

A comparative analysis of last mile delivery in Kenya's online retail subsector

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ABSTRACT

Success in online retailing depends on effective and efficient last mile delivery. Although online retailing in Kenya has considerable potential to ensure sustainable trade and economic growth, progress in this subsector has been inhibited by several problems. Furthermore, existing literature failed to determine the elements of last mile delivery most valued by online customers and how last mile delivery is implemented by Kenya's online retail market. Therefore, it is necessary to investigate the elements of last mile delivery in Kenya's online retail subsector from the perspective of customers and retailers. A convergent mixed methods research design was used to ensure a comprehensive study of the research problem. A total of 407 online customers and seven online retailers in Nairobi participated in providing the required quantitative and qualitative data. The findings indicated that attended home delivery points, same-day delivery lead time, and phone call tracking options are most valued by customers and most offered by retailers. There is, however, a discrepancy in the delivery fee options, delivery timeslots, delivery carriers, and return options most valued by customers, and those most offered by retailers. It is recommended that retailers should review alternative delivery fee options, understand the problem with the outsourced delivery carriers, and the returns process to improve their service offerings.

Keywords: Last mile delivery; Online retail; Kenya



1. INTRODUCTION

In recent years, global online retailing has grown at an unprecedented rate. According to eMarketer (2023), global electronic commerce (e-commerce) sales are expected to reach \$8.034 trillion in 2027 from \$5.784 trillion sales in 2023. This would constitute a 38.9% increase in global e-commerce sales within four years. In 2023, China, which has established itself as a global leader in e-commerce, contributed \$2.931 trillion in sales, (more than half) of the total global e-commerce sales (eMarketer 2023). China's success in e-commerce is a result of, amongst others, an established last mile delivery system (Hongfei 2017; Zandi, Torabi, Mohammad & Dan 2021).

Last mile delivery is defined as the last leg of goods movement from where a product is released by the online retailer (e.g., manufacture site or fulfilment centre) to the point where a product is delivered to the customer (e.g., at the customer's home or a collection point (Mogire, Kilbourn & Luke 2023; Sorooshian, Khademi, Parsaee & Afshari 2022). Studies conducted in China have sought to determine the most valued elements of last mile delivery. For instance, Cao, Aijan and Hong (2018) found that online customers in China were satisfied with the shipping and tracking services. 'After-delivery services', such as refunds, returns, and product exchanges have been reported to have a positive impact on customer satisfaction in China (Javed & Wu 2019).

South Africa, ranked as the largest e-commerce market in Africa, generated e-commerce revenue worth \$5.18 billion in 2023 (Statista 2024). Like in China, studies conducted in South Africa have identified the most valued elements of last mile delivery. For instance, Brink (2018) found that the most preferred elements of last mile delivery for online grocery shoppers include the attended home delivery point, afternoon delivery timeslot (i.e., 16:00 to 18:00), and same-day delivery lead time. The delivery costs and waiting time to receive ordered goods are the two most important factors for young consumers in South Africa when selecting online service providers (Heyns & Kilbourn 2022). In addition, easy returns and delivery during their preferred timeslot were the most important delivery-related factors that impacted young consumers' decision to shop online instead of going to brick-and-mortar stores (Heyns & Kilbourn 2022). Katile and Mbhele (2023) found that end-to-end tracking, global positioning system (GPS) and radio frequency identification (RFID) are the most used tracking options in the last mile delivery (LMD) sector in South Africa. This demonstrates that online retailers in countries doing well in e-commerce are aware of the last mile delivery needs of their customers.

In Kenya, the online retail subsector is expected to contribute to the realisation of Vision 2030 (Government of Kenya (GoK) 2007). Vision 2030 aims to ensure that Kenya attains middle-income country status by the year 2030, amongst other things, by increasing the market share of products sold through formal channels (GoK 2007). It was estimated in 2023, Kenya's e-commerce revenue was worth \$760 million (Statista 2024). This is forecasted to reach \$1.10 billion in 2027 (Statista 2024), a 44.7% increase in expected e-commerce revenue within four years. Whereas Kenya's online retail revenue is on an upward trajectory, last mile delivery remains a challenge. For instance, an inefficient delivery service due to the lack of a national addressing system has limited the rate of e-commerce growth in Kenya (Mogire, Kilbourn & Luke 2022; United Nations Conference on Trade and Development (UNCTAD) 2022). Like other African markets, Kenya's last mile delivery challenge is also compounded by undermaintained road networks and a lack of an addressing system for home deliveries (Pollio, Cirolia & Odeo 2023), making delivery of goods to customers' homes difficult. A search on studies conducted in Kenya concerning last mile delivery in the online retail subsector found four studies; The last mile delivery problem: a Kenyan retail perspective (Mogire *et al.* 2022); Customer satisfaction with last mile delivery in Kenya (Mogire *et al.* 2023); Algorithmic suturing: platforms, motorcycles, and the 'last mile' (Pollio *et al.* 2023), and a Crowdsourcing model for last mile delivery in Nairobi (Odera 2020). However, these studies failed to specifically determine the elements of last mile delivery most offered in Kenya's online retail market and those that customers most value. Therefore, a need was identified to investigate the elements of last mile delivery service in Kenya's online retail subsector, from the perspective of the customers and retailers but more specifically:

- i. To determine the elements of last mile delivery service most valued by online customers in Nairobi.
- ii. To establish why online customers in Nairobi value certain elements of last mile delivery

- iii To describe how last mile delivery service is offered by online retailers in Nairobi.
- iv. To establish the gap between elements of last mile delivery most valued by online customers and those offered by online retailers in Nairobi.

2. LITERATURE REVIEW

There is no common framework for identifying the various elements of last mile delivery service in online retailing. Prior studies have examined the concept differently, for instance, delivery time and shipping charges (Ma 2017); delivery time, tracking and tracing, delivery place/ location, and selection of carriers (Holdorf & Haasis 2014); physical delivery, delivery information and options, shipping and handling charges, and order tracking (Nguyen, Leeuw & Dullaert 2018); delivery information/ options, delivery fees, delivery and order tracking (Nguyen, Leeuw, Dullaert & Foubert 2019); and delivery mode, lead times, delivery windows, and delivery fees (Sousa, Horta, Ribeiro & Rabinovich 2020).

Delivery fees, also known as shipping charges, are a critical element of last mile delivery services. Shipping and handling charges offered to online customers concern shipping fee options, such as threshold-based and free shipping (Nguyen *et al.* 2018). Nguyen *et al.* (2019) indicate that delivery fees relate to the price structures online retailers use to recover costs incurred during delivery. The price structures include unconditional free shipping and flat-rate shipping options. Shipping charges also consider the price charged to online customers to conveniently receive their products at home, which can be free or sometimes pay-for-the-service (Ma 2017). Cao *et al.* (2018) assert that shipping and related services that e-commerce companies provide to their customers include either free or discounted shipping. A study by Sousa *et al.* (2020) on how to serve online customers in European countries, indicate that delivery fees include waiving delivery charges for large orders or setting delivery charges based on the bulkiness/ weight of the order or based on the distance to a customer's home. In China, online customers are unwilling to pay high delivery fees (service cost), thus free delivery service will significantly promote electronic grocery shopping (Gatta, Marcucci, Maltese, Iannaccone & Fan 2021). Whereas customers prefer a waiver or a discounted delivery fee (Cao *et al.* 2018; Sousa *et al.* 2020), online retailers are likely to offer delivery fees that enable recovery of costs incurred during delivery (Nguyen *et al.* 2019). In addition, online retailers consider reducing their delivery charges to promote the sustainability of their businesses (Oláh, Kitukutha, Haddad, Pakurár, Máté & Popp 2018). A survey conducted in five developed countries found that many online customers were dissatisfied with their last mile delivery experience from online retailers due to high delivery prices (Jacobs, Warner, Rietra, Mazza, Buvat, Khadikar, Cherian & Khemka 2019).

Apart from delivery fees, Ma (2017) considered delivery time as a critical element of the last mile delivery service. Delivery time considers the actual shipping time, which can be either short or lengthy (Ma 2017). Holdorf and Haasis (2014) indicate that delivery time involves knowing the order delivery date, time window, and quick distribution. It also includes lead time which relates to quick delivery or standard delivery, and delivery window which is concerned with having many or few time windows, as well as short or long time windows (Sousa *et al.* 2020). Cao *et al.* (2018) indicate that shipping and its related services provided by e-commerce companies to their customers include the flexibility to choose shipping/ delivery dates and delivery of products at an agreed time. Delivery timeliness also includes delivery information that consumers wish to know about last mile delivery services before placing an order (Nguyen *et al.* 2018; Nguyen *et al.* 2019). The delivery information includes shipping dates, delivery dates, and time slots. Even though there are different aspects to delivery timeliness, it has been found in the Netherlands that online customers mostly prefer a delivery option of same-day delivery, and shorter lead times rather than longer lead times (Nguyen *et al.* 2019). Customers are willing to wait for their products when they are offered an alternative free but longer delivery time (Ma 2017). Similarly, retailers can offer a variety of shipping options including expedited shipping for customers who are willing to pay more, and standard shipping for cost-conscious customers (Wahshat, Al-Rousan, Al-Haithami, Ahmad Saany, Mohamad & Kumar 2023). However, Nguyen *et al.* (2019) found that increased delivery fee reduces the preference for a delivery option. In Europe, Jacobs *et al.* (2019) found that many online customers were dissatisfied with the last mile delivery experience from online retailers due to the unavailability of same-day delivery and late deliveries. In South Africa, Brink's (2018) research on the challenges faced in last mile e-grocery

delivery from a consumer's perspective, found that online consumers tend to prefer same-day delivery lead times and afternoon timeslots (i.e., 16:00 to 18:00). Thus, there are anomalies in the delivery services that customers want, what they are prepared to pay for, what they are prepared to sacrifice for lower costs, and what is practical for retailers.

Last mile delivery service also includes delivery tracking (Cao *et al.* 2018; Holdorf & Haasis 2014; Kafile & Mbhele 2023; Nguyen *et al.* 2019). Order tracking refers to an online service where consumers can track and trace the status of their orders after release from the point of distribution (Nguyen *et al.* 2019). In addition, tracking relates to how a customer can track their delivery using multiple channels, such as email or text delivery alerts (Cao *et al.* 2018). Similarly, Holdorf and Haasis (2014) indicate that online retailers offer a variety of tracking and tracing mechanisms, such as using GPS antennas for live tracking and email or text notifications to differentiate their delivery from competitors. The Internet-of-Things (IoT) technologies, such as GPS tracking, RFID systems, and real-time data analytics can be used to improve last mile distribution systems (Kafile & Mbhele 2023). In South Africa, IoT technologies, such as IoT-enabled vehicles, sensors, RFID, and GPS contribute to increased efficiency and customer satisfaction by reducing lead times and information inaccuracies (Kafile & Mbhele 2023). In China, Cao *et al.* (2018) found that tracking services positively correlate with customer satisfaction. In the United Kingdom (UK), Xu, Ferrand and Roberts (2008) found that online customers had a high preference for trackable deliveries, even though online retailers considered it costly to implement. Thus, delivery tracking seems to be an important part of the last mile delivery service.

Physical delivery, comprising delivery points and carriers, is also a critical element of the last mile delivery service. Nguyen *et al.* (2018) indicate that physical delivery includes the various delivery points in online retailing, such as attended home delivery. An attended home delivery service requires that the customer be at home to accept the delivery (Halldórsson & Wehner 2020). The other classification of delivery points includes deliver-to-home or click-and-collect (Sousa *et al.* 2020). Holdorf and Haasis (2014) examined delivery points for delivery to a private customer's address or an alternative address. Madleňák and Madleňáková (2020) identified four basic delivery points, namely delivery to a third-party delivery office, delivery to own contact point (such as an e-shop physical store), delivery to a customer's address, and delivery to parcel lockers. Klein and Popp (2022) identified three last mile delivery points, namely home delivery (can be either attended or unattended), collection points (pick up parcels from specific locations, e.g., parcel lockers at a post office or a shopping center) and click and collection option (buy online and collect goods from a physical store). Partnering with local delivery services has also been generally recommended for faster and more efficient last mile deliveries (Wahshat *et al.* 2023). Despite the existence of various delivery points, attended home delivery has become the most preferred delivery point by customers in many countries. For instance, online grocery shoppers in South Africa tend to prefer attended home delivery point (Brink 2018; Heyns & Kilbourn 2022). In Singapore, Tan (2016) established that 80% of the surveyed customers preferred home deliveries, compared to self-collection services. In contrast, retailers prefer unattended home delivery (Tiwapat, Pomsing & Jomthong 2018; Xu *et al.* 2008). Unattended home deliveries help retailers reduce failed first-time delivery rates, lower delivery costs, and reduce delivery time (Tiwapat *et al.* 2018). In European countries, new delivery points have emerged (Jacobs *et al.* 2019). These include delivery to cars, self-service lockers, and delivery to unmanned customers' homes. Innovative delivery options, like drones and autonomous vehicles, are also on the rise, greatly reducing last mile delivery costs (Jacobs *et al.* 2019). Technologies, such as drones, autonomous vehicles and crowdsourcing have been generally recommended for faster and more efficient last mile deliveries (Kim, Kweon, Hwang & Lee 2024; Wahshat *et al.* 2023). Corvi (2017) suggests that the future of same-day delivery may involve using drones. From the studies, this implies that physical delivery consists of a variety of delivery points and delivery carriers for use by online customers. In the US, consumers were found to be more willing to buy goods online when they were allowed to choose carriers from a list provided by the online retailer (Esper, Jensen, Turnispeed & Burton 2003). Similarly, Holdorf and Haasis (2014) indicate that when selecting carriers, customers consider the reputation of the carrier and the availability of other alternative carriers (Holdorf & Haasis 2014). Even though outsourcing last mile delivery involves a high number of vehicle miles travelled, retailers can offer a high level of expedited service at a fairly low cost (Pahwa & Jaller 2022).

Last mile delivery is considered incomplete without a return option. Nguyen *et al.* (2019) indicate that the returns component is where unwanted, faulty or damaged products are returned by the customer to the online retailer. Return options in online retailing relate to return preparation, return procedures, return handling, and refunds (Nguyen *et al.* 2018). Similarly, Cao *et al.* (2018) consider return options to include the ease and extent to which a customer can return their shipment, for example, by having a clear returns policy. Jones (2017) noted that returns convenience relates to a consumer's assessment of the performance related to a product return. For example, the retailer takes care of product returns, and does it either quickly or slowly (Jones 2017). In South Africa, Brink (2018) found that online consumers prefer retailers to collect returned goods from the initial delivery location. However, in Germany, retailers prefer drop-off of the returned products at their parcel shops (Velazquez & Chankov 2019).

From the preceding literature, at least five elements of last mile delivery service exist. These include delivery fees, delivery timeliness, delivery tracking, return options, and delivery options. Based on the preceding studies, little is known of a study exploring the five elements of last mile delivery service, from a customer and retailer perspective. Prior studies have only examined a few of these elements of last mile delivery service, either from the perspective of a customer or retailer. Apart from studies conducted in South Africa, the prior studies are skewed towards developed economies. This leads us to four research questions: (1) What are the elements of last mile delivery service most valued by online customers in Nairobi? (2) Why do online customers in Nairobi value certain elements of last mile delivery? (3) How is last mile delivery service offered by online retailers in Nairobi? and (4) What is the gap between the elements of last mile delivery most valued by online customers and those offered by online retailers in Nairobi?

3. METHODOLOGY

A convergent mixed-methods research design was used in this study. Convergent mixed methods research design is characterised by the simultaneous collection of qualitative and quantitative data, analysed separately, and the results integrated during the reporting phase (Creswell & Creswell 2018; Leedy, Ormrod & Johnson 2021). The convergent mixed methods research design was selected due to the need for different complementary data from customers and retailers required to best understand the research problem. Since little is known about last mile delivery service in Kenya's online retail subsector, it was ideal to ensure that qualitative findings from the online retailers, and the quantitative findings from the online customers could be corroborated and validated.

The target population comprised 258 353 residents in Nairobi County, aged 18 years and above, with access to the Internet and currently buying goods online (Kenya National Bureau of Statistics 2019). A total of 44 online retailers in Nairobi County were also used based on Pinecrest's (2019) list. The Pinecrest list of online retailers was used because there is no official list of registered online retailers in Nairobi. Since the target population of online customers in Nairobi County is large, and it is difficult to access all of them, a quantitative approach was ideal. This enabled data collection from a sample of online customers to obtain a general perspective of Nairobi's large population of online customers. A qualitative approach was also ideal to enable the collection of in-depth data from the small target population of online retailers in Nairobi to establish the true picture of last mile delivery service.

A sample of 384 online customers was obtained from the target population. This was based on Saunders, Lewis and Thornhill's (2019) assertion that most studies in business and management estimate the target population characteristics at 95% certainty to within plus or minus 3% to 5% of its true value. A population of 258 353 at 95% certainty to within $\pm 5\%$ of its true value results in a sample size of 384. Since online retailers in Nairobi were unwilling to share their customer databases for this research, three social media influencers known to produce high-quality and engaging content across the most common social media pages in Kenya, such as LinkedIn, X (previously Twitter), Facebook, and Instagram were approached to recruit online customers from their large number of online followers. The three social media influencers were well-known for conducting online market surveys and had at least 5 000 online followers on each of their social media pages. A link to the structured questionnaire was created using Google Forms and shared via the most common social media pages used in Kenya. To ensure that appropriate respondents were recruited, a screening question was included in the questionnaire to identify customers aged at least 18 years who had bought goods online within the last 12 months. The link to the questionnaire was shared at different times of the day/ week to reduce sampling bias. This was conducted over eight weeks from 01 July 2021 to 25 August

2021. For the qualitative data, seven online retailers were sampled from the target population. This was based on the assertion that at least six in-depth interviews are adequate for data saturation (Galvin 2015; Guest, Bunce & Johnson 2006). Since online retailers in Nairobi are known to deal with five main product categories (Statista 2020), at least one online retailer from each of the product categories was approached for an interview to ensure a true representation of the target population. The five product categories include toys, appliances, electronics and media, food and personal care, and furniture (Statista 2020). One senior customer relationship manager was interviewed from each of the seven retailers because they interact with online customers and were likely to be more knowledgeable about last mile delivery service. A semi-structured interview guide was developed specifically for use in the interviews. The structured questionnaire and semi-structured interview guide included items about the demographic information of the respondents or the retailers and the different elements of last mile delivery.

Validity was achieved by conducting a pre-test of the structured questionnaire using ten online customers (Leedy, Ormrod & Johnson 2021). The semi-structured interview guide was also piloted on one online retailer excluded from the final data collection exercise. Pre-testing was aimed at ensuring the instructions were clear, as well as the items in the questionnaire and the interview guide. In addition, the structured questionnaire and semi-structured interview guide were developed from prior studies (Brink 2019, Nguyen *et al.* 2019). For qualitative research, 'credibility' was ensured by recording the interviews using an audio device and a notebook. Later, the recordings were referred to for the exact responses from the interviewed online retailers. 'Transferability' was ensured by selecting a representative sample of online retailers from the five product categories sold in Nairobi. For 'reliability/ dependability', respondents were assured of anonymity and confidentiality to encourage them to provide the required data without bias.

To determine the elements of last mile delivery service most valued by online customers in Nairobi, the Statistical Package for the Social Sciences (SPSS) version 28 was used to generate descriptive statistics from the quantitative data. The descriptive statistics indicated the frequencies and percentages of online customers that valued each of the options that were provided for the elements of last mile delivery service. To describe how last mile delivery service was offered by online retailers in Nairobi, ATLAS.ti software was used to perform a thematic analysis of the qualitative data. Thematic analysis was performed by entering the transcribed interviews into the ATLAS.ti software to search for segments of data that contain similar themes. The quantitative findings are presented in the results section, followed by the qualitative findings for each element of last mile delivery. The quantitative and qualitative findings were integrated in the results section. To ensure the study was conducted ethically, all respondents were informed about the objectives of this study and made aware of their rights to voluntarily agree or disagree to either take part or withdraw from this research. In addition, respondents were assured that the collected data would be treated as confidential and only meant for academic purposes. Ethical clearance was also sought from the University of Johannesburg ethics committee (reference number 2021- TSCM008).

4. RESULTS

To determine the elements of last mile delivery service that online customers value most in Nairobi, descriptive statistics using SPSS version 28 were generated and are presented in Tables 1 to 6. Quantitative data from 407 online customer respondents were used in this study, translating to a 105.99% response rate. The high response rate can be attributed to the online survey that targeted respondents who are active on the Internet, and thus attracted to online shopping. The data collection period was also long to achieve concurrent data collection from the online retailers. The long data collection period was because of the unwillingness of most online retailers to participate in this study.

Table 1 shows the demographic information of online customer respondents in Nairobi who participated in the study. Results indicate that most online customer respondents in Nairobi were male (57.5%), aged 34 years or less (73.1%), had an undergraduate degree (62.7%), and had a net monthly income of less than KSh. 49 999 (55.3%).

TABLE 1: DEMOGRAPHIC PROFILE OF ONLINE CUSTOMER RESPONDENTS

Gender	Male	234	57.5%
	Female	172	42.3%
	Intersex	1	0.2%
	Total	407	100%
Age(years)	18-24	101	24.8%
	25-34	198	48.6%
	35-44	92	22.6%
	45-54	16	3.9%
	Total	407	100%
Level of education	Secondary school certificate	5	1.2%
	Post-secondary certificate/ diploma	40	9.8%
	Undergraduate degree	255	62.7%
	Postgraduate degree	107	26.3%
	Total	407	100%
Net monthly income	Less than KSh 24 999	122	30.0%
	KSh. 25 000 to 49 999	103	25.3%
	KSh. 50 000 to 74 999	65	16.0%
	KSh. 75 000 to 99 999	39	9.6%
	Ksh. 100 000 and above	78	19.2%
	Total	407	100%

Source: Authors' own

Thematic analysis using ATLAS.ti software was performed to describe how online retailers in Nairobi offer last mile delivery service. The seven online retailers were assigned unique codes R1, R2, R3, R4, R5, R6, and R7 to ensure confidentiality and anonymity of the collected data. The qualitative findings are presented after the quantitative results in the following subsections.

4.1. DELIVERY FEE

As indicated in Table 2, 42.3% of online customer respondents in Nairobi valued the flat rate delivery fee option, while 2.2% valued other delivery fee options that were not provided, such as free delivery fees. Reasons given for valuing the flat rate delivery fee include making it easy to plan online purchases, able to buy in bulk, easy calculation of the total cost, considered a cheaper delivery fee option, and not considered punitive like the other delivery fee options.

TABLE 2: VALUED DELIVERY FEE

Delivery fee options	Count	% of Online customers
Flat rate delivery fee	172	42.3%
Delivery fee per minimum number of products purchased	30	7.4%
Delivery fee per weight of product purchased	49	12.0%
Delivery fee per size of product purchased	19	4.7%
Delivery fee per distance from the online retailer	111	27.3%
Delivery fee per time/ day of delivery	17	4.2%
Others	9	2.2%
Total	407	100.0%

Source: Authors' own

From the interviewed online retailer participants in Nairobi, the distance-based delivery fee option was the delivery fee option most offered. The distance-based delivery fee option is based on the residential place where the customer lives. Customers living near the retailer's fulfilment point pay less compared to those who live further away. However, some online retailers offered free delivery for orders above a specific minimum value. Retailers indicated that this was meant to attract more customers to use online shopping. Other online retailers did not charge any fee for delivery. However, they adequately priced their products to recover delivery expenses. R7 noted that: "... we do charge for delivery... based on distance with a minimum of Kenya shillings (KSh.) 100." R5 also shared the same view stating that "... our delivery charges are based on where the customer is located... charges for customers in Karen area... and like here in Westlands area are very, very different."

R6 was of the same view stating that: "... delivery is a separate charge... it is actually a fixed charge...for the different regions in Nairobi." However, R2 was of a different view noting that:

... for the longest time in Nairobi, we have been running an offer, so we are doing free deliveries for any items above KSh. 3 000. Before the offer it was distance based, from as low as KSh. 100 to as much as KSh. 3 000 depending on what you are buying.

R3 also noted that: "We don't charge anything for Nairobi because we are new and interested to have more customers." Similarly, R4 stated that:

... there is no delivery fee aspect on... the vendor side... there is a way we have structured it and is not coming out as a delivery fee per se... the way we charge, it is just added to the price of the product.

This shows that online retailers in Nairobi mostly offer a distance-based delivery fee option to enable them to recover the expenses incurred during delivery. However, a few retailers offer free deliveries for high-value purchases to attract customers and increase sales.

4.2. DELIVERY TIMELINESS

The findings also indicate that 34.4% of online customer respondents in Nairobi valued the 14:00 to 17:00 delivery timeslot, while 1.7% valued the before 08:00 delivery timeslot (Table 3). Reasons given by the customers for valuing the 14:00 to 17:00 delivery timeslot include placing an order in the morning and receiving it in the afternoon, the free time when they are at home, the time when they are mostly less busy at work, the time when there is less traffic congestion, and the only time they can have somebody at the house. It was also noted that in total, 58.2% (more than half) of online customer respondents in Nairobi valued deliveries made after 14:00. Furthermore, Table 3 shows that 55% of online customer respondents in Nairobi valued the same-day delivery lead-time, while only 1% valued the more than six-day delivery lead-time. A total of 83.1% of online customer respondents in Nairobi valued shorter delivery lead times (same-day and next-day delivery lead times). It was noted that despite most online customer respondents in Nairobi valuing shorter delivery lead times; 62% of the online customer respondents were found to value a longer but cheaper delivery lead time (Table 3). This suggests that online customer respondents in Nairobi would contemplate a longer delivery time for lower delivery costs.

TABLE 3: VALUED DELIVERY TIMELINESS

Delivery timeliness	List of options	Count	% of Online customers
Delivery timeslot	Before 08:00	7	1.7%
	08:00 -13:00	114	28.0%
	13:00 -14:00	49	12.0%
	14:00 -17:00	140	34.4%
	After 17:00	97	23.8%
	Total	407	100.0%
Delivery lead time	Same-day	224	55.0%
	Next-day	115	28.3%
	3-5 days	64	15.7%
	More than 6 days	4	1.0%
	Total	407	100.0%
Cheaper but longer lead time	Yes	251	62.0%
	No	155	38.0%
	Total	406	100.0%

Source: Authors' own

Results from the interviewed online retailer participants in Nairobi revealed that the morning delivery time slots were most favoured by retailers. The retailer participants said that they dispatch most orders in the morning, although a few are done in the afternoons. R6 noted that: "... all deliveries are complete by midmorning...so that we basically dispatch to everyone." R3 was of a similar view stating that: "... as much as possible, we try to do our deliveries in the morning...but a few orders spill over into the afternoon." However, R1 and R5 indicated that they were unable to clearly say that most of their customers requested goods either in the morning or in the afternoon. R5 noted that: "... we deliver throughout the day from 06:00 to 18:00... our customers tell us what time they want to get the product." Similarly, R1 noted that:

There is no specific timing that you will say that this time is when we deliver products... what we normally do is we have an SLA [service level agreement] with our customers when we need to get the product to the customer from the time of purchase to their hands within 3 hours.

The same-day delivery lead time was also found to be offered by online retailers in Nairobi. However, this applies to orders made within a given time of the day. This allowed the delivery persons adequate time to plan the deliveries. In addition, the nature of the product forced some retailers to offer same-day delivery lead time. R4 noted that: "... currently, due to the nature of our products, we are fully on same-day delivery." R7 also noted that: "... majorly we deliver the same-day but if after past noon hours... it goes to the next-day." Similarly, R3 was of the view noting that: "... we deliver same-day for all orders we receive by midday... the customers placing orders after midday get their products delivered the next-day."

R2 also stated: "You can only get same-day delivery if you order before 12:00... but after that, we now do a next-day delivery, just to make sure we give our 3PL [third-party logistics] partners enough time to plan for the day."

The results also indicated that all online retailers in Nairobi do not offer a longer but cheaper delivery lead time. Some retailers attributed this to the nature of their products. Some of them are forced to adhere to their strict short lead time SLAs, while others avoid delivery delays. For example, R1 noted that: "... right now we have one delivery option... and that is tied to SLA." R3 stated, "... most clients that order online prefer shorter lead-times... than longer ones." However, R4 claimed that: "Currently, due to the nature of our products, we are fully on next-day delivery. So, like if we delay delivery, the product may reach the customer when stale."

This indicates that online retailers in Nairobi mostly offer morning delivery timeslots, same-day delivery lead times, and do not offer longer but cheaper delivery lead time options. The morning delivery timeslots offered by retailers

enable them to effectively plan on delivering all the ordered goods. Retailers also indicated that they did not offer longer but cheaper delivery lead times due to the perishable nature of the goods they deal with. In addition, longer delivery lead times may result in increased operational costs to a retailer due to the additional labour hours.

4.3. DELIVERY TRACKING

The results in Table 4 indicate that 34.9% of online customer respondents in Nairobi valued the phone call delivery tracking option over options, such as WhatsApp and email. The main reasons for valuing the phone call tracking option include that it is cheaper, to give more delivery directions, it is easy to seek clarification from the retailer, and the customer has direct communication with the delivery personnel. It was also noted that online customer respondents in Nairobi valued SMS delivery tracking (22.9%) and the retailer's portal tracking (16.7%).

TABLE 4: VALUED DELIVERY TRACKING

Delivery timeliness	Count	% of Online customers
Phone call	142	34.9%
SMS	93	22.9%
WhatsApp/Telegram	24	5.9%
Email	19	4.7%
Online retailer's portal	68	16.7%
Remote satellite system	60	14.7%
Others	1	0.2%
Total	407	100.0%

Source: Authors' own

From the interviewed online retailer participants in Nairobi, the phone call delivery tracking option was found to be mostly offered. The retailers indicated that the phone call delivery tracking option allows customers to call for more clarification on their orders. Customers feel assured of their deliveries when they speak to customer care agents. Delivery personnel could also call customers to get delivery directions in case the customer's home address is not clear. However, some online retailers provide alternative tracking options, such as an online tracking platform. R7 indicated that: "*Currently, it is just the call communication between the rider and the customer.*" R4 was also of the same view indicating that: "*... the person doing delivery with our fulfilment team will make a call in the morning before they get off for deliveries to notify the customer, we are on our way coming.*" Similarly, R5 had the same view stating that: "*... customers can call to get more clarifications... they like calling because they feel assured of their deliveries when they speak to our customer care personnel.*"

However, R1 claimed that:

Currently, customers can be able to track their orders via our platform... when there is a delay, for example, we do a communication to them as well... just to be able to manage their expectations. Our riders from the service provider also make calls to the customers before deliveries... to understand exactly where the customers are, in cases where the addresses are not clear.

This indicates that online retailers in Nairobi mostly offer the phone call delivery tracking option to their customers. Retailers indicated that the phone call tracking option either helped delivery personnel to receive further directions to customers' home addresses or customers felt more assured of their deliveries when they spoke to customer care agents.

4.4. DELIVERY OPTIONS

As shown in Table 5, the results indicate that 50.1% of online customer respondents in Nairobi preferred the attended home delivery point. The major reasons stated by online customer respondents for valuing the attended home delivery point include allowing easy verification and confirmation of the ordered item, avoiding movement to public places, time-saving, convenience, confidentiality issues, and the recipient normally being at home. It was also noted that 27.5% of online customer respondents in Nairobi valued the collection of goods from the retailer's distribution centre (DC). In addition, 40.3% of online customer respondents in Nairobi valued their home deliveries to be done by the online retail delivery carrier (Table 5). The main reasons for valuing the online retail delivery carrier include that one can comfortably express concerns directly to the online retailer, it is considered a safer delivery carrier, has good customer service, is well organised, avoids dealing with third parties, and easy identification of delivery carriers. Nonetheless, outsourced parcel carriers (26.8%) and motorcycle or bicycle carriers (20.6%) are valued by a good number of online customer respondents in Nairobi (Table 5). However, very few of the online customer respondents in Nairobi valued crowdsourced carriers (0.7%), postal carriers (1.2%), and drones (1.7%) (Table 5).

TABLE 5: VALUED DELIVERY OPTIONS

Delivery options	List of options	Count	% of Online customers
Delivery point	Attended home	204	50.1%
	Unattended home	10	2.5%
	Any location other than home	79	19.4%
	Collect from retailer's DC	112	27.5%
	Others	2	0.5%
	Total	407	100.0%
Delivery carrier	Outsourced parcel carriers	109	26.8%
	Postal carriers	5	1.2%
	Online retail carriers	164	40.3%
	Crowdsourced carriers	3	0.7%
	Motorcycles or bicycles	84	20.6%
	Drones	7	1.7%
	Do not have a preference	33	8.1%
	Others	2	0.5%
	Total	407	100.0%

Source: Authors' own

Results from the interviewed online retailer participants in Nairobi revealed that the home delivery option was most favoured by online retailers. The retailers reported that they only delivered to the homes of online customers living in Nairobi. This was because they wanted their customers to enjoy the convenience that comes with online shopping. However, some online retailers deliver goods to collection points or customers' offices. R1 stated that:

When a customer places an order within Nairobi, then they have an option to have it delivered directly to their homes... but then over and above that we offer collection points within our partner's ecosystem where we utilise our partner's ecosystem to serve as collection points.

R3 also stated that: "We mainly deliver products to homes... this ensures customers enjoy the convenience of online shopping." R7 noted that:

... it depends on customers' preferences because most clients will prefer you deliver to their offices when it is working hours, but for clients that reside around the shop, they prefer home delivery... but majority of my clients are for home delivery.

In addition, R2, R5, and R6 indicated that they were unable to say if most of their customers requested goods using a single delivery point. It was noted that they either delivered goods to customers' homes or any other specified location, such as offices and business premises.

The results of the delivery carriers offered by the online retailers in Nairobi show that outsourced parcel carriers were in use. The online retailers reported that the outsourced parcel carriers were cost-effective and reliable. The outsourced parcel carriers were also branded by online retailers. This was meant to ensure that customers are served by the same brand. However, some online retailers used third-party logistics partners for delivery without branding them. Some other online retailers use 'boda-bodas' (i.e., motorcycle taxis) to deliver goods because they are affordable and flexible for door-to-door service. R1 noted that:

We use Sendy parcel carriers for deliveries... like using the service provider, first of all, is cost-effective, because... you owning the delivery itself... the end-to-end delivery will be a very huge cost to any online company.

R7 was of a similar view and noted that: "We rely on 'boda-bodas' to do our deliveries...they can get door-to-door services and are affordable...the 'boda-bodas' I use are well known to us and are very reliable." Similarly, R2 noted that: "We have 3PL partners... all our 3PL providers are trained by us and branded of course. So, the customer will never realise that they are dealing with different companies."

This shows that online retailers in Nairobi mostly offer the attended home delivery point and use the outsourced parcel carriers for their last mile delivery. Retailers indicated that the use of outsourced parcel carriers is more reliable, cost-effective, and flexible for door-to-door delivery services.

4.5. RETURN OPTIONS

Table 6 indicates that 33.9% of online customer respondents in Nairobi valued the return of goods to the closest online retail branch. Reasons given by customers for valuing the return of goods to the closest branch include easy accessibility, convenient dropping off of goods at any free time they have, it is cheaper, to directly express dissatisfaction with the online retailer, and it is not time-consuming. As shown in Table 6, very few online customer respondents in Nairobi valued the collection of goods meant for return from the customer's most convenient location and at an agreed time (13%). This may be attributed to the lack of a national addressing system in Kenya (Mogire *et al.* 2022; UNCTAD 2022), making it difficult to trace customers' most convenient location and agreed time.

TABLE 6. VALUED RETURN OPTIONS

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Return options	Count	% of Online customers
Returning goods to the fulfilment point	88	21.6%
Returning goods to the closest branch	138	33.9%
Returning goods to the collection centre	53	13.0%
Returning goods through the delivery carrier dropping off the goods	75	18.4%
Retailer to collect goods from my most convenient location and time agreed upon	53	13.0%
Total	407	100.0%

Source: Authors' own

From the interviewed online retailer participants in Nairobi, the use of the same delivery carriers for returns was found to be the most offered return option when handling goods being returned by customers. Retailers said that this

ensured that their customers returned goods free of charge. One retailer said that using the same delivery carrier for returns is attributed to the nature of the sensitive products they deal with, which does not require the involvement of intermediaries. R5 noted that: "... the customer can use the same delivery van or rider to return their products... if it is later after delivery... they wait for our vans that are scheduled on that route."

Similarly, R4 was of the view that:

So, we collect the product using the same delivery team. So, if the customer has an issue with the product... the customer will notify us through our contact centre or the delivery team on ground, then they go collect from our customer then bring it back... The reason why we use our team is because we are dealing with food... so, we do not want to hand over the product to a third party where we will not get the product in good condition.

R2 noted that:

You only sign for your item once you are happy with what has been delivered by the carrier... and if after even a day or two you feel whatever you ordered is not what you got, again, we just do returns at no extra cost to you... we will do a free return.

This indicates that online retailers in Nairobi mostly use the same delivery carrier to handle goods returned by customers. Retailers indicated that they use the same delivery carrier to handle goods returned by customers because they either handled very sensitive goods or they did not want to add extra charges to their customers.

5. DISCUSSION

Based on the results presented in the preceding section, it was found that online customers in Nairobi mostly valued a flat rate delivery fee option. In contrast, retailers in Nairobi mostly offered a distance-based delivery fee option. Retailers indicated that the distance-based delivery fee option enables them to recover the expenses incurred during delivery so that customers living far away from the order fulfilment points pay more. Some retailers indicated that they offered free deliveries for high-value purchases to attract customers and increase sales. Thus, retailers should investigate what their customers want, specifically considering the trade-off between the delivery cost-time vs delivery cost-distance, to determine an appropriate delivery fee option. In the Netherlands, Nguyen *et al.* (2019) indicated that free delivery fees (with or without a minimum threshold) can be offered together with paid deliveries (such as for time slot delivery or speedy delivery requirements). Similarly, Xu *et al.* (2008) found that some customers are willing to pay extra for a speedy delivery service, while others prefer zero or low delivery charges. Wahshat *et al.* (2023) also assert that retailers can offer a variety of shipping options including expedited shipping for customers that are willing to pay more, and standard shipping for cost-conscious customers.

Apart from delivery fees, Ma (2017) considered delivery time as a critical element of last mile delivery service. Most online customers in Nairobi were found to value the after 14:00 delivery timeslots (i.e., either 14:00 to 17:00 or after 17:00). However, insights from online retailers in Nairobi revealed that they mostly offered morning delivery timeslots. Thus, to satisfy customer preferences, retailers should consider a combination of delivery services that include both morning and evening options. The finding from online customers in Nairobi is aligned with Brink's (2018) study in South Africa where most customers were found to prefer an afternoon timeslot (i.e., 16:00 to 18:00). However, Nguyen *et al.*'s (2019) study in the Netherlands established that most online customers preferred a combination delivery service, i.e., done during the daytime and in the evening, as opposed to only during the daytime. In addition, online customers in Nairobi indicated that they could accept a longer but cheaper delivery lead time if it was offered to them. This supports Ma's (2017) study that found customers in the US were willing to wait for their products when they were offered an alternative for a free but longer delivery time. In contrast, the interviewed online retailers in Nairobi indicate that none of them offered the option of a longer but cheaper delivery lead time. Some retailers attributed this to the sensitive or perishable nature of the products they deal with. The same-day delivery lead time was found to be the most valued by customers and the most offered by retailers in Nairobi. More than half of the surveyed customers in Nairobi were found to highly value a same-day delivery lead time. However, the extent to which the customers in

Nairobi are prepared to pay for same-day delivery lead time remains unknown. The same-day delivery lead times are also costly for retailers to implement. Thus, a variety of delivery lead times should be considered by retailers to accommodate the unique requirements of customers in terms of pricing and the nature of goods. As in Nairobi, Brink's (2018) study in South Africa reported that most customers preferred same-day delivery lead times, possibly owing to the perishable nature of some groceries and on-demand requirements for consumers' delivery. In the Netherlands, Nguyen *et al.* (2019) agreed that customers mostly prefer a delivery option that has same-day delivery and those with shorter lead times over longer lead times, considered impractical from an operations and cost perspective.

Although the phone call delivery tracking option was the most valued tracking option by customers, as well as the most offered by retailers in Nairobi, it was found that only a third of the surveyed customers in Nairobi valued this option. This was closely followed by the SMS delivery tracking and the portal delivery tracking options. This implies that retailers need to go beyond the phone call delivery tracking option by evaluating the efficiency of the other alternative delivery tracking options in terms of cost and user-friendliness. For instance, Kafile and Mbhele (2023) found that end-to-end tracking, GPS and RFID are the most used tracking options in the LMD sector in South Africa. In the UK, Xu *et al.* (2008) found that online customers had a high preference to track their deliveries, even though retailers found it costly to implement (Xu *et al.* 2008).

Concerning delivery points, the attended home delivery point was the most valued by customers and the most offered by retailers in Nairobi. An attended home delivery service requires that the consumer is available at home to accept delivery (Halldórsson & Wehner 2020). Past studies have found that online customers prefer the attended home delivery service. For instance, most online grocery shoppers in South Africa prefer attended home delivery (Brink 2018; Heyns & Kilbourn 2022). In Singapore, Tan (2016) established that 80% of the surveyed customers preferred home delivery compared to self-collection service. However, some online retailers have been reported to prefer unattended home delivery (Tiwapat *et al.* 2018; Xu *et al.* 2008). Retailers in Nairobi should prioritise customer preference for convenience, security, and reduced risk of failed deliveries in offering attended home delivery. Customers in Nairobi also mostly valued a delivery carrier operated by an online retailer. They indicated that delivery carriers operated by online retailers were ideal because they are safer, and customers can comfortably express their concerns directly to the retailer during delivery. Nonetheless, some online customers in Nairobi valued outsourced parcel carriers, and motorcycle or bicycle carriers. The use of motorcycle or bicycle carriers can be attributed to undermaintained road networks and the lack of an addressing system for home deliveries (Pollio, Cirolia & Odeo 2023), which makes it difficult for delivery vehicles to deliver goods to customers' homes. Insights from online retailers in Nairobi revealed they mostly offered outsourced parcel carriers for their last mile delivery. This implies that retailers need to consider whether there are any issues with the outsourced delivery carriers, due to the low preference from customers. There is also a need for retailers in Nairobi to understand why customers do not favour emerging delivery carriers, such as crowdsourced carriers, drones, and postal carriers, which are considered safe, reliable, and efficient. The use of crowdsourcing and drones have been generally recommended as solutions for ensuring an effective and efficient last mile delivery service (Kim *et al.* 2024; Wahshat *et al.* 2023). When customers are choosing carriers, they consider the reputation of the carrier and the availability of other alternative carriers (Holdorf & Haasis 2014).

Return options are also an important consideration in last mile delivery, especially when dealing with unwanted, faulty, or damaged products (Nguyen *et al.* 2019). Customers in Nairobi indicated that they mostly value an option to return goods to the closest online retail store. This can be attributed to the store being a convenient drop-off point and customers can directly express their dissatisfaction with the online retailer. Customers in Nairobi were also found not to favour the retailer to collect goods from them, which is unusual. This contradicts Velazquez and Chankov's (2019) finding that retailers in Germany preferred customers to drop off returned products at their parcel shops. Insights from retailers revealed that they mostly used the same delivery carriers for the pick-up of goods from their customers at no extra cost. Thus, retailers need to understand why stores are the most valued return option by customers. In addition, retailers should address concerns about using delivery carriers in handling returns; this is a high preference from customers.

6. CONCLUSIONS

The purpose of this study was to investigate the elements of last mile delivery service in Kenya's online retail subsector, from the perspective of customers and retailers. First, this study found that elements of last mile delivery service most valued by online customers in Nairobi include the flat rate delivery fee option, afternoon delivery timeslot, same-day delivery lead time, a longer but cheaper lead time, phone call tracking option, return of goods to the closest retail branch, attended home delivery point, and the use of delivery carriers operated by the online retailers. Second, the elements of last mile delivery service mostly offered by online retailers in Nairobi include the distance-based delivery fee option, morning delivery timeslot, same-day delivery lead time, phone call tracking option, return of goods via same delivery carrier, attended home delivery point, and use of outsourced parcel carriers for deliveries. In addition, retailers did not offer a longer but cheaper delivery lead time. It is evident that there is a gap in the delivery fee options, delivery timeslots, delivery carriers, and return options valued by customers and those offered by retailers in Nairobi. This suggests that online retailers in Nairobi need to consider solutions for these problems to further their growth.

Reviewing alternative delivery fee options should be a top priority for online retailers in Nairobi to identify the best delivery fee option that meets customer needs while enabling retailers to recover their delivery costs. The ideal delivery fee option for customers is determined by several factors including the ability to buy in bulk, ease of understanding its computation, and the amount paid as a delivery charge. Therefore, retailers could consider offering multiple delivery fee options, such as free delivery (with or without a minimum threshold) and paid deliveries (such as for time slot delivery or speedy delivery requirements). For paid deliveries, retailers need to investigate the willingness of customers to pay (e.g., for different time windows). For customers who do not value home delivery, retailers in Nairobi need to investigate why such customers do not value home deliveries and attempt to address this. For instance, retailers can consider using existing local logistics networks, e.g., collaborate with local grocery stores or use existing DCs as pick-up/ drop-off points. Partnering with local delivery services has been generally recommended for faster and more efficient last mile deliveries (Wahshat *et al.* 2023). Retailers can drop ordered goods at the existing DCs or the local grocery stores in the morning hours for customers to pick up their goods at a convenient time in the afternoon. Even though this will cut down the retailer's last mile delivery costs, it must be evaluated with the customer's willingness to forego the convenience associated with the attended home delivery.

Reviewing the current return option (use of own delivery carriers to collect returned goods from customers) should also be a priority for online retailers. Customers in Nairobi indicated that they valued return options that are easily accessible, affordable, and convenient to drop off returned goods. Thus, retailers could work on improving their current return options to meet customer requirements or partner with reliable local grocery stores for use as drop-off points. Strategic partnerships and collaboration arrangements are common at the last mile of online food and grocery retailing in South Africa (Dakora & Rambe 2022). Lastly, retailers need to understand if there are any issues with the outsourced delivery carriers before making any future last mile deliveries. Reasons given by customers for preferring a delivery carrier include being well-organised, having good customer service, and ensuring customer safety during delivery. Retailers could either work with the existing delivery carriers to improve their service offerings or select a good, outsourced delivery carrier that can meet customer requirements. In addition, there is a need for retailers in Nairobi to understand why their customers do not favour using emerging delivery carriers, such as crowdsourced carriers, drones, and postal carriers, which are safer, reliable, and efficient. Retailers can position themselves for success in an increasingly competitive e-commerce market by strategically using these emerging delivery carriers.

This study contributes to the body of logistics literature as follows: First, the study examines last mile delivery using five elements identified from prior studies. They include delivery fees, delivery timeliness, delivery tracking, return options, and delivery options. This provides researchers with a focused view of the concept of last mile delivery. Second, the study extends previous knowledge on last mile delivery by comparing customer and retailer viewpoints on last mile delivery in online retailing. Results showed that delivery fee options, delivery timeslots, delivery carriers, and return options most valued by customers are different from those offered by retailers in Kenya. This study also

provides practical implications to online retailers who wish to understand online retailing, especially from a last mile delivery perspective. Retailers can consider the elements of last mile delivery most valued by customers in the formulation of an efficient and effective last mile delivery strategy.

This study is subject to some limitations. First, the study was confined to identifying elements of last mile delivery most valued by customers, and those mostly offered by retailers. With customers in Nairobi mostly valuing short delivery lead times but still contemplating a longer delivery time for lower delivery cost, future researchers could consider researching customers' willingness to pay for alternative delivery times. Second, with advancements in technology, new elements of last mile delivery, such as drones and crowdsourced delivery are likely to be widely valued by customers in the future. Future research needs to explore the use of these emerging elements to better understand the concept of last mile delivery. Lastly, the study was confined to online retailers in Nairobi and may not be representative of the rest of Kenya or other countries. Future research can extend this research to other parts of the country or other countries to have a better insight into last mile delivery in online retailing.

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