selected e-commerce firms in Nairobi. The study findings show a positive influence of accessibility on supply chain performance at ($\beta=0.123$, $t=2.045$, $p=0.042$). The null hypothesis was rejected.

The last objective of the study was to establish the moderating effects of logistics management systems on urban logistics and supply chain performance for selected e-commerce firms in Nairobi. The coefficient of determination (R^2) from the regression analysis was used to test the hypothesis. The increase in the value of R^2 after the interaction of the moderating variable with the independent variables indicates that there is a moderation effect. The null hypothesis was:

H₀₄: There is no significant relationship between the moderating effects of logistics management systems on urban logistics and supply chain performance for selected e-commerce firms within Nairobi. From the analysis (Table 4.16), it can be seen that the value of R^2 increases in all the models: Model 1 $R^2=0.112(11.2\%)$, Model 2 $R^2=0.126(12.6\%)$, Model 3 $R^2=0.127(12.7\%)$, Model 4 $R^2=0.136(13.6\%)$ and Model 5 $R^2=0.138(13.8\%)$. This means that Logistics Management Systems moderates the

relationship between Urban Logistics and Supply Chain Performance of e-commerce firms in Nairobi.

H_{O4a}: There is no moderating effect of logistics management systems on the relationship between urban demand and supply chain performance for selected e-commerce firms in Nairobi.

H_{O4b}: There is no moderating effect of logistics management systems on the relationship between urban freight distribution and supply chain performance for selected e-commerce firms in Nairobi.

H_{O4c}: There is no moderating effect of logistics management systems on the relationship between accessibility and supply chain performance for selected e-commerce firms in Nairobi

Table 4.16 Moderation Results

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
	β	β	β	β	β
Constant	1.60**	1.36**	1.37**	1.402**	1.40**
UD	0.22**	0.21**	0.21**	0.21**	0.21**
UFD	0.17*	0.17*	0.17*	0.18*	0.18*
AS	0.12*	0.10	0.10	0.08	0.08
LMS		0.12*	0.12*	0.12	0.12*
UD*LMS			0.04**	0.02**	0.03**
UF*LMS				0.10**	0.10**
AS*LMS					0.04**
R ²	0.112	0.126	0.127	0.136	0.138
ΔR^2	-	0.014	0.001	0.011	0.002
Sig	p<0.05	p<0.05	p<0.05	p<0.05	p<0.05
F	10.45	8.90	7.19	6.42	5.57

UD: Urban Demand, UFD: Urban Freight Distribution, AS: Accessibility, LMS: Logistics Management System

(Source: Researcher 2024)

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter gives a summary of the findings in chapter four as per the data analysis. Further, give conclusions on the findings, recommendations and suggestions for further studies.

5.2 Discussion of the Study Findings

The research was aimed at establishing how logistics management systems moderate the relationship between urban logistics and the supply chain performance of e-commerce firms. The results indicated that urban demand, urban freight distribution, and accessibility are enough to explain the variation in supply chain performance. The coefficient of determination $R^2=0.112$ shows that urban demand, urban freight distribution, and accessibility explain a variation of 11.2% in the supply chain performance of e-commerce firms.

The first objective was to determine the effect of urban demand on supply chain performance for selected e-commerce firms. The regression results showed that urban demand has a positive and significant influence on supply chain performance ($\beta=0.218$, $p=0.000$). The null hypothesis was rejected since urban demand has a significant influence on the supply chain performance of e-commerce firms. This agrees with the sentiments of Deng, Wang, Cai, Liu, and Zhang (2020) and Alexandro and Basrowi (2024) that urban household consumption is significant in determining supply chains.

The second objective was to assess the effect of urban freight distribution on the supply chain performance of selected e-commerce firms. The regression results found that urban freight distribution has a positive and significant influence on supply chain

performance ($\beta=0.169$, $p=0.006$). The study concurs with the findings of Allen et al. (2018) which indicated that appropriate urban freight consolidation increases supply chain performance.

The third objective was to evaluate the effect of accessibility on the supply chain performance of selected e-commerce firms. Regression coefficients of Accessibility indicated that it is both statistically significant and positively influences Supply chain performance ($\beta=0.123$, $p=0.042$) implying that there is a positive and significant effect of urban logistics construct on supply chain performance. This study agrees with Taniguchi and Thompson (2018) which showed that better accessibility leads to improved logistics efficiency.

The fourth objective of the study was to establish the moderating effects of logistics management systems on the relationships between urban logistics constructs and supply chain performance for selected e-commerce firms. The interaction models were fit, the change in R^2 was evident, the beta coefficients were non-zero and the interaction p-values were significant. These interactions between logistics management systems and; urban demand, urban freight distribution, and accessibility were evident in enhancing moderating effects. The study concurs with Gu et al. (2010) who determined that the link between logistics management and business performance was moderated by the logistics management system and Winkelhaus and Grosse (2020) also underscores the relevance of Logistics Management System in achieving efficient business operations.

5.3 Summary of Findings

Objective	Hypothesis	Tetst Statistics	Decision Rule	Decision	Concurring Studies
#1	HO ₁ : There is no significant relationship between urban demand and supply chain performance for e-commerce firms within Nairobi	$\beta=0.218$ $P=0.000$ $t=3.566$	$\beta > 0$ $P < 0.05$ $t\text{-value} > 1.96$	Reject H ₀	Urban household consumption affects supply chains (Zhang et.al ,2020)
#2	HO ₂ : There is no significant relationship between urban freight distribution and supply chain performance for e-commerce firms within Nairobi.	$\beta=0.169$ $P=0.006$ $t=2.783$	$\beta > 0$ $P < 0.05$ $t\text{-value} > 1.96$	Reject H ₀	Urban freight consolidation increases supply chain performance (Allen et al. ,2018).
#3	HO ₃ : There is no significant relationship between accessibility and supply chain performance for e-commerce firms within Nairobi.	$\beta=0.123$ $P=0.042$ $t=2.045$	$\beta > 0$ $P < 0.05$ $t\text{-value} > 1.96$	Reject H ₀	Accessibility improves logistics efficiency (Taniguchiet.al.,2018).
#4	HO ₄ : There is no significant relationship between the moderating effects of logistics management systems on urban logistics and supply chain performance for e-commerce firms within Nairobi.	$\beta=0.04$ $P=0.000$ $F= 5.57$ $R^2=0.138$	$\beta > 0$ $P < 0.05$ $F\text{-value} > 1.96$ $0 \geq R^2 \leq 1$	Reject H ₀	relevance of LMS in achieving efficient business operations (Grosse et.al., 2020).

5.4 Conclusion

Based on the findings, it was concluded that urban demand and performance are positively and significantly related. This includes putting into consideration product stock levels to avoid stock out due to high demand, understanding the business environment and cultural practices, establishing product promotion techniques that will increase sales, frequent forecasting to meet demand levels and proper timings as well

as establishing close relationships with customers. Improving urban demand by one unit leads to an improvement in performance by 0.218 units with all other factors held constant.

The study further concludes that urban freight distribution and performance are positively and significantly related. Better urban freight distribution can be determined by establishing route maps to avoid traffic, establishing distances to be covered during delivery, avoiding restricted zones when loading or offloading, determining the best time to do the delivery and using suitable vehicles for the type of freight. The study findings showed that improving urban freight distribution by one unit improves performance by 0.169 units.

Accessibility was also found to be both positive and significantly related to performance and an improvement of accessibility by one unit leads to improvement of performance by 0.123 units. Such includes making the information on the website easy to read and understand, using suitable trucks for various terrains, establishing good internet connection to ease communication, reducing transportation cost and improving the state of roads to ease access.

It is concluded that logistics management system moderates the relationship between urban logistics and performance of ecommerce firms in Nairobi. From the study findings, it was seen that the coefficient of determination R^2 increased in all models. In the first model $R^2=11.2\%$, second model $R^2=12.6\%$, third model $R^2=12.7\%$, fourth model $R^2=13.6\%$ and in the last model $R^2=13.8\%$. Adoption of logistics management systems will lead to accuracy in order processing, delivery of products will be monitored in real-time by both the customer and the firm, it provides a transparent platform for all the stakeholders leading to accountability, establishment of a proper

working returns system allows customers to return faulty products and strong collaborations are established with suppliers.

5.5 Recommendations

5.5.1 Policy and Practice

The study findings indicated that urban demand, urban freight distribution and accessibility have a positive and significant relation to performance. Logistics management systems were also found to moderate the interaction of the variables mentioned with performance. Therefore, the study recommends that government and other policy makers should champion for the adoption of logistics management systems to improve performance. Every organization should focus on urban demand, urban freight distribution and accessibility. It is recommended that firms should always utilize forecasting to determine the levels of stock to be kept meeting different levels of demand in different seasons and be able to determine the best timing for their products.

The study further recommends that managers should focus on distribution times, distances to be covered and the routes to be taken during delivery through establishing route maps and time schedules avoid delays during delivery due to bad timings like lots of traffic during pick hours. For those purely offering services online, the study recommends that proper connectivity be established as well as having websites that can be easily accessible and understood by anyone to allow for better communication and smooth processes.

Similarly, the study recommends that organizations should strive to uphold good customer relations through being responsive to their needs and always being reliable. Good relationships with customers will lead to loyalty which fosters long-term retention

of the customer. It is also recommended that organizations should promote supplier collaborations to benefit from increased quality and competitiveness.

Lastly, the study recommends the adoption of logistics management systems to allow for accuracy, real-time monitoring of products, and easy return of faulty products to the supplier and seamless flow of processes. All this is due to having happy customers and increased sales, which is the goal of every firm.

5.5.2 Theory Implications

The findings of the study showed that urban logistics and performance are positively and significantly related. The study therefore confirms institutional theory, transaction cost theory and resource-based view (RBV) theory. Institutional theory argues that the extent to which institutional pressures influence supply chain performance depends on the organization's internal characteristics, such as its culture, structure, and resources. Organizations that are more flexible and adaptable may be better able to respond to institutional pressures and improve their supply chain performance. Transaction cost theory provides a useful framework for understanding the decision-making process involved in organizing logistics activities in urban areas. By considering the costs and benefits of different options, firms can make informed decisions about how to best manage their logistics activities to achieve their goals. Resource-Based View (RBV) theory provides a useful framework for understanding the role of resources and capabilities in achieving competitive advantage in logistics management systems. By leveraging their unique resources and capabilities, firms can develop logistics management systems that are more effective, efficient, and responsive to customer needs. This will eventually lead to improved quality, reduced costs and increased profits.

5.5.3 Suggestions for Further Studies

The study aimed to establish the moderating effects of logistics management systems on the relationship between urban logistics and performance among ecommerce firms in Nairobi. The study recommends that further studies be done on firms other than ecommerce firms and other variables affecting performance apart from those in the study can be examined. Further it is recommended that studies be carried out in other sectors other than Agriculture, Tourism, Transport, ICT and Healthcare. This will allow for a diverse view of factors affecting supply chain performance, hence better decisions will be made.

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APPENDICES

Appendix I: Questionnaire

Dear Respondent,

I am a Masters Student at Moi University and conducting a study on **EFFECTS OF LOGISTICS MANAGEMENT SYSTEMS ON SUPPLY CHAIN PERFORMANCE AMONG SELECTED E-COMMERCE FIRMS IN NAIROBI.**

You have been selected as one of the respondents for this study. Kindly complete this questionnaire as honestly and precisely as possible to assist me get data. The information given is purely intended for academic purposes and will be treated with utmost confidentiality. Your participation is entirely voluntary and the questionnaire is completely anonymous. Your contribution in facilitating this study will be highly appreciated.

Thank you.

Part A: Background Information

1. How long has your company been in operation?

1. Under 5 years [] 2. 5 - 10 years [] 3. 10-15 years [] 4. 15-20years []
5. Over 20 years []

2. What sector does your company operate in?

1. Agriculture [] 2. Tourism [] 3. Transport [] 4. ICT []
5. Healthcare []

3. Kindly indicate the industry your company operates in.

1. Manufacturing [] 2. Wholesale [] 3. Retail [] 4. Shipping []
5. Service []

4. What is the size of your company?

1. Micro [] 2. Small [] 3. Medium [] 4. Large [] 5. Macro []

5. How many employees does your company have?

1. Below 10 [] 2. 10-50 [] 3. 50-150 [] 4. 150-250 []
5. Above 250 []

Section B: Urban Demand

6. The following are statements on urban demand, to what extent do you agree with the following statements related to urban demand using the scale;

1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree

Urban Demand	1	2	3	4	5
1 Stock outs have never occurred due to high demand for products.					
2 Culture has never affected demand for products					
3 Advertising is the major cause of increase in demand.					
4 Demand forecasting is done annually					
5 Close customer relations have been established.					

Section C: Urban Freight Distribution

7. The following are statements on urban freight distribution, to what extent do you agree with the following statements related to urban freight distribution using the scale;

1 = Strongly Disagree 2 =Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree

Urban Freight Distribution	1	2	3	4	5
1 Deliveries are never delayed due to traffic					
2 Distance covered to deliver products does not affect reliability of delivery					
3 Restricted zones in the city do not affect loading/offloading					
4 Distribution vehicles suit the nature of freight.					
5 There is easy access to the airport					

Section D: Accessibility

8. The following are statements on accessibility, to what extent do you agree with the following statements related to accessibility using the scale.

1 = Strongly Disagree 2 =Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree

Accessibility	1	2	3	4	5
1 Information on company websites is easy to read and understand.					
2 Delivery truck drivers use already established route maps.					
3 Freight trucks are suitable for different terrains in the city					
4 Communication is easy due to the availability of internet					

connectivity					
5 Transport costs have reduced because of easy access to destinations					

Section E: Logistics management system

9. The following are statements on logistics information system, to what extent do you agree with the following statements related to logistics management system using the scale.

1 = Strongly Disagree 2 =Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree

Logistics management system	1	2	3	4	5
1 Order processing is accurate and reliable					
2 Product delivery is monitored in real-time					
3 There's a transparent network for suppliers and customers					
4 There's a system for customers to return faulty products					
5 There are strong collaborations with suppliers					

Section F: Supply Chain Performance

10. The following are statements on supply chain performance, to what extent do you agree with the following statements related to supply chain performance using the scale.

1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree

Supply Chain Performance	1	2	3	4	5
1 Products are delivered in the city within 24 hours					
2 There are no complaints of late deliveries					
3 There is high responsiveness to changes in demand					
4 Products have never been damaged during delivery					
5 The company delivery costs are cheap					

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Awarded by

Prof. Anne Syomwene Kisilu
CERM-ESA Project Leader Date: 04/04/2024

Appendix IV: Introductory Letter



**MOI UNIVERSITY
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RE: MU/SBE/PGR/ACD/21B

DATE: 20th July, 2023

TO WHOM IT MAY CONCERN:

RE: NAOMIE KEMEI -MLS/5776/21

The above named is a bonafide student of Moi University School of Business and Economics, undertaking Master of Science in Logistics and Supplies Management.

She has successfully completed the coursework, defended her proposal, and is proceeding to the field to collect data for her research titled: *"Effects of Logistics Management Systems on Supply Chain Performance Among Selected Firms in Nairobi."*

Any assistance accorded to her will be highly appreciated.

Yours faithfully,

SCHOOL OF BUSINESS &
ECONOMICS
MOI UNIVERSITY
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DR. RONALD BONUKE
POSTGRADUATE CHAIR, SB&E

/vc