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INFLUENCE OF LAST-MILE DELIVERY STRATEGIES ON THE PERFORMANCE OF E-COMMERCE COMPANIES IN NAIROBI COUNTY, KENYA

LUCY NJOKI WANJIRU

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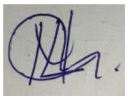
A DISSERTATION SUBMITTED TO THE SCHOOL OF BUSINESS AND LEADERSHIP STUDIES IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF BUSINESS ADMINISTRATION (PROCUREMENT AND SUPPLY CHAIN MANAGEMENT) OF ST. PAUL'S UNIVERSITY

OCTOBER, 2026

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DECLARATION

This dissertation is my original work and has not been presented for examination in any other Institute or university.

Signature:  Date: 16th October, 2026

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Declaration by the Supervisors

We confirm that the work reported in this dissertation was carried out by the student under our supervision.

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Second Supervisor

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DEDICATION

This work is dedicated to my son Keegan Waweru, mother Esther Waweru, and brother Trevor Waweru for their continuous encouragement, sacrifice, and support that have kept me going throughout my entire academic career.

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ACRONYMS AND ABBREVIATIONS

ANOVA	Analysis of Variance
KES	Kenya Shillings
NACOSTI	National Commission for Science, Technology and Innovation
SERVQUAL	Service Quality Model
SPSS	Statistical Package for Social Sciences
USD	United States Dollar

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OPERATIONAL DEFINITION OF TERMS

Delivery coverage capacity strategy The capability of an e-commerce company to offer delivery services across a wide geographic area, including both easily accessible and hard-to-reach locations. In this study it was measured using indicators on the range of customer locations served, availability of delivery services in most customer areas, ability to serve hard-to-reach locations, consistency of delivery availability across geographic areas, presence in both central and peripheral areas, and accessibility of delivery services to customers in different locations.

Delivery performance strategy The effectiveness with which an e-commerce company executes its delivery operations in terms of timeliness and reliability. In this study, it was measured using indicators on delivery within the expected time frame, consistency in meeting promised delivery dates, rarity of delivery delays, efficiency of order dispatch, promptness of delivery after order confirmation, and realism of the delivery timelines communicated to customers.

E-commerce company A firm licensed to trade in Nairobi County whose principal business is the sale of goods to

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customers through an online platform (website or mobile application), with the goods physically delivered to the customer. In this study, the term covers marketplace platforms, direct online retailers and niche online retailers as listed in Appendix III.

Flexible parcel delivery services strategy The capability of an e-commerce company to provide adaptable delivery options that accommodate varying customer needs and preferences. In this study, it was measured using indicators on the availability of multiple delivery time options, ease of rescheduling deliveries, availability of alternative delivery locations, adjustment of delivery services to customer preferences, provision of flexible solutions when initial delivery attempts fail, and sufficiency of customer choice on where parcels are received.

Last-mile delivery strategies The operational approaches adopted by e-commerce companies to move parcels from the distribution centre or local hub to the final customer effectively. In this study, the construct comprised four strategies, namely delivery performance strategy, delivery coverage capacity strategy, flexible parcel delivery services strategy and parcel tracking systems.

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Parcel tracking systems	Digital tools that provide real-time visibility of parcel movement and delivery status updates to the company and its customers. In this study, they were measured using indicators on real-time tracking, accuracy of delivery status information, timeliness of notifications, ease of use of the tracking platform, reduction of customer uncertainty, and regularity of tracking updates until delivery.
Performance	The extent to which an e-commerce company achieves its delivery-related operational outcomes. In this study, performance is the dependent variable and was measured using three indicators, namely operational cost efficiency, delivery timeliness and order fulfilment rate. The single term "performance" is used consistently throughout this study to refer to this variable.

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ABSTRACT

Last-mile delivery has become a decisive determinant of performance as e-commerce grows in Nairobi County, Kenya. Challenges related to delivery performance, delivery coverage capacity, flexible delivery services and parcel tracking systems continue to influence delivery costs, delivery timeliness and order fulfilment across e-commerce platforms. This study sought to establish the influence of last-mile delivery strategies on the performance of e-commerce companies in Nairobi County, where performance was narrowed to operational cost efficiency, delivery timeliness and order fulfilment rate. The specific objectives were to determine the influence of delivery performance strategy, delivery coverage capacity strategy, flexible parcel delivery services strategy and parcel tracking systems on performance. The study was underpinned by the service quality model, transaction cost theory and expectation confirmation theory. A descriptive cross-sectional survey design was adopted, with a census of all 61 e-commerce companies licensed in Nairobi County. Three respondents were targeted from every company, namely the operations manager, the delivery coordinator and the customer service manager, giving a total of 183 respondents, of whom 151 (82.5%) responded. A structured questionnaire with five-point Likert-type items was used to collect data. A pilot study was undertaken before the main survey in order to establish the reliability and validity of the instrument: internal consistency was tested using Cronbach's alpha, and all constructs exceeded the 0.70 threshold (0.713 to 0.813), while content validity was established through expert review by the supervisors and logistics practitioners. Data were analysed using descriptive statistics (means and standard deviations) and inferential statistics (Pearson correlation and multiple linear regression) with the aid of the Statistical Package for Social Sciences. Ethical standards, including informed consent, confidentiality and a research licence from the National Commission for Science, Technology and Innovation, were observed. The four strategies jointly explained 65.4% of the variation in performance ($R^2 = 0.654$, $F = 68.851$, $p < 0.001$), and each strategy had a positive and statistically significant influence on performance. On the basis of the standardised coefficients, delivery coverage capacity strategy had the greatest influence ($\beta = 0.297$), followed by parcel tracking systems ($\beta = 0.278$), flexible parcel delivery services strategy ($\beta = 0.230$) and delivery performance strategy ($\beta = 0.216$). The study concluded that broader delivery networks, effective tracking technologies, flexible delivery arrangements and dependable delivery execution enhance operational cost efficiency, delivery timeliness and order fulfilment among e-commerce companies. The study recommends that the management of e-commerce companies expand delivery coverage, invest in reliable tracking technologies, widen delivery options and strengthen delivery execution, that policymakers and regulators support logistics, addressing and ICT infrastructure, and that researchers extend the model to other counties and to moderating and mediating variables.

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CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The rapid expansion of e-commerce has transformed business operations across the world, with digital capabilities and platform-based models changing how companies compete and grow. Nasir and Wen (2026) show that firms which combine big data analytics with digital platforms are able to run more advanced operations and expand their market share, while Hao et al. (2026) find that digital infrastructure and platform connectivity raise productivity within e-commerce ecosystems. Large platform ecosystems such as Alibaba illustrate how digital integration increases efficiency, coordination and competitive advantage (Rahman, 2024). Despite these technological advances, the performance of many e-commerce companies remains uneven. Last-mile delivery problems, rising logistics costs, inconsistent service and failed deliveries erode profitability and competitive advantage. Because delivery is the final and most visible stage of the value chain, weaknesses at this stage directly affect cost efficiency, delivery timeliness, order fulfilment and customer retention (Yang et al., 2024).

The management of last-mile delivery has therefore become an important operational area in e-commerce in terms of cost, service and performance. According to Ganesh et al. (2024), delivering at the right time, handling products correctly, providing real-time tracking and communicating effectively during delivery are the main elements of successful order fulfilment. When these elements are poorly managed, firms incur higher operational costs, more returns, more customer complaints and reputational risk. Conversely, in dynamic markets, companies with better delivery reliability and coordination are more competitive (Obara et al., 2025). Digital technologies and e-

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commerce systems are also reported to improve logistics coordination and network efficiency (Nasir & Wen, 2026), and modern e-commerce ecosystems must have sound logistics and fulfilment strategies to remain competitive (Rahman, 2024).

Globally, several trends now shape last-mile delivery. Mangiaracina et al. (2019) document the spread of innovative solutions such as parcel lockers, collection and delivery points, crowd-sourced delivery and dynamic route optimisation, while Islam et al. (2024) describe the growing use of artificial intelligence for intelligent routing, demand forecasting and automated delivery coordination. Lim and Choo (2026) further observe that leading retailers now combine in-house and outsourced delivery fleets in plural governance structures in order to widen coverage while controlling cost. Leading global firms illustrate how these strategies are tied to performance. Amazon, established in 1994 in the United States, continues to face rising logistics costs and ever-shorter delivery-speed expectations despite its extensive fulfilment network (Mangiaracina et al., 2019). Alibaba Group, established in 1999 and operating Taobao and Tmall, confronts delivery congestion and coordination complexity within very large distribution networks (Rahman, 2024), while JD.com, founded in 1998 and operating a direct-sales model, is under sustained pressure to maintain delivery reliability and cost efficiency. Saha and Sarma (2026) note that across such markets, delivery performance, delivery coverage, flexible delivery arrangements and parcel tracking have become central to how e-commerce firms perform.

Regionally, e-commerce in Africa has grown through platforms such as Jumia, founded in 2012 in Nigeria and operating across several African countries in electronics, fashion, groceries and household goods (Odo et al., 2024); Takealot, established in 2011 in South Africa in electronics, books and general merchandise (Kafile & Mbhele, 2023); and Konga, founded in 2012 in Nigeria in consumer electronics and lifestyle goods

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(Ayantoyinbo & Oyewale, 2025). More recently, cross-border entrants such as Temu and Shein have intensified competition by offering low-cost goods through cross-border fulfilment models. The regional trends in last-mile delivery include the use of Internet of Things devices and mobile applications to track parcels (Kafile & Mbhele, 2023), reliance on motorcycle couriers and agent networks to reach customers without formal addresses, and the growth of pick-up stations and collection points (Bharadwaj, 2025). Even so, Hao et al. (2026) observe that many African e-commerce firms face high delivery costs, infrastructure gaps, inconsistent parcel reliability and limited tracking integration, all of which constrain performance in increasingly competitive regional markets.

Locally, e-commerce platforms in Kenya illustrate how last-mile delivery strategies influence performance. Jiji Kenya, established in 2014, operates a marketplace connecting buyers and sellers in electronics, vehicles, property and household goods and relies largely on delivery partnerships to sustain operational efficiency (Mogire et al., 2023). MyDawa, established in 2017, specialises in pharmaceutical and healthcare products, where timely and reliable delivery is critical to performance and customer retention (Caberoy et al., 2025). Copia, launched in 2013, serves peri-urban and rural consumers with household goods through agent-based distribution networks and faces coverage and cost-control challenges, while Avechi, established in 2017, retails electronics and appliances where delivery speed and product safety directly affect costs and competitiveness (Kimondio & Tumuti, 2024). Jumia Kenya and Kilimall, which operate nationwide in fashion, electronics, and general merchandise, continue to face delivery delays, high fulfilment costs, and tracking inefficiencies. The local last-mile trends include the dominance of boda boda (motorcycle) riders and third-party courier partners, the adoption of pick-up stations in shopping centres and petrol stations, the integration of mobile-money payment on delivery, and the gradual roll-out of real-time

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tracking and customer notification systems (Obara et al., 2025). Across these firms, variations in delivery speed and reliability, delivery coverage, flexible service options and tracking systems are closely linked to cost efficiency, delivery timeliness and order fulfilment.

In spite of technological change, unresolved challenges continue to impede performance among e-commerce companies in Nairobi, including high operating costs, traffic congestion, incorrect or informal addresses and unreliable courier partners (Obara et al., 2025). These challenges affect delivery time, accuracy and reliability, while high delivery charges reduce repeat purchases and perceived value, especially among price-sensitive customers (Caberoy et al., 2025). Saha and Sarma (2026) show that poor delivery practices damage customer perceptions, loyalty, and confidence, particularly in Nairobi, where intense e-commerce competition makes effective last-mile delivery more important. Although delivery efficiency is recognised as a major determinant of performance in Kenya, scientific evidence on the effectiveness of specific last-mile strategies remains scanty (Suguna et al., 2021). Kimondio and Tumuti (2024), for instance, suggest that tracking systems and crowd-shipping technologies may enhance delivery performance in urban settings with logistical constraints, while firms that adopt dedicated delivery staff, proper communication, and customer-oriented systems are more likely to perform well. This study therefore sought to establish the role of last-mile delivery strategies in the performance of e-commerce companies in Nairobi County, Kenya, so as to provide evidence that can inform decisions on sustainable business growth.

1.1.1 Last-Mile Delivery Strategies

Last-mile delivery denotes the final stage of the logistics process in which products are transported from distribution centres or local hubs to the end customer. It is a critical link

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in supply chain operations because it determines how efficiently, accurately and reliably products reach their destinations (Suguna et al., 2021). From a strategic perspective, last-mile delivery encompasses the operational approaches and logistics systems organisations adopt to ensure timely and effective order fulfilment. As Choudhary et al. (2025) note, effective last-mile delivery strategies enhance coordination and responsiveness within distribution networks, making them a key determinant of performance in e-commerce environments.

Prior studies have operationalised last-mile delivery strategies using different measurable dimensions. Ganesh et al. (2024) and Nikzadask et al. (2026) emphasise fulfilment time and delivery timeliness; Lim and Choo (2026) and Li and Gan (2025) emphasise the breadth and reach of the delivery network; Obara et al. (2025) and Caberoy et al. (2025) emphasise flexible and customer-responsive delivery arrangements; while Betrand et al. (2024) and Scorohodov (2026) emphasise real-time parcel tracking. Drawing on this literature, the researcher developed an operationalisation of last-mile delivery strategies comprising four dimensions: delivery performance strategy, delivery coverage capacity strategy, flexible parcel delivery services strategy and parcel tracking systems. The four dimensions are therefore not adopted from a single source but were adapted by the researcher from the respective studies cited above.

In this study, delivery performance strategy was measured by delivery within the expected time frame, consistency in meeting promised delivery dates, rarity of delays, efficiency of order dispatch, promptness of delivery after order confirmation and realism of communicated timelines (Ganesh et al., 2024; Nikzadask et al., 2026). Delivery coverage capacity strategy was measured by the range of customer locations served, availability of delivery in most customer areas, ability to serve hard-to-reach locations, consistency of availability across geographic areas, presence in both central and

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peripheral areas and accessibility of delivery to customers in different locations (Lim & Choo, 2026; Li & Gan, 2025). Flexible parcel delivery services strategy was measured by the availability of multiple delivery time options, ease of rescheduling, availability of alternative delivery locations, adjustment of delivery to customer preferences, flexible solutions after failed attempts and sufficiency of customer choice on where parcels are received (Obara et al., 2025; Caberoy et al., 2025). Parcel tracking systems were measured by real-time tracking, accuracy of delivery status information, timeliness of notifications, ease of use of the tracking platform, reduction of customer uncertainty and regularity of updates until delivery (Betrand et al., 2024; Scorohodov, 2026). These indicators align directly with the items in the questionnaire (Appendix II).

1.1.2 Performance

Performance refers to a company's ability to achieve its operational and strategic goals by using resources and effectively executing processes. It is usually assessed using specific metrics that show how well an organisation manages its activities, coordinates operations and delivers results. In technology-driven environments, Nasir and Wen (2026) argue that systems integration, process design, and consistent service delivery shape performance. Hao et al. (2026) examined performance using cost control, operational effectiveness and process efficiency, while Rahman (2024) stresses that good performance depends on resource utilisation, coordination and continual improvement of operational systems. Performance can also be evaluated more broadly through revenue growth, customer retention, market share, and platform scalability (Rahman, 2024; Nasir & Wen, 2026); however, these financial and market measures are influenced by many factors beyond delivery and were therefore outside the scope of this study.

Because the term performance is broad, this study narrowed it from the outset to the delivery-related operational outcomes that last-mile delivery strategies can be expected to

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influence directly. Operational cost efficiency has become an imperative element of performance as logistics and fulfilment costs rise in competitive markets. Saha and Sarma (2026) show that poor courier service delivery significantly increases operational costs, especially in periods of high demand and instability; Foo and Cheah (2026) find that inconsistent delivery and poor coordination raise service costs and lower efficiency in the courier sector; and Bharadwaj (2025) reports that weak collection and delivery systems raise distribution costs in e-commerce logistics networks. Delivery timeliness and order fulfilment rate are, likewise, the outcomes most immediately affected by the way deliveries are executed (Yang et al., 2024).

Accordingly, this study measured performance using three indicators. Operational cost efficiency was measured by the firm's ability to reduce delivery-related operational costs over time and organise delivery operations to minimise operational expenses. Delivery timeliness was measured by completion of deliveries within planned schedules and effective minimisation of delays. Order fulfilment rate was measured by the accuracy of delivered orders and the proportion of orders completed without corrections. These indicators were developed by the researcher from the cost-efficiency, timeliness and fulfilment measures discussed above (Hao et al., 2026; Yang et al., 2024; Saha & Sarma, 2026), and the single term "performance" is used throughout the study to refer to this dependent variable.

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1.1.3 E-Commerce Companies in Nairobi County

Nairobi County hosts the largest concentration of e-commerce activity in Kenya. The Communications Authority of Kenya (2026) reports 62.6 million mobile data subscriptions in the country as at March 2026, and Research and Markets (2026) estimates the value of Kenya's business-to-consumer e-commerce market at USD 2.61 billion in 2025, growing at about 10 % a year. A substantial share of this activity is

generated and fulfilled in Nairobi, the commercial capital, the main logistics hub, and the location of most e-commerce head offices and warehouses. This study defined an e-commerce company as a firm licensed to trade in Nairobi County whose principal business is the sale of goods to customers through a website or mobile application, with the goods physically delivered to the customer. Using this definition, we identified 61 e-commerce companies from the Nairobi City County Government's business licensing and permit records (2025), which require every enterprise to register and specify its nature of business when acquiring a trade permit. The 61 companies are listed in Appendix III.

The 61 companies can be classified into three broad categories according to their business models. The first category comprises marketplace platforms that host third-party sellers and coordinate delivery on their behalf, such as Jumia Kenya, Kilimall, Jiji Kenya, Sky Garden, PigiaMe and Mybigorder. The second category comprises direct online retailers that sell their own stock through their own platforms, such as Avechi, Phone Place Kenya, Naivas Online, Carrefour Kenya Online, Quickmart Online and Jamboshop. The third category comprises niche online retailers that serve specific product segments, such as MyDawa in pharmaceuticals, Twiga Foods and Wasoko in fresh produce and fast-moving consumer goods, Copia in household goods for peri-urban and rural households, Kasha in health and personal-care products, Lapaire in eyewear and Buupass in travel tickets. Across the three categories, the companies deal in general merchandise, electronics, pharmaceuticals, groceries, fashion and agricultural products, and all of them depend on physical delivery of parcels to the customer, either through in-house riders or through contracted courier companies.

E-commerce companies in Kenya operate within an established regulatory framework. The Kenya Information and Communications Act (Cap. 411A) provides for electronic transactions and empowers the Communications Authority of Kenya to license and

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regulate courier and postal operators, including the third-party couriers which most e-commerce companies rely on (Republic of Kenya, 1998). The Consumer Protection Act, 2012 governs distance and internet sales and gives consumers the right to accurate information, delivery within the agreed time and remedies for non-delivery (Republic of Kenya, 2012). The Data Protection Act, 2019 regulates the collection and processing of the personal and location data that e-commerce and tracking systems handle (Republic of Kenya, 2019). At the county level, the Nairobi City County Government licenses all trading enterprises and issues the single business permits from which the population of this study was drawn (Nairobi City County Government, 2025). Given the diversity of business models and the common dependence on physical delivery, the e-commerce companies in Nairobi County provided an appropriate context in which to examine how last-mile delivery strategies influence performance.

1.2 Statement of the Problem

E-commerce companies in Nairobi County are expected to deliver orders at low cost, on time and accurately, yet available evidence shows that their performance on these three outcomes remains unsatisfactory. Demand has grown rapidly: mobile data subscriptions in Kenya reached 62.6 million by March 2026, and licensed courier operators handled 3.68 million domestic parcels in the first quarter of 2026 alone (Communications Authority of Kenya, 2026), while the business-to-consumer e-commerce market was valued at USD 2.61 billion in 2025 (Research & Markets, 2026). This growth has expanded the operational demands on online retailers, particularly in last-mile delivery. Local evidence indicates that delivery outcomes have not kept pace. In a survey of 407 online shoppers in Nairobi, Mogire et al. (2023) found that customers were only moderately satisfied with the elements of last-mile delivery, with mean satisfaction scores ranging between 2.87 and 3.55 on a five-point scale; only 54.4 % of shoppers were

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satisfied with the delivery options offered, and 41.5 % were dissatisfied with the ease of returning goods, with delayed, missed and damaged deliveries reported as recurring problems. Obara et al. (2025) similarly found that courier firms in Kenya continue to experience operational inefficiencies, traffic congestion, incorrect addresses and unreliable riders, which translate into high delivery costs and unreliable service. Caberoy et al. (2025) add that high delivery charges reduce repeat purchases among price-sensitive customers, so that cost inefficiency in the last mile translates directly into lost orders. The performance problem for e-commerce companies in Nairobi County is therefore three-fold: delivery costs that remain high, deliveries that are frequently late or missed, and orders that are not fulfilled accurately.

Several scholars have examined how last-mile delivery strategies relate to performance in other contexts. Ganesh et al. (2024) established in the online food delivery sector that faster fulfilment times improved operational outcomes, while Siddiqi et al. (2024) in Bangladesh and Choudhary et al. (2025) in India highlighted the role of efficient logistics flows and timely order fulfilment in improving service outcomes on digital commerce platforms. Obara et al. (2025) in Kenya's courier sector and Caberoy et al. (2025) in the Philippines emphasised the contribution of flexible delivery arrangements to service quality and operational outcomes, and Scorohodov (2026) in European logistics and Betrand et al. (2024) in digital logistics systems demonstrated that real-time parcel tracking enhances delivery transparency and coordination. However, most of these studies were conducted in courier services, food delivery or logistics systems, in economic and operational environments that differ from those of e-commerce companies in Nairobi County, and most examined a single strategy in isolation. The two Kenyan studies are also limited: Mogire et al. (2023) measured customer satisfaction rather than the

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performance of the firms, and Obara et al. (2025) studied courier companies rather than e-commerce companies.

Consequently, little empirical evidence was available on how the combination of delivery performance strategy, delivery coverage capacity strategy, flexible parcel delivery services strategy and parcel tracking systems influences the operational cost efficiency, delivery timeliness and order fulfilment rate of e-commerce companies in Nairobi County. This study sought to fill that gap by establishing the influence of the four last-mile delivery strategies on the performance of e-commerce companies in Nairobi County, Kenya.

1.3 Objectives of the Study

The general objective of the study was to establish the influence of last-mile delivery strategies on the performance of e-commerce companies in Nairobi County, Kenya.

1.3.1 Specific Objectives

The specific objectives of the study were:

i. To determine the influence of delivery performance strategy on the performance of e-commerce companies in Nairobi County, Kenya.
ii. To examine the influence of delivery coverage capacity strategy on the performance of e-commerce companies in Nairobi County, Kenya.
iii. To assess the influence of flexible parcel delivery services strategy on the performance of e-commerce companies in Nairobi County, Kenya.
iv. To evaluate the influence of parcel tracking systems on the performance of e-commerce companies in Nairobi County, Kenya.

1.3.2 Research Questions

The study sought to answer the following research questions:

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i. How does delivery performance strategy influence the performance of e-commerce companies in Nairobi County, Kenya?

ii. How does delivery coverage capacity strategy influence the performance of e-commerce companies in Nairobi County, Kenya?

iii. How does flexible parcel delivery services strategy influence the performance of e-commerce companies in Nairobi County, Kenya?

iv. How do parcel tracking systems influence the performance of e-commerce companies in Nairobi County, Kenya?

1.4 Significance of the Study

The findings of this study are expected to benefit three groups of stakeholders. First, the findings will assist the management of e-commerce companies in Nairobi County by showing how each of the four last-mile delivery strategies affects performance. When managers understand how delivery performance, delivery coverage capacity, flexible parcel delivery services and parcel tracking systems influence cost efficiency, delivery timeliness and order fulfilment, they will be better placed to prioritise logistics investments, enhance service quality and reduce delivery failures, leading to greater customer loyalty, fewer complaints and a stronger competitive position in the rapidly growing e-commerce market.

Second, the study is relevant to government policymakers and regulatory agencies in trade, transport and digital commerce, including the Ministry of Investments, Trade and Industry, the Ministry of Roads and Transport, the Ministry of Information, Communications and the Digital Economy, the Communications Authority of Kenya and the Nairobi City County Government. The findings identify the areas that require policy support, such as logistics and addressing infrastructure, digital tracking systems and delivery reliability standards, and may inform policy on how to create efficient last-mile

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delivery systems, encourage private investment in logistics and strengthen consumer protection in e-commerce.

Third, the study contributes to the research community by enriching the literature on e-commerce logistics and performance in developing economies. Empirical studies focusing specifically on e-commerce companies in Nairobi were few, and the study bridges that gap by providing firm-level evidence on four strategies examined together. The findings offer a reference point for future studies on e-commerce logistics, supply chain management and customer experience in African urban settings.

1.5 Scope of the Study

The study examined the influence of last-mile delivery strategies on the performance of e-commerce companies in Nairobi County, Kenya. Nairobi County was chosen because of its concentration of e-commerce activity, its digital infrastructure and its distinctive last-mile challenges, including traffic congestion, security concerns and informal settlement layouts. The study targeted operations managers, delivery coordinators and customer service managers, who work directly with delivery operations, in all 61 licensed e-commerce companies. It evaluated four last-mile delivery strategies, namely delivery performance strategy, delivery coverage capacity strategy, flexible parcel delivery services strategy and parcel tracking systems, and assessed their influence on performance measured by operational cost efficiency, delivery timeliness and order fulfilment rate.

The study adopted a descriptive cross-sectional survey design, with data collected using structured questionnaires over a period of less than nine months in 2026. A census approach was used to include all e-commerce companies in Nairobi County, ensuring comprehensive coverage of the target population. While the findings apply principally to

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Nairobi County, the insights generated may be analytically applicable to other urban centres in Kenya and East Africa with similar e-commerce and logistics characteristics.

1.6 Limitations of the Study

The study had some limitations. Some e-commerce companies were constrained by confidentiality regarding operational information and internal processes, which may have limited the amount of information provided; this was mitigated by assuring respondents of anonymity and by restricting the questionnaire to perceptual items that did not require disclosure of confidential figures. The response rate was also affected by time constraints and survey fatigue among busy managers; this was mitigated by distributing the questionnaire both electronically and in hard copy, by allowing respondents sufficient time and by making follow-up visits, which yielded a response rate of 82.5 %. Self-reported data carry a risk of response bias; this was mitigated by targeting three different managers in each company so that perceptions were triangulated. Finally, the cross-sectional design made it difficult to capture changes in delivery strategies and performance over time; this limitation is acknowledged in the suggestions for further studies. Despite these limitations, the confidentiality assurances, the concise questionnaire and the data collection procedures adopted ensured that the findings are reliable and offer useful insights for the improvement of last-mile delivery in urban e-commerce.

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CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews the literature on last-mile delivery strategies and performance in e-commerce. It examines the theories, empirical studies and conceptual perspectives that explain how delivery performance, delivery coverage capacity, flexible delivery services and parcel tracking systems influence performance. By analysing existing scholarly work, the chapter highlights prevailing findings and knowledge gaps, provides justification for the research focus and supports the development of the conceptual framework.

2.2 Theoretical Review

This section presents the theories that link last-mile delivery strategies with performance in the e-commerce sector: the service quality model, transaction cost theory and expectation confirmation theory. Each theory is explained, critiqued and then related to the study variables. The section closes by showing what each theory contributes that the others do not, so that the three together provide a complete conceptual basis for the study.

2.2.1 Service Quality Model

The service quality model (SERVQUAL), first developed by Parasuraman et al. (1988), asserts that perceived service quality is defined by the gap between customer expectations and the service actually performed. The model identifies five dimensions of service quality, namely reliability, responsiveness, assurance, empathy and tangibles, as the key contributors to customer perceptions and behaviour (Demir et al., 2021). In e-commerce these dimensions extend to electronic service quality and logistics performance, where customer expectations of on-time delivery, complete order fulfilment, service options and transparent tracking shape the perception of service quality. Monoarfa et al. (2024) show

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that as the quality of last-mile delivery improves, performance improves and customers continue to use the e-commerce platform.

Although the model has been widely used, it has been criticised on conceptual and measurement grounds. Ghosh et al. (2023) argue that the traditional dimensions may not capture the changing expectations of digital consumers, who are influenced by speed, convenience and technology-enabled experiences. Yas and Jusoh (2025) point out that the SERVQUAL dimensions are not always well aligned with specific industries such as aviation, e-commerce and logistics, and require adaptation, while Naylor (2024) notes that the expectation-performance gap is unstable over time because expectations change, so that the model may not measure satisfaction accurately at a single point in time.

The service quality model was relevant to this study because it explains how delivery performance strategy and delivery coverage capacity strategy influence performance. In last-mile delivery, timely dispatch and delivery within promised time frames are manifestations of responsiveness, while the consistent availability of delivery across locations is a manifestation of reliability, the two dimensions that Parasuraman et al. (1988) found most important to customers. When e-commerce companies consistently meet their delivery schedules and make delivery available wherever their customers are, orders are fulfilled as promised and fewer resources are spent on repeat attempts and complaints, which improves delivery timeliness, order fulfilment and cost efficiency. The model therefore anchored the first and second objectives of the study.

2.2.2 Transaction Cost Theory

Transaction cost theory, developed by Williamson (1985), explains how organisations structure their operations so as to minimise the costs associated with economic exchange, namely search costs, monitoring costs, coordination costs and the risks arising from

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uncertainty and opportunistic behaviour. The theory suggests that firms seek efficient governance mechanisms to reduce transaction inefficiencies, especially where exchanges are frequent and uncertainty is high. Its key tenets are cost minimisation, contractual efficiency, information transparency and reliability in service delivery processes (Yusof et al., 2024). In service-oriented sectors such as e-commerce, firms have developed operational models that reduce transaction frictions through reliable delivery systems, service options and technological coordination tools, and the theory thus provides a basis for optimising logistics and managing cost structures (Yuntika et al., 2025).

The theory has also attracted criticism in complex modern business environments. Cuypers et al. (2021) contend that it overstates cost reduction and understates strategic considerations such as innovation, trust and long-term relational value. Rindfleisch (2020) observes that its assumptions of rational behaviour and opportunism do not always hold, since cooperation and social norms also shape organisational decisions. Avdasheva and Geliskhanov (2025) add that the traditional model does not fully describe the digital economy, where technology-based platforms reduce some transaction costs while creating new uncertainty and coordination challenges. These critiques suggest that the theory remains relevant but should be complemented by other perspectives when explaining operational strategy in technology-intensive sectors.

Transaction cost theory was useful to this study because it explains the cost-efficiency dimension of performance, which the other two theories do not address directly. Delivery coverage capacity and flexible parcel delivery services reduce the costs of failed deliveries, repeat delivery attempts and customer complaints, while parcel tracking systems reduce information asymmetry between the company, its riders and its customers and thereby lower monitoring and uncertainty costs. By reducing these transaction-related frictions, e-commerce companies operate more efficiently and deliver more smoothly,

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which improves performance. The theory therefore anchored the second, third and fourth objectives and, in particular, the operational cost efficiency indicator of the dependent variable.

2.2.3 Expectation Confirmation Theory

Expectation confirmation theory, first proposed by Oliver (1980), explains satisfaction as a function of the comparison between pre-consumption expectations and the performance actually experienced after use. Customers form expectations before using a product or service and later assess whether those expectations were confirmed or disconfirmed. Positive confirmation occurs when perceived performance matches or exceeds expectations and produces satisfaction; negative disconfirmation produces dissatisfaction. The key tenets of the theory are expectation formation, performance perception, confirmation or disconfirmation, and the resulting satisfaction outcomes (Shukla et al., 2025). The theory is commonly applied in service industries such as e-commerce to understand how service delivery experiences affect customer perception and behaviour (Bhatnagr & Rajesh, 2025).

Scholars have noted several limitations in the theory's explanatory capacity. Pan et al. (2024) observe that it focuses on cognitive evaluations of performance against expectations and neglects the emotional, social and contextual factors that affect satisfaction and usage intention. Chen and Zhang (2025) suggest that the model is too simple, since engagement and behaviour are influenced by variables beyond confirmation, and Yang et al. (2025) note that expectations are dynamic and evolve with peer opinion, digital content and environmental change, so that static comparisons are less accurate. These criticisms imply that the theory remains relevant but should be embedded in broader behavioural and contextual models.

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Expectation confirmation theory was apt for this study because it explains the customer-facing mechanism through which flexible parcel delivery services and parcel tracking systems influence performance. When a customer is able to choose or reschedule a delivery time and place, and is kept informed of parcel movement, the delivery experience matches the expectations formed at the time of purchase; orders are received on the first attempt, fewer are cancelled or returned, and fulfilment rates and timeliness improve. Delays, failed deliveries and poor communication, by contrast, produce negative disconfirmation, cancellations and costly re-deliveries. The theory therefore anchored the third and fourth objectives of the study.

2.2.4 Complementarity of the Theories

Although the service quality model and expectation confirmation theory both concern the comparison between what customers expect and what they receive, they contribute different things to this study. The service quality model is a supply-side framework: it specifies the service dimensions the company must deliver (reliability and responsiveness) and therefore explains why delivery performance strategy and delivery coverage capacity strategy should matter. Expectation confirmation theory is a demand-side and post-purchase framework: it explains how the customer's evaluation of the delivery experience translates into first-attempt acceptance, repeat purchase or cancellation, and it therefore explains why customer-controlled strategies such as flexible delivery and tracking should matter. Transaction cost theory adds the economic logic that the other two lack: it explains why the same strategies reduce the cost of coordinating, monitoring and re-attempting deliveries, and thus links all four strategies to the operational cost efficiency indicator of performance. Together, the three theories explain the three indicators of performance used in this study, namely delivery timeliness (service

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quality model), order fulfilment (expectation confirmation theory) and operational cost efficiency (transaction cost theory).

2.3 Empirical Literature Review

This section reviews prior empirical studies on last-mile delivery strategies and performance, organised according to the four study objectives. For each study, the context, method, findings and gap are presented, and each sub-section closes with a critique that compares the reviewed studies and identifies the contextual, conceptual and methodological gaps that the present study addressed.

2.3.1 Delivery Performance Strategy and Performance

Nikzadask et al. (2026) explored how delivery service strategies affect operational outcomes on online food delivery platforms in Iran, using a netnographic analysis of user-generated content. The findings revealed that timely delivery enhanced service reliability and platform performance by improving order processing and delivery coordination. Arora and Chaudhary (2025), using survey data from online shoppers in India, found that faster fulfilment on fashion e-commerce platforms improved performance and strengthened competitiveness. Both studies focused on a single retail segment and relied on customer perceptions, and neither measured performance using firm-level indicators such as cost efficiency, timeliness and fulfilment rate; they therefore present contextual and methodological gaps that the current study addressed by collecting data from managers of general e-commerce companies.

Siddiqi et al. (2024) investigated the factors influencing customer loyalty in online food delivery services in Bangladesh through a quantitative survey and found that timely order fulfilment significantly improved service performance and loyalty. Choudhary et al. (2025) assessed the impact of logistics efficiency and delivery speed on service outcomes

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on digital commerce platforms in India and established that efficient logistics flows and timely deliveries improved platform performance. Ganesh et al. (2024) examined the relationship between fulfilment time and performance on online delivery platforms and found that shorter fulfilment times significantly improved performance by raising efficiency and reliability. Sobaih and AlSaif (2023) surveyed customers of parcel delivery services in Saudi Arabia and found that timely arrival and careful handling of parcels enhanced performance, although national culture shaped customer expectations. In Kenya, Kinuthia and Wambua (2025) examined service delivery strategies in commercial banks in Nairobi City County and found that service delivery speed significantly influenced performance and competitiveness. These studies converge on the finding that speed and timeliness matter, but they diverge in what they measure: Siddiqi et al. (2024) and Choudhary et al. (2025) measured customer loyalty and perceived service quality, Ganesh et al. (2024) measured platform-level efficiency, and Kinuthia and Wambua (2025) worked in banking rather than in physical goods delivery.

Taken together, the reviewed studies leave three gaps. Contextually, none was conducted among e-commerce companies in Nairobi County, and the only Kenyan study was in banking. Conceptually, the studies treated delivery speed as a customer-experience variable and did not examine delivery performance strategy as a firm-level operational strategy linked to cost efficiency, delivery timeliness and order fulfilment. Methodologically, five of the seven relied on customer perception data or netnography rather than on the assessments of the managers who design and execute the strategy. The current study addressed these gaps by measuring delivery performance strategy through six firm-level items answered by operations, delivery and customer service managers, and by linking it to three firm-level performance indicators.

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2.3.2 Delivery Coverage Capacity Strategy and Performance

Lim and Choo (2026) examined how e-commerce retailers in developed markets structure their last-mile delivery networks, using a qualitative case study approach. They found that retailers adopt plural governance structures that combine in-house and outsourced delivery to expand network coverage, improve service availability across locations, and enhance performance. Li and Gan (2025), using a quantitative multidimensional analysis in China, found that the expansion of logistics networks and distribution infrastructure significantly increased the reach, accessibility and performance of rural e-commerce systems, and highlighted the importance of coverage capacity in serving geographically dispersed and hard-to-reach areas. Peña-Acosta et al. (2025), through quantitative benchmarking in an urban e-commerce setting, found that fleet composition improved delivery reach, service coverage across urban zones and last-mile efficiency. These three studies agree that broader reach improves outcomes, but they examined coverage indirectly, through governance structures, regional infrastructure and fleet design, respectively, rather than through firm-level indicators of coverage capacity.

Islam et al. (2024) examined the application of artificial intelligence to last-mile delivery in e-commerce through a conceptual and empirical study and found that intelligent routing, demand forecasting and automated coordination increased delivery reach and accessibility across locations. Aziz et al. (2025) investigated factors affecting service quality and performance in the Malaysian postal and courier industry using structural equation modelling and found that a reliable, well-established service network across locations led to improved performance. In Kenya, Mogire et al. (2023) surveyed 407 online shoppers in Nairobi and found that delays, missed deliveries, and poor accessibility of certain locations reduced satisfaction, identifying the reach of the delivery network as a concern. Whereas Islam et al. (2024) and Aziz et al. (2025) approached coverage from the

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technology and service-quality perspectives, Mogire et al. (2023) approached it from the customer's side; none measured the coverage capacity of the e-commerce firm itself.

The gaps across this body of work are therefore contextual, in that only Mogire et al. (2023) studied Kenya and did so from a customer rather than a firm perspective; conceptual, in that delivery coverage capacity was inferred from governance, infrastructure, fleet or technology variables rather than measured directly; and methodological, in that Lim and Choo (2026) used qualitative case studies with limited generalisability while Mogire et al. (2023) relied on customer perceptions. The current study addressed these gaps by measuring delivery coverage capacity strategy directly using six firm-level indicators of geographic reach and availability, and by testing its influence on performance quantitatively across all e-commerce companies in Nairobi County.

2.3.3 Flexible Parcel Delivery Services Strategy and Performance

Obara et al. (2025) investigated how distribution strategies affect service delivery in Kenya's courier sector using survey data from courier service providers and found that flexible delivery arrangements and customer-responsive logistics practices significantly improved service delivery and performance. Caberoy et al. (2025) surveyed users of last-mile logistics services in the Philippines and found that providers offering flexible delivery schedules, multiple drop-off points and convenient delivery options achieved higher customer satisfaction. Kosamu and Mwanza (2025) surveyed courier service users in Lusaka, Zambia and found that firms offering responsive and flexible delivery arrangements recorded improved service performance and stronger loyalty, particularly where they accommodated customer preferences on timing and location. The three studies agree on the value of flexibility, but Obara et al. (2025) studied courier firms rather than

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e-commerce companies, while Caberoy et al. (2025) and Kosamu and Mwanza (2025) measured customer satisfaction and loyalty rather than firm-level performance.

Ayantoyinbo and Oyewale (2025) explored the impact of delivery efficiency on e-commerce adoption among courier firms in Lagos, Nigeria, using survey data from courier service users, and found that firms with flexible schedules and customer-responsive logistics were more efficient and performed better operationally. Saha (2025) used qualitative case studies of courier, express and parcel providers in India to examine competitive preparedness during disruptions and found that firms able to adopt alternative delivery methods, contingency plans and flexible routing sustained service continuity and performance. Compared with the survey-based studies above, Saha (2025) examined flexibility as a resilience capability under disruption rather than as a routine service strategy, and its qualitative design limits generalisation.

The gaps in this stream of literature are contextual, since the studies were conducted in courier sectors in Kenya, the Philippines, Zambia, Nigeria and India rather than among e-commerce companies in Nairobi County; conceptual, since flexibility was linked to customer satisfaction, loyalty, adoption or resilience rather than to firm-level performance indicators such as cost efficiency, timeliness and fulfilment; and methodological, since most relied on customer perception data or qualitative cases. The current study addressed these gaps by measuring flexible parcel delivery services strategy as a routine firm-level strategy from the perspective of managers and testing its influence on performance quantitatively.

2.3.4 Parcel Tracking Systems and Performance

Scorohodov (2026) studied the role of digital logistics systems in online commerce using qualitative methods and found that logistics firms with real-time parcel tracking improved

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delivery visibility, reduced uncertainty and enhanced performance. Dabić-Miletić (2026) examined how digital transformation affects the management and sustainability of postal supply chains in Europe through a qualitative study and found that advanced digital technologies improved operational transparency and service management. Betrand et al. (2024) developed and evaluated a web-based logistics application for tracking parcels and demonstrated that real-time tracking, delivery status notifications and location updates reduced uncertainty and increased confidence in service reliability. Francis (2025) assessed the factors influencing customer comfort in private logistics couriers and found that investment in tracking technologies and digital communication improved customer comfort through timely updates and accurate delivery information. These four studies approached tracking from a technology or customer-comfort perspective: two were qualitative, one was a system-development study, and one measured customer comfort, and none empirically tested whether tracking systems influence firm-level performance indicators.

In Kenya, Kimondio and Tumuti (2024) studied the adoption of management information systems by long-distance public transport bus companies in Lamu County using a quantitative survey of transport operators, and found that information systems improved information flow, coordination and service quality, leading to better performance. In contrast to European and technology-focused studies, this study provides Kenyan quantitative evidence on information systems and performance, but it focused on passenger transport and examined management information systems in general rather than parcel-tracking systems in last-mile delivery.

The gaps in the tracking literature are therefore contextual, since no study examined tracking among e-commerce companies in Nairobi County; conceptual, since tracking was studied as a technology or as a general information system rather than as a last-mile

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strategy linked to cost efficiency, timeliness and fulfilment; and methodological, since the studies were qualitative or system-development in nature and did not test the tracking-performance relationship statistically. The current study addressed these gaps by measuring parcel tracking systems through six firm-level indicators and by testing their influence on performance using correlation and regression analysis.

2.4 Summary of the Reviewed Literature and Research Gaps

The reviewed literature consistently shows that delivery timeliness, delivery reach, flexible delivery arrangements and parcel tracking are associated with better service and performance outcomes. However, the studies differ in sector (food delivery, fashion, courier, postal, transport and banking), in country (Iran, India, Bangladesh, China, Malaysia, the Philippines, Zambia, Nigeria, Europe, Saudi Arabia and Kenya), in the unit of analysis (customers, users, platforms or firms) and in method (surveys of customers, netnography, qualitative case studies and system development). Most examined a single strategy in isolation and most measured customer satisfaction or perceived service quality rather than firm-level performance. Table 2.1 summarises the reviewed studies, the gaps identified and how the current study addressed them.

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Table 2.1: Summary of the Reviewed Literature

Author and year	Focus of study	Key findings	Knowledge gaps	Focus of the current study
Nikzadask et al. (2026)	Delivery service strategies on online food delivery platforms, Iran	Prompt delivery improved perceived reliability and convenience, strengthening platform performance.	Contextual (online food delivery outside Kenya); methodological (netnography of user content).	Delivery performance strategy and the performance of e-commerce companies in Nairobi County, using manager data.
Scorohodov (2026)	Digital logistics systems in online commerce, Europe	Real-time tracking improved delivery visibility, reduced uncertainty and enhanced performance.	Conceptual and methodological (technology perspective; qualitative design).	Tests parcel tracking systems as a last-mile strategy quantitatively.
Dabić-Miletić (2026)	Digital transformation of postal logistics supply chains, Europe	Advanced digital tools enhanced transparency, monitoring and service management.	Contextual and conceptual (postal logistics; no firm-level performance test).	Tests tracking and digital visibility in Nairobi e-commerce.
Lim and Choo (2026)	Governance of last-mile delivery networks in developed e-commerce markets	Plural governance (in-house plus outsourced) expanded network coverage and service availability.	Methodological and conceptual (qualitative cases; coverage inferred from governance).	Measures delivery coverage capacity directly with firm-level indicators.
Li and Gan (2025)	Sustainable development of rural e-commerce, China	Expansion of logistics networks increased reach, accessibility and performance of rural e-commerce.	Contextual and conceptual (rural China; sustainability outcomes rather than firm-level performance).	Evaluates delivery coverage capacity within Nairobi's urban e-commerce ecosystem.
Arora and Chaudhary (2025)	Delivery speed in fashion e-commerce, India	Quick fulfilment improved operational efficiency and competitiveness.	Conceptual (single performance outcome) and methodological (shopper survey).	Links delivery performance strategy to three firm-level performance indicators.

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Table 2.1: Summary of the Reviewed Literature

Author and year	Focus of study	Key findings	Knowledge gaps	Focus of the current study
Choudhary et al. (2025)	Logistics flows and delivery speed on Indian digital commerce platforms	Efficient logistics and faster delivery improved perceived service quality and performance.	Contextual (India) and conceptual (perceived service quality).	Localises the relationship to Nairobi County e-commerce companies.
Kinuthia and Wambua (2025)	Service delivery strategies and positioning of commercial banks, Nairobi	Service speed enhanced competitive positioning and performance.	Contextual (banking sector; no physical delivery).	Extends the speed-performance evidence to last-mile delivery in e-commerce.
Peña-Acosta et al. (2025)	Fleet composition and delivery efficiency in urban e-commerce	Optimised fleets enhanced reach, coverage across urban zones and efficiency.	Conceptual (fleet optimisation metrics rather than coverage capacity).	Links delivery coverage capacity to performance indicators in Nairobi County.
Aziz et al. (2025)	Service quality and performance in Malaysia's postal and courier industry	Parcel safety, accuracy and a reliable service network improved performance.	Contextual (Malaysian courier sector) and conceptual (service quality focus).	Tests coverage and reliability strategies within Nairobi e-commerce delivery.
Obara et al. (2025)	Distribution strategies and tracking technology in Kenya's courier sector	Flexible delivery arrangements and tracking improved service quality and performance.	Contextual (courier companies rather than e-commerce companies).	Examines flexibility and tracking among e-commerce companies in Nairobi.
Caberoy et al. (2025)	Factors affecting last-mile delivery logistics, the Philippines	Adaptable schedules and multiple drop-off options improved satisfaction.	Contextual (Philippines) and methodological (customer perception data).	Assesses flexible services from the firm's perspective in Nairobi.
Kosamu and Mwanza (2025)	Service quality and customer behaviour in courier firms, Zambia	Flexible timing and location options improved experience, loyalty and performance.	Contextual (Zambia) and conceptual (customer behaviour outcomes).	Evaluates flexibility against firm-level performance in Nairobi County.

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Table 2.1: Summary of the Reviewed Literature

Author and year	Focus of study	Key findings	Knowledge gaps	Focus of the current study
Ayantoyinbo and Oyewale (2025)	Delivery efficiency and e-commerce adoption by courier firms, Lagos	Adaptable delivery increased efficiency and performance.	Contextual (Nigerian courier sector) and conceptual (adoption outcome).	Flexible parcel delivery services as an e-commerce strategy in Nairobi.
Saha (2025)	Competitive preparedness of courier providers during disruptions, India	Flexible routing and contingency frameworks sustained continuity and performance.	Methodological (qualitative cases) and conceptual (disruption context).	Tests routine flexible delivery arrangements and their performance effects.
Francis (2025)	Customer comfort in private logistics couriers	Tracking investment improved customer comfort through timely and accurate delivery information.	Conceptual (customer comfort rather than firm-level performance).	Examines tracking systems and performance in Nairobi e-commerce.
Siddiqi et al. (2024)	Customer loyalty in online food delivery, Bangladesh	Timely fulfilment enhanced performance and strengthened loyalty.	Contextual (Bangladesh food delivery) and conceptual (loyalty outcome).	Investigates delivery performance strategy and firm-level performance in Nairobi.
Ganesh et al. (2024)	Fulfilment time and performance in online food delivery	Shorter fulfilment times improved efficiency and reliability.	Contextual and methodological (platform-specific data).	Tests similar timeliness effects within Nairobi e-commerce.
Islam et al. (2024)	Artificial intelligence in last-mile delivery in e-commerce	Intelligent routing and automated coordination enhanced reach and accessibility.	Conceptual (technological interventions and customer experience).	Links delivery coverage capacity to firm-level performance indicators.
Kimondio and Tumuti (2024)	Management information systems and performance of bus companies, Lamu County	MIS adoption improved information flow, coordination and performance.	Contextual (passenger transport) and conceptual (general MIS focus).	Narrows to parcel tracking systems as a last-mile strategy in e-commerce.

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Table 2.1: Summary of the Reviewed Literature

Author and year	Focus of study	Key findings	Knowledge gaps	Focus of the current study
Betrand et al. (2024)	Web-based parcel tracking application	Real-time notifications and location updates reduced uncertainty and improved reliability.	Methodological (system development rather than empirical test).	Tests the influence of tracking systems on firm-level performance statistically.
Sobaih and AlSaif (2023)	Parcel delivery service and performance in the Saudi logistics industry	Timely arrivals and careful handling enhanced performance; national culture shaped expectations.	Contextual (Saudi logistics industry).	Provides Nairobi-specific evidence on delivery performance and performance.
Mogire et al. (2023)	Customer satisfaction with last-mile delivery in Kenya	Missed deliveries, delays and damaged parcels reduced satisfaction; returns were the weakest element.	Conceptual and methodological (customer satisfaction; customer survey).	Extends to firm-level performance indicators for Nairobi e-commerce companies.

Source: Researcher (2026)

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2.5 Conceptual Framework

This section presents the conceptual framework that guided the study by illustrating the relationship between last-mile delivery strategies (the independent variables) and the performance of e-commerce companies (the dependent variable). The indicators used to measure each variable are shown in Figure 2.1.

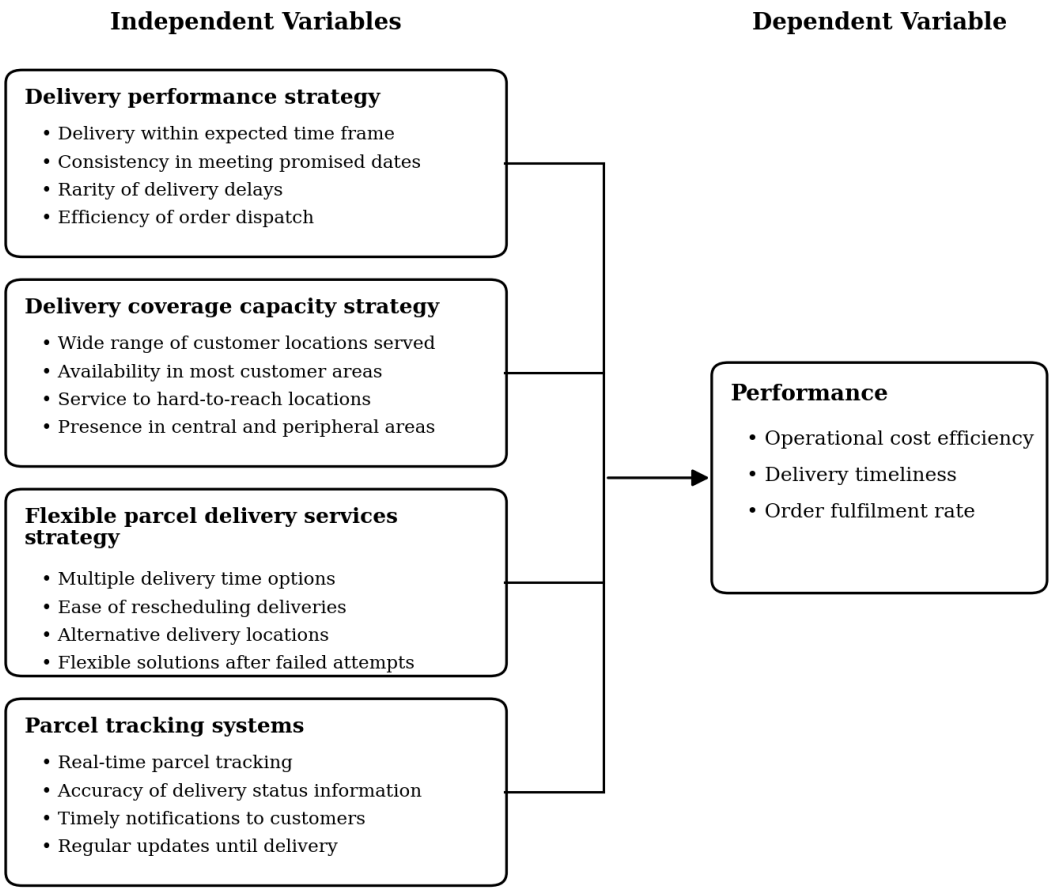


Figure 2.1: Conceptual Framework

Source: Researcher (2026)

The conceptual framework shows the relationship between last-mile delivery strategies and performance. The independent variables, namely delivery performance strategy, delivery coverage capacity strategy, flexible parcel delivery services strategy and parcel tracking systems, are expected to influence performance, which was measured through

operational cost efficiency, delivery timeliness and order fulfilment rate. The framework assumes that effective implementation of these four delivery strategies improves performance, and each arrow corresponds to one of the four research questions.

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CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the methodology and procedures of the study, covering the research design, target population and population frame, data collection instrument, data collection procedure, pilot study, data analysis and presentation, and ethical considerations. It explains how the study was undertaken in a structured manner to produce valid and reliable results in line with the study objectives.

3.2 Research Design

The study adopted a descriptive cross-sectional survey design to examine the influence of last-mile delivery strategies on the performance of e-commerce companies in Nairobi County, Kenya. The design was appropriate because it enabled data collection from all respondents at one point in time, allowing the researcher to describe prevailing delivery practices and analyse their relationship with performance (Bell et al., 2019). The design also supported quantitative techniques, namely correlation and multiple regression analysis, to determine the extent to which delivery performance strategy, delivery coverage capacity strategy, flexible parcel delivery services strategy, and parcel tracking systems influence performance (Saunders et al., 2019).

3.3 Target Population and Population Frame

A population is the entire group of individuals, organisations, or units sharing common characteristics to which a study's findings are generalised (Kothari, 2021). The target population of this study comprised all 61 e-commerce companies operating within Nairobi County, Kenya. The population frame, that is, the complete list from which the units of the population were identified, was obtained from the Nairobi City County

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Government's business licensing and permit records (2025). Since every enterprise is required to register and to specify its nature of business when acquiring a single business permit, these records provided a reliable and comprehensive listing of the e-commerce companies operating within the County. The 61 companies in the frame are listed in Appendix III. The companies represent the major players in the e-commerce sector and are actively engaged in last-mile delivery, making them appropriate units of analysis for examining delivery performance strategy, delivery coverage capacity strategy, flexible parcel delivery services strategy and parcel tracking systems.

The unit of analysis was the e-commerce company, while the unit of observation was the manager responsible for last-mile delivery operations. Because the population was small, the study adopted a census in which all 61 companies were included, and no sampling was carried out. From each company, three respondents were targeted, namely the operations manager, the delivery coordinator and the customer service manager, because they possess direct knowledge of the company's last-mile delivery strategies and performance outcomes. This yielded a total of 183 respondents, as shown in Table 3.1.

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Table 3.1: Target Population

Respondent category	Number of companies	Number of respondents	Percent
Operations managers	61	61	33.3
Delivery coordinators	61	61	33.3
Customer service managers	61	61	33.3
Total	**61**	**183**	**100.0**

Source: Nairobi City County Government (2025)

3.4 Data Collection Instrument

A data collection instrument is a tool used by a researcher to collect information relevant to a study in an organised way (Creswell & Creswell, 2021). The study used a structured, self-administered questionnaire (Appendix II) to collect primary data from the respondents. Saunders et al. (2019) note that standardised questionnaires enhance

reliability by reducing researcher bias and maintaining uniformity in responses. The questionnaire comprised six sections. Section A collected background information on respondents using four closed-ended questions on gender, age bracket, highest level of education and number of years worked in the company; these items were measured on nominal and ordinal scales and were used for the demographic profile. Sections B, C, D and E measured the four independent variables, namely delivery performance strategy, delivery coverage capacity strategy, flexible parcel delivery services strategy and parcel tracking systems, and Section F measured the dependent variable, performance.

Each of Sections B to F contained six closed-ended statements, giving 30 statements in total. The statements were developed by the researcher from the indicators identified in the literature (Section 1.1.1 and Section 1.1.2) and were measured on a five-point Likert-type scale on which 1 represented strongly disagree, 2 disagree, 3 neutral, 4 agree, and 5 strongly agree. Respondents were asked to tick the point that best represented their level of agreement with each statement in relation to their company. A Likert-type scale was preferred because it allows perceptions of practices and outcomes to be quantified and summarised using means and standard deviations, and because the resulting composite scores can be analysed using correlation and regression (Mugenda & Mugenda, 2020). No open-ended questions were included to keep the instrument short for busy managers and maintain uniformity of responses. The composite score for each variable was computed as the mean of its six items.

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3.5 Data Collection Procedure

Data collection procedure refers to the systematic steps followed by a researcher in obtaining relevant data from selected respondents in line with the research objectives (Bell et al., 2019). The process commenced with securing approval from the relevant university authorities and obtaining a research licence from the National Commission for

Science, Technology and Innovation (NACOSTI). Upon receiving authorisation, the researcher formally engaged the e-commerce companies through an introductory letter (Appendix I) to seek consent and identify the operations managers, delivery coordinators and customer service managers who would participate in the study.

Following these arrangements, the questionnaires were distributed electronically by e-mail to enhance accessibility, and hard copies were also delivered to companies that preferred them, in order to raise the response rate. Participants were informed of the purpose of the study and assured of confidentiality, and their voluntary consent was obtained before they completed the questionnaire. In line with Orodho (2020), respondents were allowed sufficient time to complete the instrument, and follow-up calls and visits were made. Once returned, the questionnaires were checked for completeness and stored securely for analysis.

3.6 Pilot Study

A pilot study is a preliminary assessment undertaken on a small group similar to the target population in order to identify weaknesses in the research instrument and procedures (Kothari, 2021). A pilot study was undertaken before the main survey in order to test the clarity of the questionnaire items, estimate the time required to complete the instrument, and establish its reliability and validity. The pilot was conducted among 18 respondents drawn from six e-commerce companies operating in Kiambu County, namely Niche Retailers, Carrefour, Copia, Mybigorder, Peachcars and Duka One, which were outside the target population and were therefore not included in the main study. The 18 pilot respondents represented about 10 % of the 183 respondents targeted in the main study, which is within the range recommended by Mugenda and Mugenda (2020). Saunders et al. (2019) note that pilot testing improves the quality and credibility of research instruments by ensuring that they are appropriate for capturing the intended

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information. Responses from the pilot were used to refine the wording of a few items and to test the reliability and validity of the instrument as described below.

3.6.1 Reliability of the Instrument

Reliability is the extent to which an instrument produces consistent results on repeated trials. The internal consistency of the six items measuring each variable was assessed using Cronbach's alpha coefficient computed from the pilot data. A Cronbach's alpha of 0.70 and above was regarded as acceptable evidence of reliability, in line with Mugenda and Mugenda (2020). All five variables met this threshold, with coefficients ranging from 0.713 to 0.813, as reported in Section 4.4. Items were reworded where necessary to improve clarity, and the refined instrument was then used in the main study.

3.6.2 Validity of the Instrument

Validity is the extent to which an instrument measures what it is intended to measure. The study established content validity and face validity. Content validity was established by developing every item from the indicators identified in the reviewed literature and by submitting the draft questionnaire to the two university supervisors and to practitioners in logistics and e-commerce operations, who reviewed the items for relevance, comprehensiveness and clarity in relation to the study objectives (Saunders et al., 2019). Face validity was assessed during the pilot study, where respondents commented on the clarity and appropriateness of the items, and their feedback was used to refine the instrument (Kothari, 2021). Construct validity was supported indirectly by the high internal consistency of the items within each variable and by the pattern of correlations reported in Chapter Four; however, exploratory factor analysis was not carried out, and this is acknowledged as a limitation.

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3.7 Data Analysis and Presentation

The returned questionnaires were checked for completeness, coded and entered into the Statistical Package for Social Sciences (SPSS) for analysis. Descriptive statistics, namely frequencies and percentages for the demographic data and means and standard deviations for the Likert-type items, were used to summarise the data. To ensure consistent interpretation of the descriptive results, the mean scores were interpreted using the equal-interval bands shown in Table 3.2, which correspond to the five anchors of the Likert scale used in the questionnaire. Standard deviations were interpreted as indicators of the level of agreement among respondents: a standard deviation below 1.00 was taken to indicate that responses converged around the mean (a high level of agreement among respondents), while a standard deviation of 1.00 or more was taken to indicate that responses were dispersed (varied views among respondents).

Table 3.2: Interpretation of Mean Scores and Standard Deviations

Mean score range	Likert scale anchor	Interpretation
1.00 – 1.80	Strongly disagree	Very low extent
1.81 – 2.60	Disagree	Low extent
2.61 – 3.40	Neutral	Moderate extent
3.41 – 4.20	Agree	High extent
4.21 – 5.00	Strongly agree	Very high extent
Standard deviation < 1.00	Responses converge around the mean	High level of agreement among respondents
Standard deviation ≥ 1.00	Responses dispersed around the mean	Varied views among respondents

Source: Researcher (2026)

Inferential analysis was then carried out. Pearson product-moment correlation was used to determine the strength and direction of the relationship between each independent variable and performance, and multiple linear regression was used to determine the influence of the four independent variables jointly and individually on performance at the 5% level of significance. The significant linear correlations between each independent variable and performance established the linearity on which the regression model rests,

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and the 151 observations analysed were well above the 30 required for the sampling distribution of the regression estimates to approximate normality (Saunders et al., 2019). Unstandardised coefficients (B) were used to write the fitted equation and to interpret the change in performance associated with a one-unit change in each strategy, while standardised coefficients (Beta) were used to rank the relative influence of the four strategies. The results were presented in tables. The regression model adopted was:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Where:

Y = Performance (measured by operational cost efficiency, delivery timeliness and order fulfilment rate)

β_0 = Constant term

$\beta_1 - \beta_4$ = Regression coefficients of the independent variables

X_1 = Delivery performance strategy

X_2 = Delivery coverage capacity strategy

X_3 = Flexible parcel delivery services strategy

X_4 = Parcel tracking systems

ε = Error term

3.8 Ethical Considerations

The study observed strict ethical standards in order to safeguard participants and uphold research integrity. Ethical approval was obtained from the relevant university authorities and a research licence was obtained from NACOSTI (Appendix IV) before data collection commenced. Informed consent was observed throughout: respondents were informed of the purpose of the study and of their right to withdraw at any time, and participation was voluntary. Confidentiality and anonymity were upheld by not collecting

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names, by reporting results only in aggregate and by storing the data securely, in compliance with the Data Protection Act, 2019. The researcher also ensured objectivity and honesty by reporting the findings accurately and by citing all sources used.

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CHAPTER FOUR

RESULTS, FINDINGS AND DISCUSSION

4.1 Introduction

This chapter presents the analysis and interpretation of the data collected to examine how last-mile delivery strategies influence the performance of e-commerce companies in Nairobi County, Kenya. The chapter begins with the response rate, the demographic profile of the respondents and the reliability and validity of the instrument. It then presents the descriptive analysis of the study variables, the inferential analysis and, finally, the discussion of the findings in relation to the research objectives, the empirical literature and the theories underpinning the study. In the descriptive sections, mean scores are interpreted using the bands in Table 3.2 (a mean of 3.41 to 4.20 indicates that respondents agreed with a statement, and a mean of 2.61 to 3.40 indicates that respondents were neutral), and standard deviations below 1.00 indicate a high level of agreement among respondents while those of 1.00 or more indicate varied views.

4.2 Response Rate

Table 4.1 presents the response rate achieved in the study. Out of the 183 questionnaires distributed, 151 were completed and returned, giving a response rate of 82.5 %. The 32 questionnaires (17.5 %) that were not returned were excluded from the analysis.

Table 4.1: Response Rate

Response Rate	Frequency	Percent
Returned	151	82.51%
Unreturned	32	17.49%
Total	**183**	**100%**

Source: Research Data (2026)

The response rate of 82.5 % exceeded the 70 % threshold recommended by Mugenda and Mugenda (2020) for survey research, indicating strong participation by the respondents.

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The data obtained were therefore adequate for meaningful statistical analysis and can be considered representative of the target population.

4.3 Demographic Profile of Respondents

This section presents the demographic characteristics of the respondents, namely gender, age, level of education and years of service in the company. The information describes the composition of the respondents and helps in judging whether the views captured were drawn from a diverse and suitably experienced group of managers.

4.3.1 Gender of the Respondents

Table 4.2 shows the distribution of the respondents by gender. Gender was examined to determine whether the views captured came from both male and female managers involved in e-commerce delivery operations.

Table 4.2: Gender of the Respondents

Gender	Frequency	Percentage
Male	83	54.97%
Female	68	45.03%
Total	**151**	**100%**

Source: Research Data (2026)

The findings indicate that 83 (55.0 %) of the respondents were male, while 68 (45.0 %) were female. Both genders were therefore well represented, with a slightly higher representation of male respondents, and the views captured on last-mile delivery operations reflect the perspectives of both male and female managers.

4.3.2 Age of the Respondents

Table 4.3 presents the distribution of the respondents by age. Age was examined because it reflects the professional maturity and industry exposure of the respondents, which helps in contextualising their assessments of last-mile delivery strategies and performance.

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Table 4.3: Age of the Respondents

Age	Frequency	Percentage
25 Years and Below	24	15.9%
26–35 Years	37	24.5%
36–50 Years	76	50.3%
Over 50 Years	14	9.3%
Total	**151**	**100%**

Source: Research Data (2026)

The findings indicate that 76 (50.3%) respondents were aged 36 to 50 years, 37 (24.5%) were aged 26 to 35 years, 24 (15.9%) were aged 25 years and below, and 14 (9.3%) were over 50 years. The majority of the respondents were therefore in the 36 to 50 years bracket, which suggests a group of managers with substantial managerial experience and industry knowledge relevant to last-mile delivery operations. The presence of younger respondents aged 25 years and below also indicates that the views captured include those of employees who are likely to be familiar with emerging digital technologies and contemporary e-commerce practices.

4.3.3 Education Level of the Respondents

Table 4.4 summarises the highest level of education attained by the respondents. Education was examined because it indicates the knowledge and professional capacity of the managers whose assessments informed the findings.

Table 4.4: Education Level of the Respondents

Qualification Category	Frequency	Percent
Diploma	47	31.1%
Undergraduate degree	71	47.1%
Masters	23	15.2%
PhD	2	1.3%
Others	8	5.3%
Total	151	100%

Source: Research Data (2026)

The findings indicate that 71 (47.1 %) of the respondents held an undergraduate degree, 47 (31.1 %) held a diploma, 23 (15.2 %) held a master's degree, 8 (5.3 %) held other professional or technical qualifications and 2 (1.3 %) held a doctorate. Most respondents

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therefore had tertiary-level education, suggesting they could understand the questionnaire items and provide informed assessments of their companies' delivery strategies and performance. This enhances the credibility of the information provided.

4.3.4 Years of Service of the Respondents

Table 4.5 presents the number of years the respondents had worked in their companies. Years of service were examined because it indicates the extent of the respondents' exposure to the company's delivery operations and therefore their ability to evaluate its last-mile delivery strategies.

Table 4.5: Years of Service of the Respondents

Years of Service	Frequency	Percent
Less than one year	12	7.95%
1 – 3 years	28	18.54%
4-7 Years	37	24.50%
8 years and above	74	49.01%
Total	**151**	**100%**

Source: Research Data (2026)

The findings indicate that 74 (49.0 %) of the respondents had worked in their companies for eight years and above, 37 (24.5 %) for four to seven years, 28 (18.5 %) for one to three years and 12 (8.0 %) for less than one year. Nearly three-quarters of the respondents had therefore served for four years or more, implying a deep understanding of the delivery systems, operational processes and performance outcomes of their companies. The responses can accordingly be regarded as informed by practical exposure to last-mile delivery operations.

4.4 Reliability and Validity of the Instrument

A pilot study was undertaken among 18 respondents drawn from six e-commerce companies in Kiambu County to assess the reliability of the instrument before the main survey. Table 4.6 presents the Cronbach's alpha coefficients obtained.

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Table 4.6: Reliability Test Results

Variables	Items	Cronbach Alpha	Remark
Delivery performance strategy	6	0.713	Reliable
Delivery coverage capacity strategy	6	0.764	Reliable
Flexible parcel delivery services strategy	6	0.733	Reliable
Parcel tracking system	6	0.741	Reliable
Performance	6	0.813	Reliable

Source: Research Data (2026)

All the study variables achieved acceptable reliability, with Cronbach's alpha coefficients ranging from 0.713 to 0.813. Delivery performance strategy recorded an alpha of 0.713, delivery coverage capacity strategy 0.764, flexible parcel delivery services strategy 0.733, parcel tracking systems 0.741 and performance 0.813. Since all the coefficients exceeded the 0.70 threshold recommended by Mugenda and Mugenda (2020), the instrument was deemed reliable and was used in the main study. Content validity was established through review of the questionnaire by the two university supervisors and by practitioners with expertise in logistics and supply chain operations, who confirmed that the items were relevant, comprehensive and clear in relation to the study objectives, and face validity was confirmed by the pilot respondents, whose feedback was used to refine the wording of a few items. As noted in Section 3.6.2, factor analysis was not carried out, and construct validity rests on the internal consistency of the items and the pattern of correlations reported in Section 4.6.1.

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4.5 Descriptive Analysis of the Study Variables

This section presents a descriptive analysis of the study variables based on the respondents' levels of agreement with the statements in the questionnaire. Means and standard deviations summarise responses for each of the four last-mile delivery strategies and for performance. The mean scores are interpreted using the bands in Table 3.2 and the standard deviations are interpreted as indicators of the level of agreement among the respondents.

4.5.1 Delivery Performance Strategy

In line with the first objective, Table 4.7 presents the descriptive findings on delivery performance strategy. The variable was measured using six statements on delivery within the expected time frame, consistency in meeting promised delivery dates, rarity of delivery delays, efficiency of order dispatch, promptness of delivery after order confirmation and realism of the delivery timelines communicated to customers.

Table 4.7: Descriptive Statistics for Delivery Performance Strategy

Statements	N	Mean	Std. Dev
Orders placed through our e-commerce platform are delivered within the expected time frame	151	3.77	0.83
The company consistently meets the promised delivery dates provided to customers.	151	3.83	0.81
Customers rarely experience delays in receiving their orders.	151	3.26	1.08
The time taken to dispatch orders is efficient.	151	3.66	0.83
Deliveries are completed promptly after orders are confirmed.	151	3.75	0.84
The delivery timelines communicated to customers are realistic.	151	3.87	0.71
Overall mean score	**151**	**3.69**	**0.62**

Source: Research Data (2026)

The results in Table 4.7 show an overall mean score of 3.69 and a standard deviation of 0.62. The overall mean score falls within the 3.41 to 4.20 band, indicating that respondents agreed that their companies had implemented a delivery performance strategy to a great extent. The overall standard deviation of 0.62 is below 1.00, indicating a high level of agreement among respondents on this assessment.

Respondents agreed most strongly that the delivery timelines communicated to customers are realistic (M = 3.87, SD = 0.71), followed by the statement that the company consistently meets the promised delivery dates (M = 3.83, SD = 0.81), that orders are delivered within the expected time frame (M = 3.77, SD = 0.83), that deliveries are completed promptly after orders are confirmed (M = 3.75, SD = 0.84) and that the time

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taken to dispatch orders is efficient (M = 3.66, SD = 0.83). All five statements fall within the agree band, and their standard deviations, which range from 0.71 to 0.84, are all below 1.00, indicating that respondents largely agreed that their companies manage customer expectations, keep to delivery schedules, and dispatch orders efficiently.

In contrast, respondents were neutral on the statement that customers rarely experience delays in receiving their orders (M = 3.26, SD = 1.08). This was the lowest-rated statement, and its standard deviation of 1.08 is above 1.00, indicating varied views among respondents: while some companies appear to have largely eliminated delays, others still experience them. Overall, the findings show that the delivery performance strategy was implemented to a great extent among e-commerce companies in Nairobi County, with the persistence of delivery delays in some companies being the main area requiring improvement.

4.5.2 Delivery Coverage Capacity Strategy

In line with the second objective, Table 4.8 presents the means and standard deviations on delivery coverage capacity strategy. The variable was measured using six statements on the geographic reach of the delivery service, namely the ability to deliver to a wide range of customer locations, availability of delivery in most areas where customers are located, ability to serve hard-to-reach locations, consistency of availability across geographic areas, maintenance of delivery operations in both central and peripheral areas, and accessibility of delivery services to customers from different locations.

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Table 4.8: Descriptive Statistics for Delivery Coverage Capacity Strategy

Statements	N	Mean	Std. Dev
The company is able to deliver products to a wide range of customer locations	151	3.95	0.69
Delivery services are available in most areas where customers are located	151	3.74	0.89
The company is able to serve customers in hard-to-reach locations	151	3.26	1.05
Delivery services are consistently available across different geographic areas	151	3.63	0.94
The company maintains delivery operations in both central and peripheral areas.	151	3.69	0.89
Customers from different locations are able to access delivery services without major limitations.	151	3.39	1.08
Overall mean score	**151**	**3.61**	**0.72**

Source: Research Data (2026)

The results in Table 4.8 show an overall mean score of 3.61 and a standard deviation of 0.72. The overall mean score falls within the agree band, indicating that respondents agreed that their companies had developed delivery coverage capacity to a great extent, and the standard deviation of 0.72 indicates a high level of agreement among respondents on this assessment.

Respondents agreed most strongly that the company is able to deliver products to a wide range of customer locations (M = 3.95, SD = 0.69), followed by the statements that delivery services are available in most areas where customers are located (M = 3.74, SD = 0.89), that the company maintains delivery operations in both central and peripheral areas (M = 3.69, SD = 0.89) and that delivery services are consistently available across different geographic areas (M = 3.63, SD = 0.94). The standard deviations of these four statements are all below 1.00, indicating that respondents were in close agreement that their companies had built a broad distribution footprint.

Respondents were, however, neutral on the statements that customers from different locations are able to access delivery services without major limitations (M = 3.39, SD =

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1.08) and that the company is able to serve customers in hard-to-reach locations (M = 3.26, SD = 1.05). Both standard deviations exceed 1.00, indicating varied views among respondents: coverage of remote and difficult-to-access locations differs markedly from one company to another. Overall, the findings show that e-commerce companies in Nairobi County have a reasonably extensive delivery reach, but that serving hard-to-reach locations without limitation remains a challenge for a number of companies.

4.5.3 Flexible Parcel Delivery Services Strategy

In line with the third objective, Table 4.9 presents the means and standard deviations for the flexible parcel delivery services strategy. The variable was measured using six statements on the availability of multiple delivery time options, ease of rescheduling deliveries, availability of alternative delivery locations, adjustment of delivery services to customer preferences, provision of flexible solutions when initial delivery attempts fail, and sufficiency of customer choice on where parcels are received.

Table 4.9: Descriptive Statistics for Flexible Parcel Delivery Services Strategy

Statements	N	Mean	Std. Dev
Customers are offered multiple delivery time options to suit their schedules	151	3.74	0.85
The company allows customers to easily reschedule delivery times when necessary.	151	3.77	0.86
Alternative delivery locations are available for customer convenience	151	3.77	0.84
Delivery services can be adjusted based on customer preferences	151	3.97	0.78
The company provides flexible solutions when initial delivery attempts fail.	151	3.60	0.97
Customers have sufficient choices regarding where they receive their parcels.	151	3.87	0.85
Overall mean score	**151**	**3.79**	**0.61**

Source: Research Data (2026)

The results in Table 4.9 show an overall mean score of 3.79 and a standard deviation of 0.61. The overall mean score falls within the agree band, indicating that respondents

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agreed that their companies offered flexible parcel delivery services to a high extent. This was the highest overall mean score among the four strategies, and the standard deviation of 0.61 was the lowest, indicating a high level of agreement among respondents.

Respondents agreed most strongly that delivery services can be adjusted based on customer preferences (M = 3.97, SD = 0.78), followed by the statements that customers have sufficient choices regarding where they receive their parcels (M = 3.87, SD = 0.85), that the company allows customers to easily reschedule delivery times (M = 3.77, SD = 0.86), that alternative delivery locations are available (M = 3.77, SD = 0.84) and that customers are offered multiple delivery time options (M = 3.74, SD = 0.85). Respondents also agreed, although least strongly, that the company provides flexible solutions when initial delivery attempts fail (M = 3.60, SD = 0.97). All six statements fall within the agree band, and all six standard deviations are below 1.00, indicating a high level of agreement among respondents on every aspect of flexibility. The comparatively lower mean and higher standard deviation for managing failed delivery attempts suggest that this is the aspect of flexibility on which companies differ most. Overall, the findings show that flexible parcel delivery services are widely practised among e-commerce companies in Nairobi County.

4.5.4 Parcel Tracking Systems

In line with the fourth objective, Table 4.10 presents the descriptive results on parcel tracking systems. The variable was measured using six statements on real-time tracking, accuracy of delivery status information, timeliness of notifications, ease of use of the tracking platform, reduction of customer uncertainty and regularity of tracking updates until delivery.

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Table 4.10: Descriptive Statistics for Parcel Tracking Systems

Statements	N	Mean	Std. Dev
Customers can track their parcels in real time throughout the delivery process	151	3.59	0.93
The tracking system provides accurate information on delivery status.	151	3.62	0.92
Customers receive timely notifications about their parcel movements.	151	3.75	0.83
The tracking platform is easy for customers to use	151	3.69	0.98
The tracking system helps reduce customer uncertainty about deliveries.	151	3.85	0.90
Tracking information is updated regularly until the parcel is delivered.	151	3.54	1.06
Overall mean score	**151**	**3.67**	**0.79**

Source: Research Data (2026)

The results in Table 4.10 show an overall mean score of 3.67 and a standard deviation of 0.79. The overall mean score falls within the agree band, indicating that respondents agreed to a great extent that parcel tracking systems were used in their companies. The standard deviation of 0.79 is below 1.00, indicating a high level of agreement among respondents, although it was the highest overall standard deviation among the four strategies, showing that the use of tracking systems varies more from company to company than the other strategies.

Respondents agreed most strongly that the tracking system helps reduce customer uncertainty about deliveries (M = 3.85, SD = 0.90), followed by the statements that customers receive timely notifications about their parcel movements (M = 3.75, SD = 0.83), that the tracking platform is easy for customers to use (M = 3.69, SD = 0.98), that the tracking system provides accurate information on delivery status (M = 3.62, SD = 0.92) and that customers can track their parcels in real time throughout the delivery process (M = 3.59, SD = 0.93). All five statements fall within the agree band, and their standard deviations are below 1.00, indicating a high level of agreement among respondents.

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The lowest-rated statement was that tracking information is updated regularly until the parcel is delivered (M = 3.54, SD = 1.06). Although the mean still falls within the agree band, the standard deviation of 1.06 exceeds 1.00, indicating varied views among respondents and suggesting that some companies do not maintain continuous updates throughout the delivery journey. Overall, the findings show that parcel tracking systems are reasonably well integrated into the operations of e-commerce companies in Nairobi County, with the regularity of updates being the aspect most in need of improvement.

4.5.5 Performance

Table 4.11 presents the descriptive findings on performance, the dependent variable. Performance was measured using six statements covering operational cost efficiency (reduction of delivery-related operational costs over time and organisation of delivery operations to minimise expenses), delivery timeliness (completion of deliveries within planned schedules and minimisation of delays) and order fulfilment rate (accurate delivery of orders and completion of orders without corrections).

Table 4.11: Descriptive Statistics for Performance

Statements	N	Mean	Std. Dev
The company has reduced delivery-related operational costs over time	151	3.42	0.89
Delivery operations are organized in a way that minimizes operational expenses.	151	3.87	0.62
Deliveries are completed within the planned time schedules.	151	3.63	0.87
The company effectively minimizes delays in the delivery process	151	3.79	0.84
Customer orders are accurately delivered as requested	151	3.80	0.77
The majority of orders are successfully completed without corrections	151	3.88	0.80
Overall mean score	**151**	**3.73**	**0.57**

Source: Research Data (2026)

The results in Table 4.11 show an overall mean score of 3.73 and a standard deviation of 0.57. The overall mean score falls within the agree band, indicating that respondents

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agreed their companies were performing well in cost efficiency, delivery timeliness, and order fulfilment. The standard deviation of 0.57 was the lowest of all the variables, indicating a very high level of agreement among respondents on this assessment.

Respondents agreed most strongly that the majority of orders are successfully completed without corrections (M = 3.88, SD = 0.80), followed closely by the statement that delivery operations are organised in a way that minimises operational expenses (M = 3.87, SD = 0.62). Respondents also agreed that customer orders are accurately delivered as requested (M = 3.80, SD = 0.77), that the company effectively minimises delays in the delivery process (M = 3.79, SD = 0.84) and that deliveries are completed within the planned time schedules (M = 3.63, SD = 0.87). All standard deviations are below 1.00, indicating a high level of agreement among respondents on these aspects of performance.

The lowest-rated statement was that the company has reduced delivery-related operational costs over time (M = 3.42, SD = 0.89). Although the mean lies at the lower boundary of the agree band, it indicates that cost reduction over time remains the weakest aspect of performance. Overall, the findings show that e-commerce companies in Nairobi County perform well in order fulfilment and delivery timeliness, while the reduction of delivery-related costs remains the area in which performance is least strong.

4.6 Inferential Analysis

This section presents the inferential analysis used to answer the four research questions. It includes correlation analysis to establish the strength and direction of the association between each strategy and performance, the model summary to establish how much of the variation in performance the four strategies explain, analysis of variance to establish whether the regression model as a whole is significant, and the regression coefficients to establish the influence of each strategy on performance.

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4.6.1 Correlation Analysis

Pearson product-moment correlation analysis was carried out to establish the strength, direction and significance of the association between each of the four last-mile delivery strategies and performance. The results are presented in Table 4.12.

Table 4.12: Correlation Results

Variable		DPS	DCCS	FPDSS	PTS	PERF
Delivery performance strategy (DPS)	Pearson correlation	1				
	Sig. (2-tailed)					
Delivery coverage capacity strategy (DCCS)	Pearson correlation	.501**	1			
	Sig. (2-tailed)	.000				
Flexible parcel delivery services strategy (FPDSS)	Pearson correlation	.537**	.646**	1		
	Sig. (2-tailed)	.000	.000			
Parcel tracking systems (PTS)	Pearson correlation	.415**	.429**	.494**	1	
	Sig. (2-tailed)	.000	.000	.000		
Performance (PERF)	Pearson correlation	.603**	.672**	.674**	.608**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	151	151	151	151	151

Correlation is significant at the 0.01 level (2-tailed). DPS = delivery performance strategy; DCCS = delivery coverage capacity strategy; FPDSS = flexible parcel delivery services strategy; PTS = parcel tracking systems; PERF = performance

Source: Research Data (2026)

The results in Table 4.12 indicate that all four strategies had positive and statistically significant associations with performance at the 0.01 level of significance. The flexible parcel delivery services strategy had the strongest association with performance ($r = 0.674$, $p < 0.01$), followed closely by the delivery coverage capacity strategy ($r = 0.672$, p

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< 0.01), parcel tracking systems (r = 0.608, p < 0.01) and the delivery performance strategy (r = 0.603, p < 0.01). All four coefficients lie between 0.60 and 0.68, indicating strong positive associations: companies that provide adaptable delivery arrangements, maintain extensive coverage, operate effective tracking systems and execute deliveries dependably tend to report higher cost efficiency, delivery timeliness and order fulfilment. The significant linear correlations also confirmed that the relationship between each strategy and performance is linear, which is the assumption on which the multiple linear regression that follows rests. The correlations among the four strategies themselves (r = 0.415 to 0.646) were moderate, indicating that the four strategies are related but distinct. The correlation results therefore provided preliminary evidence, in answer to the four research questions, that each strategy is positively associated with performance.

4.6.2 Model Summary

Table 4.13 presents the model summary, showing the overall strength of the relationship between the four strategies and performance and the proportion of the variation in performance explained by the regression model.

Table 4.13: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.808a	.654	.644	.3404

a. Predictors: (Constant), parcel tracking systems, delivery performance strategy, delivery coverage capacity strategy, flexible parcel delivery services strategy

Source: Research Data (2026)

Table 4.13 shows a multiple correlation coefficient (R) of 0.808, indicating a strong relationship between the four strategies taken together and performance. The coefficient of determination (R^2) of 0.654 shows that 65.4 % of the variation in the performance of e-commerce companies in Nairobi County was explained by delivery performance strategy,

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delivery coverage capacity strategy, flexible parcel delivery services strategy and parcel tracking systems. The remaining 34.6 % was attributable to factors not included in the model and to random error. The adjusted R^2 of 0.644 is close to the R^2, confirming that the model retained substantial explanatory power after adjusting for the number of predictors.

4.6.3 Analysis of Variance

Table 4.14 presents the analysis of variance (ANOVA) results, which were used to establish whether the regression model as a whole was statistically significant in explaining performance.

Table 4.14: Analysis of Variance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	31.914	4	7.978	68.851	.000b
	Residual	16.918	146	.116		
	Total	48.832	150			

a. Dependent variable: Performance. b. Predictors: (Constant), parcel tracking systems, delivery performance strategy, delivery coverage capacity strategy, flexible parcel delivery services strategy

Source: Research Data (2026)

The results in Table 4.14 show that the regression model was statistically significant ($F(4, 146) = 68.851$, $p < 0.001$). Since the significance value was below the 0.05 level, the four last-mile delivery strategies, taken together, had a statistically significant influence on the performance of e-commerce companies in Nairobi County. The model was therefore adequate for predicting performance and provided a sound basis for examining the individual contribution of each strategy.

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4.6.4 Regression Coefficients

Table 4.15 presents the regression coefficients. The unstandardised coefficients (B) show the change in performance associated with a one-unit change in each strategy while holding the other strategies constant, and were used to write the fitted regression equation. The standardised coefficients (Beta) express the coefficients in standard deviation units and were used to rank the relative influence of the four strategies. The significance values were used to determine whether each strategy had a statistically significant influence on performance at the 5% level.

Table 4.15: Regression Coefficients

Model	Unstandardised coefficients		Standardised coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.612	.197		3.099	.002
Delivery performance strategy	.199	.055	.216	3.584	.000
Delivery coverage capacity strategy	.234	.052	.297	4.480	.000
Flexible parcel delivery services strategy	.213	.065	.230	3.295	.001
Parcel tracking systems	.200	.042	.278	4.817	.000

a. Dependent variable: Performance

Source: Research Data (2026)

Using the unstandardised coefficients in Table 4.15, the fitted regression equation was:

$$Y = 0.612 + 0.199X_1 + 0.234X_2 + 0.213X_3 + 0.200X_4$$

Where Y is performance, X_1 is delivery performance strategy, X_2 is delivery coverage capacity strategy, X_3 is flexible parcel delivery services strategy and X_4 is parcel tracking systems. The constant of 0.612 ($p = 0.002$) is the predicted level of performance when all four strategies are held at zero.

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All four strategies had positive and statistically significant unstandardised coefficients. A one-unit improvement in delivery coverage capacity strategy was associated with an increase of 0.234 units in performance ($B = 0.234$, $t = 4.480$, $p < 0.001$); a one-unit improvement in flexible parcel delivery services strategy with an increase of 0.213 units ($B = 0.213$, $t = 3.295$, $p = 0.001$); a one-unit improvement in parcel tracking systems with an increase of 0.200 units ($B = 0.200$, $t = 4.817$, $p < 0.001$); and a one-unit improvement in delivery performance strategy with an increase of 0.199 units ($B = 0.199$, $t = 3.584$, $p < 0.001$), in each case holding the other strategies constant. Since all the p-values were below 0.05, each of the four strategies made a statistically significant contribution to performance, which answers the four research questions in the affirmative.

The standardised coefficients were used to rank the strategies because they are expressed on a common scale. On this basis, the delivery coverage capacity strategy had the greatest relative influence on performance (Beta = 0.297), followed by parcel tracking systems (Beta = 0.278), flexible parcel delivery services strategy (Beta = 0.230) and delivery performance strategy (Beta = 0.216). It should be noted that the ranking by standardised coefficients differs slightly from the ordering of the unstandardised coefficients, because the strategies were measured with different standard deviations; the standardised ranking is the appropriate one for comparing relative influence, while the unstandardised coefficients are appropriate for interpreting the size of the change in performance. The findings indicate that expanding delivery reach, strengthening tracking capabilities, widening delivery flexibility and improving delivery execution are all significant drivers of the cost efficiency, delivery timeliness and order fulfilment of e-commerce companies in Nairobi County.

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4.7 Discussion of Findings

This section discusses the findings in relation to the four research objectives, the empirical literature reviewed in Chapter Two and the theories underpinning the study. The findings are interpreted in light of prior studies in order to establish areas of convergence and divergence and to draw out their implications for practice and policy.

4.7.1 Delivery Performance Strategy and Performance

The first objective was to determine the influence of delivery performance strategy on the performance of e-commerce companies in Nairobi County. The descriptive results showed that respondents agreed that their companies had implemented delivery performance strategy to a high extent (overall mean = 3.69, SD = 0.62), agreeing in particular that delivery timelines are realistic, that promised dates are met and that orders are delivered within the expected time frame, while remaining neutral on whether customers rarely experience delays. The correlation analysis established a strong positive and significant association between delivery performance strategy and performance ($r = 0.603$, $p < 0.01$), and the regression analysis showed that delivery performance strategy had a positive and statistically significant influence on performance ($B = 0.199$, Beta = 0.216, $p < 0.001$). Although it ranked fourth among the four strategies, its influence was significant, indicating that improving delivery speed, dispatch efficiency, and adherence to delivery schedules raises the cost efficiency, delivery timeliness and order fulfilment of e-commerce companies.

The findings support the service quality model, which holds that reliability and responsiveness are the dimensions of service that matter most to customers: timely dispatch and adherence to promised delivery dates are direct expressions of these two dimensions. The findings also support expectation confirmation theory, since delivery

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within the communicated time frame confirms the expectations formed at the time of purchase, reducing cancellations and re-deliveries. They further support transaction cost theory, in that efficient delivery processes reduce the coordination inefficiencies and resource wastage associated with delayed and repeated deliveries, thereby improving cost efficiency.

The findings are consistent with Nikzadask et al. (2026), who found that timely delivery enhanced performance on online food delivery platforms by improving coordination and reliability, and with Arora and Chaudhary (2025), who concluded that faster fulfilment improved operational effectiveness and competitiveness in fashion e-commerce. They also corroborate Choudhary et al. (2025), who showed that efficient logistics flows and timely deliveries are associated with better platform outcomes; Siddiqi et al. (2024), who found that timely fulfilment improved service outcomes and loyalty; and Ganesh et al. (2024), who found that shorter fulfilment times raised efficiency and reliability. In the Kenyan context, the findings agree with Kinuthia and Wambua (2025), who found that service delivery speed positively affected the performance of commercial banks, and extend that evidence from banking to the physical delivery of goods. The present study adds to these studies by showing that the relationship holds when delivery performance strategy is assessed by managers rather than customers and when performance is measured at the firm level.

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4.7.2 Delivery Coverage Capacity Strategy and Performance

The second objective was to examine the influence of delivery coverage capacity strategy on the performance of e-commerce companies in Nairobi County. The descriptive results showed that respondents agreed that their companies had developed delivery coverage capacity to a high extent (overall mean = 3.61, SD = 0.72), agreeing that they deliver to a wide range of locations and maintain operations in both central and peripheral areas, but

remaining neutral on whether hard-to-reach locations are served without limitation. The correlation analysis established a strong positive and significant association between delivery coverage capacity strategy and performance ($r = 0.672$, $p < 0.01$), and the regression analysis showed that the strategy had the largest unstandardised coefficient ($B = 0.234$, $p < 0.001$) and the largest standardised coefficient (Beta = 0.297), making it the most influential of the four strategies. Companies with wider coverage are able to fulfil more orders at the first attempt, reduce failed deliveries and serve a broader customer base, which improves cost efficiency, timeliness and fulfilment.

The findings support the service quality model, as consistent delivery availability across locations reflects reliability, and expectation confirmation theory, as customers whose locations are served as expected receive their orders and do not cancel. They particularly support transaction cost theory, which argues that effective distribution networks reduce delivery inefficiencies and the costs of repeated attempts, enabling firms to serve customers at lower cost.

The findings agree with Lim and Choo (2026), who concluded that extensive delivery networks built through plural governance improve performance by widening service availability, and with Li and Gan (2025), who found that broader logistics coverage increased reach, accessibility and performance in rural e-commerce. They are also in line with Peña-Acosta et al. (2025), who found that expanded delivery reach improved efficiency in urban e-commerce, with Aziz et al. (2025), who found that a reliable service network across locations was a key determinant of performance in the courier industry, and with Islam et al. (2024), who emphasised the importance of overcoming geographical delivery barriers. In Kenya, the findings complement Mogire et al. (2023), who found from the customer's side that poor accessibility of certain locations reduced satisfaction; the present study shows from the firm's side that coverage is the strongest driver of

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performance. The finding that coverage ranked first is a notable contribution, since most of the reviewed studies emphasised speed rather than reach.

4.7.3 Flexible Parcel Delivery Services Strategy and Performance

The third objective was to assess the influence of flexible parcel delivery services strategy on the performance of e-commerce companies in Nairobi County. The descriptive results showed that respondents agreed that their companies offered flexible parcel delivery services to a great extent, and this strategy recorded the highest overall mean score and the lowest standard deviation of the four (overall mean = 3.79, SD = 0.61); respondents agreed with all six statements, most strongly that delivery services can be adjusted to customer preferences and least strongly that flexible solutions are provided when initial attempts fail. The correlation analysis established the strongest association of the four strategies with performance ($r = 0.674$, $p < 0.01$), and the regression analysis showed that the strategy had a positive and statistically significant influence on performance ($B = 0.213$, Beta = 0.230, $p = 0.001$), ranking third by standardised coefficient once the other strategies were controlled for. Companies that give customers greater control over when and where parcels are delivered reduce failed attempts and re-deliveries and improve first-attempt fulfilment.

The findings support expectation confirmation theory, which posits that customers evaluate a service positively when it aligns with the preferences and expectations they formed at purchase; delivery options that fit the customer's schedule and location produce confirmation and first-attempt acceptance. They also support the service quality model, in which responsiveness to customer needs is a core dimension of quality, and transaction cost theory, in that fewer failed attempts mean lower coordination and re-delivery costs.

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The findings are consistent with Obara et al. (2025), who showed in Kenya's courier sector that flexible delivery arrangements improve performance by allowing firms to respond to changing customer needs, and with Caberoy et al. (2025), who found in the Philippines that alternative delivery options and convenient arrangements enhance service effectiveness. They also agree with Kosamu and Mwanza (2025), who found that responsiveness to customer delivery preferences was central to service efficiency in Zambia; with Ayantoyinbo and Oyewale (2025), who found that flexible delivery systems increased delivery success rates in Lagos, and with Saha (2025), who showed that delivery flexibility sustained service continuity and performance in India. The present study extends these findings from courier firms and customer surveys to e-commerce companies assessed at the firm level, and shows that flexibility remains significant even after delivery speed, coverage and tracking are controlled for.

4.7.4 Parcel Tracking Systems and Performance

The fourth objective was to evaluate the influence of parcel tracking systems on the performance of e-commerce companies in Nairobi County. The descriptive results showed that respondents agreed that parcel tracking systems were used in their companies to a high extent (overall mean = 3.67, SD = 0.79), agreeing most strongly that tracking reduces customer uncertainty and that customers receive timely notifications, while holding varied views on whether tracking information is updated regularly until delivery. The correlation analysis established a strong positive and significant association between parcel tracking systems and performance ($r = 0.608$, $p < 0.01$), and the regression analysis showed that parcel tracking systems had a positive and statistically significant influence on performance ($B = 0.200$, Beta = 0.278, $p < 0.001$), ranking second by standardised coefficient. Companies with effective tracking technology are better able to monitor

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deliveries, communicate with customers and coordinate their riders, which improves timeliness, fulfilment and cost efficiency.

The findings support the service quality model, in that tracking provides the assurance and communication that customers value, and expectation confirmation theory, in that accurate and timely tracking information manages customer expectations and reduces the uncertainty that leads to negative disconfirmation. They particularly support transaction cost theory, since tracking reduces the information asymmetry between the company, its riders and its customers and thereby lowers monitoring and coordination costs.

The findings are consistent with Scorohodov (2026), who found that tracking technology improved operating efficiency through better shipment visibility and coordination, with Dabić-Miletić (2026), who found that digital tracking technology enhanced logistics efficiency by providing real-time information, and with Bertrand et al. (2024), who found that timely access to tracking information improved delivery reliability. They also agree with Francis (2025), who found that investment in tracking improved customer comfort through timely and accurate delivery information, and with Kimondio and Tumuti (2024), who reported in Kenya that information systems enhanced performance through improved operational control and coordination. The present study adds quantitative firm-level evidence, which the largely qualitative and technology-focused tracking literature lacked, that parcel tracking systems significantly influence the performance of e-commerce companies.

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CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary of the key findings of the study, draws conclusions in relation to the research objectives, states the contribution of the study to knowledge, and makes recommendations to the management of e-commerce companies, to policymakers and regulators, and to the research community. The chapter closes with suggestions for further studies.

5.2 Summary of Findings

The general objective of the study was to establish the influence of last-mile delivery strategies on the performance of e-commerce companies in Nairobi County, Kenya. Data were collected from 151 operations managers, delivery coordinators and customer service managers in the 61 licensed e-commerce companies in the County, with a response rate of 82.5 %. The four strategies jointly explained 65.4 % of the variation in performance (R^2 = 0.654, F = 68.851, $p < 0.001$). The findings for each specific objective are summarised below.

5.2.1 Delivery Performance Strategy and Performance

The first objective was to determine the influence of delivery performance strategy on the performance of e-commerce companies in Nairobi County. The descriptive findings showed that respondents agreed that their companies had implemented delivery performance strategy to a high extent (overall mean = 3.69, SD = 0.62), with a high level of agreement among respondents. Respondents agreed that delivery timelines communicated to customers are realistic, that promised delivery dates are met and that orders are dispatched and delivered promptly, but were neutral on whether customers

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rarely experience delays, on which views varied (SD = 1.08). Correlation analysis revealed a strong positive and significant association between delivery performance strategy and performance ($r = 0.603$, $p < 0.01$), and regression analysis established that delivery performance strategy had a positive and statistically significant influence on performance (B = 0.199, Beta = 0.216, $p < 0.001$), ranking fourth among the four strategies.

5.2.2 Delivery Coverage Capacity Strategy and Performance

The second objective was to examine the influence of delivery coverage capacity strategy on the performance of e-commerce companies in Nairobi County. The descriptive findings showed that respondents agreed that their companies had developed delivery coverage capacity to a great extent (overall mean = 3.61, SD = 0.72), with a high level of agreement among respondents. Respondents agreed that their companies deliver to a wide range of locations and maintain operations in both central and peripheral areas, but were neutral on whether hard-to-reach locations are served and whether customers in different locations face no major limitations, on which views varied (SD = 1.05 and 1.08). Correlation analysis revealed a strong positive and significant association between delivery coverage capacity strategy and performance ($r = 0.672$, $p < 0.01$), and regression analysis established that the strategy had the greatest influence on performance of the four (B = 0.234, Beta = 0.297, $p < 0.001$).

5.2.3 Flexible Parcel Delivery Services Strategy and Performance

The third objective was to assess the influence of flexible parcel delivery services strategy on the performance of e-commerce companies in Nairobi County. The descriptive findings showed that respondents agreed that their companies offered flexible parcel delivery services to a high extent, and this strategy recorded the highest overall mean

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score and the highest level of agreement among respondents of the four strategies (overall mean = 3.79, SD = 0.61). Respondents agreed with all six statements, most strongly that delivery services can be adjusted to customer preferences and least strongly that flexible solutions are provided when initial delivery attempts fail. Correlation analysis revealed the strongest association with performance of the four strategies ($r = 0.674$, $p < 0.01$), and regression analysis established that the strategy had a positive and statistically significant influence on performance (B = 0.213, Beta = 0.230, p = 0.001), ranking third by standardised coefficient.

5.2.4 Parcel Tracking Systems and Performance

The fourth objective was to evaluate the influence of parcel tracking systems on the performance of e-commerce companies in Nairobi County. The descriptive findings showed that respondents agreed that parcel tracking systems were used in their companies to a high extent (overall mean = 3.67, SD = 0.79), with a high level of agreement among respondents. Respondents agreed most strongly that tracking reduces customer uncertainty and that customers receive timely notifications, while views varied on whether tracking information is updated regularly until delivery (SD = 1.06). Correlation analysis revealed a strong positive and significant association between parcel tracking systems and performance ($r = 0.608$, $p < 0.01$), and regression analysis established that parcel tracking systems had a positive and statistically significant influence on performance (B = 0.200, Beta = 0.278, $p < 0.001$), ranking second by standardised coefficient.

5.3 Conclusions

On the basis of the findings, the study concludes that last-mile delivery strategies are significant determinants of the performance of e-commerce companies in Nairobi County.

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The four strategies together explained about two-thirds of the variation in performance, and each of them had a positive and statistically significant influence, so that improvement in any one of them can be expected to raise cost efficiency, delivery timeliness and order fulfilment.

Regarding the first objective, the study concludes that the delivery performance strategy significantly improves performance, but it is the least influential of the four strategies (Beta = 0.216). The evidence shows that e-commerce companies in Nairobi County already manage customer expectations well through realistic timelines and generally keep to promised dates; the remaining weakness is that delays still occur in some companies, as shown by the neutral and widely dispersed responses on the rarity of delays. Further gains from this strategy will therefore come from eliminating residual delays rather than from setting new timelines.

With respect to the second objective, the study concludes that delivery coverage capacity strategy is the most influential driver of performance (Beta = 0.297). The evidence shows that companies with a wider, more consistently available delivery footprint fulfil more orders at lower cost, and that the weakest aspect of coverage is service to hard-to-reach locations, on which respondents were neutral and divided. Expanding reach into such locations is therefore the single investment most likely to raise performance.

With respect to the third objective, the study concludes that flexible parcel delivery services strategy significantly improves performance (Beta = 0.230). Flexibility is the most widely practised of the four strategies and has the strongest simple correlation with performance, which indicates that giving customers control over the time and place of delivery reduces failed attempts and re-deliveries; its lower ranking in the regression indicates that part of its benefit is shared with coverage and tracking. The weakest aspect is the handling of failed first attempts.

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With respect to the fourth objective, the study concludes that parcel tracking systems are the second most influential driver of performance (Beta = 0.278). The evidence shows that tracking reduces customer uncertainty and supports timely communication, but that continuous updating of tracking information until delivery is inconsistent across companies. Tracking systems that are updated throughout the delivery journey will therefore yield larger performance gains than systems that only confirm dispatch and delivery.

5.4 Recommendations

The recommendations below are derived from the findings and conclusions and are directed to the three groups of stakeholders identified in the significance of the study, namely the management of e-commerce companies, policymakers and regulators, and the research community.

To the management of e-commerce companies in Nairobi County, the study recommends, first, that priority be given to expanding delivery coverage capacity, since this was the strategy with the greatest influence on performance and the one with the clearest weakness. Management should extend delivery into hard-to-reach and peripheral locations through partnerships with courier companies and boda boda networks that already operate in those areas, through agent-based pick-up points in estates and market centres, and through zoning of the county so that every customer location falls within a defined delivery zone with a published delivery promise. Second, management should invest in reliable parcel tracking systems that update parcel status at every hand-over point until delivery, with automated notifications to customers, since regularity of updates was the weakest aspect of tracking and tracking was the second most influential strategy. Third, management should widen flexible delivery options, and in particular should establish a clear procedure for failed first attempts, such as automatic rescheduling,

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redirection to a pick-up point or a call-back within a defined time, since this was the weakest aspect of flexibility. Fourth, management should eliminate the residual delays in delivery execution by using route optimisation and dispatch management systems and by monitoring on-time performance per rider and per zone, so that the realistic timelines they already communicate are consistently met. Because the reduction of delivery-related costs over time was the weakest indicator of performance, management should also track the cost per delivery and the cost of failed deliveries so that the savings from these four strategies are measured and retained.

To policymakers and regulators, namely the Ministry of Investments, Trade and Industry, the Ministry of Roads and Transport, the Ministry of Information, Communications and the Digital Economy, the Communications Authority of Kenya and the Nairobi City County Government, the study recommends that they support the strategies found to drive performance. The National and County Governments should accelerate the roll-out of the national physical addressing system and the improvement of access roads in peripheral and informal settlements, since poor addressing and access were the constraints behind the coverage and delay weaknesses found in this study. The Communications Authority of Kenya, as the regulator of courier operators, should set minimum service standards for licensed couriers on parcel tracking and status notification, so that e-commerce companies that rely on third-party couriers can maintain continuous tracking. The Ministry of Information, Communications and the Digital Economy should support affordable access to logistics and tracking technologies by small e-commerce companies, for example through the digital economy programmes already in place. The Nairobi City County Government should maintain and share an up-to-date register of licensed e-commerce companies and should consider designated loading and pick-up points in the central business district and major estates to ease last-mile operations. Consumer

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protection agencies should require e-commerce companies to publish their delivery coverage, delivery times and rescheduling options so that customers can make informed choices.

To the research community, the study recommends that the model developed here, which links four last-mile delivery strategies to firm-level performance, be adopted and tested in other counties and in other East African cities so that the ranking of the strategies found in Nairobi County can be compared across contexts. Researchers should also use the operational definitions and the validated instrument developed in this study, whose reliability coefficients were all above 0.70, as a starting point for further instrument development, including factor analysis, which was not carried out in this study. Specific directions for further research are given in Section 5.6.

5.5 Contribution to Knowledge

The study makes three contributions to knowledge. First, it provides firm-level empirical evidence from e-commerce companies in Nairobi County, a context in which prior evidence came either from customers (Mogire et al., 2023) or from courier companies (Obara et al., 2025). Second, it examines four last-mile delivery strategies together rather than in isolation, and shows that, when the strategies are considered jointly, the delivery coverage capacity strategy has the greatest influence on performance, followed by parcel tracking systems, the flexible parcel delivery services strategy and the delivery performance strategy; this ranking, in which reach outweighs speed, differs from the emphasis on speed in much of the reviewed literature. Third, the study operationalises last-mile delivery strategies and performance through an instrument whose reliability was established, and demonstrates how the service quality model, transaction cost theory and expectation confirmation theory complement one another in explaining the delivery timeliness, cost efficiency and order fulfilment dimensions of performance respectively.

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5.6 Suggestions for Further Studies

Although the study achieved its objectives, the regression results showed that 34.6 % of the variation in performance was explained by factors outside the model. Future research should examine other factors that may influence the performance of e-commerce companies, such as customer trust, service quality, technological innovation, organisational capabilities and logistics infrastructure. Future research should also test moderating and mediating variables such as firm size, business model (marketplace, direct retailer or niche retailer), organisational culture, technological readiness and customer characteristics, in order to explain more fully how last-mile delivery strategies translate into performance.

Future researchers should also strengthen methodological rigour by employing mixed-methods designs that combine structured questionnaires with interviews of managers and riders, so as to capture contextual insights that quantitative data alone cannot explain, and by carrying out factor analysis to establish the construct validity of the instrument. Longitudinal studies could examine how the influence of last-mile delivery strategies on performance evolves over time, and comparative studies across counties, industries or categories of e-commerce companies would help to establish the generalisability of the findings beyond Nairobi County.

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APPENDICES

Appendix I: Introductory Letter

Lucy Wanjiru

Postgraduate Student

School of Business and Leadership Studies

St. Paul's University

P.O. Box 00017

Limuru.

Re:To whom it may concern

I am a postgraduate student currently pursuing a Master of Business Administration (MBA) degree. As part of the requirements for the completion of my program, I am undertaking a research study titled "Influence of Last-Mile Delivery Strategies on Performance of E-Commerce Companies in Nairobi County, Kenya.".

The purpose of this letter is to respectfully seek your permission to collect data from your organization through a structured questionnaire. The information gathered will be used strictly for academic purposes and will be handled with the highest level of confidentiality. Participation in this study is entirely voluntary, and respondents are free to withdraw at any time without any obligation or penalty.

Your cooperation and support in facilitating this research will be greatly appreciated. Should you require any clarification regarding the study, please feel free to contact me.

Thank you for your time and kind consideration.

Yours faithfully,

Lucy Wanjiru

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Appendix II: Questionnaire

This questionnaire is designed to collect information on last-mile delivery strategies and their influence on performance among e-commerce companies operating in Nairobi County, Kenya. The information you provide will be used solely for academic purposes and will be treated with strict confidentiality. Your honest responses are highly valued and will contribute to the success of this study. Participation is voluntary, and you may withdraw at any time without any consequences.

Instructions:

Do not indicate your name

Tick appropriately

SECTION A: BACKGROUND INFORMATION

1 Gender: Male [ ] Female [ ]

2 Under which age brackets are you?

25 Years and below [ ] 26 - 35 Years [ ]

36 - 50 years [ ] Over 50 years [ ]

3 Which is the highest education level that you have attained?

Diploma [ ] Masters [ ]

Degree [ ] PhD [ ]

Others Specify…….

4 How many years have you worked in your firm?

Less than one year [ ] 1-3 years [ ]

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4-7 years [ ] 8 years and above [ ]

SECTION B: DELIVERY PERFORMANCE STRATEGY

Kindly rate your level of agreement with the following statements on delivery performance strategy to customers by your e-commerce company. Use the scale below to guide your responses: 1 – Strongly Disagree 2 – Disagree 3 – Neutral 4 – Agree 5 – Strongly Agree

Statement	1	2	3	4	5
Orders placed through our e-commerce platform are delivered within the expected time frame					
The company consistently meets the promised delivery dates provided to customers.					
Customers rarely experience delays in receiving their orders.					
The time taken to dispatch orders is efficient.					
Deliveries are completed promptly after orders are confirmed.					
The delivery timelines communicated to customers are realistic.					

SECTION C: DELIVERY COVERAGE CAPACITY STRATEGY

Kindly rate your level of agreement with the following statements on delivery coverage capacity strategy to customers by your e-commerce company. Use the scale below to guide your responses: 1 – Strongly Disagree 2 – Disagree 3 – Neutral 4 – Agree 5 – Strongly Agree

Statement	1	2	3	4	5
The company is able to deliver products to a wide range of customer locations					
Delivery services are available in most areas where customers are located					
The company is able to serve customers in hard-to-reach locations					

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Delivery services are consistently available across different geographic areas.					
The company maintains delivery operations in both central and peripheral areas					
Customers from different locations are able to access delivery services without major limitations					

SECTION D: FLEXIBLE PARCEL DELIVERY SERVICES STRATEGY

Kindly rate your level of agreement with the following statements on flexible parcel delivery service strategy to customers by your e-commerce company. Use the scale below to guide your responses: 1 – Strongly Disagree 2 – Disagree 3 – Neutral 4 – Agree 5 – Strongly Agree

Statement	**1**	**2**	**3**	**4**	**5**
Customers are offered multiple delivery time options to suit their schedules.					
The company allows customers to easily reschedule delivery times when necessary.					
Alternative delivery locations are available for customer convenience					
Delivery services can be adjusted based on customer preferences					
The company provides flexible solutions when initial delivery attempts fail.					
Customers have sufficient choices regarding where they receive their parcels					

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SECTION E: PARCEL TRACKING SYSTEM

Kindly rate your level of agreement with the following statements on parcel parcel tracking system to customers by your e-commerce company. Use the scale below to guide your responses: 1 – Strongly Disagree 2 – Disagree 3 – Neutral 4 – Agree 5 – Strongly Agree

Statement	1	2	3	4	5
Customers can track their parcels in real time throughout the delivery process					
The tracking system provides accurate information on delivery status					
Customers receive timely notifications about their parcel movements.					
The tracking platform is easy for customers to use					
The tracking system helps reduce customer uncertainty about deliveries.					
Tracking information is updated regularly until the parcel is delivered					

SECTION F: PERFORMANCE

Please indicate the extent to which you agree with the following statements regarding performance in your company. Use the scale below to guide your responses: 1 – Strongly Disagree 2 – Disagree 3 – Neutral 4 – Agree 5 – Strongly Agree

Statement	1	2	3	4	5
The company has reduced delivery-related operational costs over time					
Delivery operations are organized in a way that minimizes operational expenses					
Deliveries are completed within the planned time schedules.					
The company effectively minimizes delays in the delivery process.					
Customer orders are accurately delivered as requested					
The majority of orders are successfully completed without corrections					

Thank you very much

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Appendix III: E-Commerce Companies in Nairobi County (Population Frame)

No.	Company name	No.	Company name
1.	My Dawa	28.	Zandaux.com
2.	Sky Garden Kenya	29.	Savannah kicks
3.	Twiga foods	30.	My primepay tech ltd
4.	Jiji Kenya (formerly OLX)	31.	Muthurwa market place
5.	Kilimall Kenya	32.	Carata ltd
6.	Jumia Kenya	33.	Eco Kart Africa
7.	Copia	34.	Purpink gifts ltd
8.	Avechi	35.	Neyomis events & Cusine ltd
9.	Shopit	36.	Duka one
10.	Masoko	37.	Rafut zetu
11.	Chpter	38.	Masoko (Safaricom)
12.	Wasoko inc (soko watch)	39.	Virbyze ventures
13.	Phone place Kenya	40.	Entrehub investments
14.	Cheki Kenya	41.	Pi Consulting services ltd
15.	Kasha	42.	Naivas Online
16.	Honeycoin	43.	Carrefour Kenya Online
17.	Buupass Inc	44.	Chandaria Industries Online
18.	Cellulant	45.	Citizen-Duka
19.	Badili	46.	Mama Mikes
20.	Lapaire	47.	Afrigility
21.	GoBEBA	48.	Bupace Digital
22.	Shamba pride	49.	PigiaMe
23.	Kyota AI	50.	Mybigorder Marketplace
24.	Back to school (B2S) Kenya	51.	Quickmart Online
25.	Toto steps	52.	Auto Check
26.	Stock App	53.	Ovostore Kenya
27.	Taimba ltd	54.	Techaven,Saruk
		55.	Digital Solutions
		56.	Air Duka
		57.	AquinaFlies
		58.	Jamboshop
		59.	Compland Shop.com
		60	Buytec stores ltd
		61.	Foodplus

Source: Nairobi City County Government (2025)

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Appendix IV: Research Licence



REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION

Ref No: 331482

Date of Issue: 13/May/2026

RESEARCH LICENSE

This is to Certify that Ms.. LUCY NJOKI WANJIRU of St. Paul's University, Kenya, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Nairobi on the topic: INFLUENCE OF LAST-MILE DELIVERY STRATEGIES ON THE PERFORMANCE OF E-COMMERCE COMPANIES IN NAIROBI COUNTY, KENYA. for the period ending : 13/May/2027.

License No: NACOSTI/P/26/4189470

331482

Applicant Identification Number

Ag. Director General
NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION

Verification QR Code

NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.

See overleaf for conditions

Appendix V: Approval Letter

ST. PAUL'S UNIVERSITY

Private Bag 00217 Limuru,
Kenya
Email: office@spu.ac.ke
Website: www.spu.ac.ke

Tel Office: +254 (0) 20-2020505/10
Mobile: +254 (0) 728-669000
(0) 736-424440

REF: SPU/752/2026 **Date: 30th April 2026**

TO: Lucy Njoki
St. Paul's University

Dear Lucy,

==========

REF: Influence of Last-Mile Delivery Strategies on the Performance of E-Commerce Companies in Nairobi County, Kenya

==========

Greetings,

This is to inform you that SPU- Institutional Scientific Ethics Review Committee has reviewed the above-named research proposal. **Your ERB approval number is 762, for the period between 30th April 2026 – 30th April 2027 (1 year).**

This approval is subject to compliance with the following requirements;

i. Only approved documents including (informed consents, study instruments) will be used.
ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by SPU- Institutional Scientific Ethics Review Committee.
iii. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to SPU- Institutional Scientific Ethics Review Committee within 72 hours of notification
i. Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to *SPU- Institutional Scientific Ethics Review Committee* within 72 hours
ii. Clearance for export of biological specimens must be obtained from relevant institutions.

iii. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
iv. Submission of an executive summary report within 90 days upon completion of the study to SPU- Institutional Scientific Ethics Review Committee.
v. Should there be any publications from your research, note that you are supposed to anonymize the particulars of the respondents, the identifiers and the name of institution (s) where you collected data.
vi. Please note that it is within the ISERC's mandate to monitor your research and to do random visits to the site. All research is subject to post approval monitoring. Kindly provide a closure report after the research.

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) if you are collecting data in the country - https://research-portal.nacosti.go.ke **or obtain other clearances needed in the country where you will collect your data from.**

Yours sincerely,

Dr. Daniel Nzengya, PhD
Chairperson
SPU- Institutional Scientific & Ethics Review Committee

ST. PAUL'S UNIVERSITY
(ISERC)
APPROVAL WITH
CONTIGENCIES
RESEARCH
DIRECTORATE
INSTITUTIONAL SCIENTIFIC ETHICS REVIEW COMMITTEE

ST. PAUL