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Assessing the Effects of Public Trust and Logistics Performance in Somalia's Emerging E-Commerce Sector: Customer-Driven Digitalization

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Abstract
This study investigates the effects of digital payment adoption and trust in last-mile delivery on logistics service quality. Furthermore, it examines the moderating role of the absence of a standardized addressing system in the relationship between trust in last-mile delivery and logistics service quality. Data were collected through a questionnaire from 100 online shoppers residing in Mogadishu, Somalia. The data were analyzed in SPSS using correlation and regression analyses. The analysis indicates that digital payment adoption does not have a statistically significant effect on logistics service quality, suggesting that digital payment constitutes a baseline expectation rather than a competitive differentiator. Conversely, trust in last-mile delivery has a significant positive effect on logistics service quality, indicating that consumer trust in logistics agents enhances perceived service quality. Furthermore, the study finds that the absence of a standardized addressing system does not moderate the relationship between trust in last-mile delivery and logistics service quality. This paper contributes to the limited empirical literature on e-commerce logistics in an underdeveloped economy with many logistical challenges by examining the relationship between digital and physical readiness in Mogadishu, Somalia, a country where digital platforms have outpaced the physical logistics infrastructure.

Keywords: Digital payment adoption, Mobile money services, E-commerce, Trust in last-mile delivery, Poor logistics infrastructure, Logistics service quality

1. Introduction

Over the past few years, electronic commerce in Somalia has grown substantially, and the rise of online retail businesses has drawn attention to the role of logistics in e-commerce. This rapid growth is driven largely by the country's well-developed mobile money payment systems but is, at the same time, constrained by the current condition of its logistics infrastructure. Numerous studies have demonstrated the role of logistics service quality (LSQ) as the backbone of electronic commerce (Akil & Ungan, 2022), showing that it affects customer satisfaction, loyalty, and relationship quality (Huma et al., 2020) and provides businesses with a competitive advantage (Kilibarda et al., 2020). In the current national economy, the rapid development of online retail platforms and businesses far outpaces the development of the country's logistics infrastructure.

Numerous studies have examined the role of LSQ in the development of online retail businesses. These studies indicate that the success of e-commerce businesses depends largely on a country's logistics conditions. Factors such as information and product quality (Rashid &

Rasheed, 2024), brand trust, personnel contact quality (Sürücü & Özispa, 2017), timeliness, and order discrepancies (Pramudita & Guslan, 2025) all appear to affect customer satisfaction (Gajewska & Zimon, 2018). Trust in last-mile delivery is also frequently mentioned. For example, Ejdys and Gulc (2020) state that customers' perceived LSQ increases when they trust the reliability of service providers and that high-quality logistics services, in turn, strengthen trust in last-mile delivery. Similarly, Hasdiansa and Hasbiah (2025) highlight that the competence, manners, and diligence of delivery agents shape consumer trust in last-mile delivery.

Although extensive research has been conducted on the relationship between e-commerce and LSQ in developed and emerging economies (Bhat et al., 2026; Setiadi & Muharam, 2024), research on underdeveloped and low-income economies such as Somalia remains scarce. Such economies face a unique challenge: rapidly growing digital business platforms coexist with severe infrastructure constraints, such as security issues, the lack of a standardized addressing system, the lack of a regulatory framework, and poor roads (El Aissoug et al., 2026). These constraints lower the service quality of e-logistics, affect trust in last-mile delivery, and hinder the development and success of online retail businesses. The Somalia Logistics Cluster (2025) has pointed out that poor logistics infrastructure is the biggest challenge facing Somalia's supply chains.

This study addresses this gap by empirically investigating the effects of digital payment adoption and trust in last-mile delivery on LSQ and how the lack of a standardized addressing system moderates the relationship between trust in last-mile delivery and LSQ. The study contributes to the existing literature on LSQ, digital payment systems, trust in last-mile delivery, and the lack of standardized addressing systems, and it offers significant information to all interested parties. In terms of practical value, the empirical data were collected from individuals who use mobile commerce in Mogadishu, Somalia, allowing the study to examine how the lack of standardized addressing systems affects the relationship between trust in last-mile delivery and LSQ.

This study aims to answer the following questions:

1. What is the role of digital payment adoption in influencing logistics service quality?
2. What is the impact of trust in last-mile delivery on logistics service quality?
3. What is the moderating role of the lack of a standardized addressing system in the relationship between trust in last-mile delivery and logistics service quality?

2. Literature Review

2.1 Digital Payment Adoption

Digital payment adoption refers to the process by which consumers adopt electronic payment methods and subsequently develop a favorable disposition toward electronic payment systems (Rahma et al., 2025). Digital payments connect firms and individuals through electronic financial transactions facilitated by banks and interswitch operators. The global payments industry has undergone a substantial transformation owing to the proliferation of fintech products and services, the increased use of mobile devices in consumer purchasing, and the widespread adoption of mobile wallets among millennials and Generation Z (Thanigan et al., 2025).

E-commerce has grown significantly, and, as a result, digital payment systems have become key to online purchasing, improving convenience, efficiency, and security. However, despite government initiatives and technological progress, digital payments are still unevenly implemented in peri-urban and rural areas (Khan & Khattak, 2026).

Recent studies indicate that adopting contactless payment systems and mobile wallets streamlines the checkout process, reduces customer waiting times, and enhances the overall shopping experience. Although independent retailers often face implementation costs, they

nonetheless report favorable outcomes, including increased sales and greater customer engagement (Brown et al., 2024).

2.2 Trust in Last-Mile Delivery

Last-mile delivery is widely understood as the logistics activities involved in delivering shipments, including products purchased online, to consumers' doorsteps. Accordingly, last-mile delivery begins once a product is dispatched from the retailer and ends when it reaches the final customer's preferred destination (Boysen et al., 2021).

E-commerce and logistics companies regard last-mile delivery as the key differentiator from their competitors (Alkhalifah et al., 2022). Distributing products from the warehouse to the end customer represents the "last mile" of the e-commerce logistics process. As such, last-mile delivery is essential to the supply chain, especially in the e-commerce and retail sectors, where the demand for fast delivery rises as online shopping grows. This rapid development in last-mile delivery is attributed to urban population growth. In e-commerce, transporting goods to the final customer requires fast and efficient service to ensure satisfaction and build trust in last-mile delivery companies (Vrhovac et al., 2024). Trust is pivotal in the sharing economy, particularly in shared modes of transportation, and it influences consumer interest in smart delivery systems. Furthermore, trust in service providers is an emerging topic in last-mile delivery research, as it is a crucial factor in the adoption of new transportation modes (Zhu et al., 2023).

2.3 Logistics Service Quality

Logistics service quality (LSQ) is defined as the perceived judgment that results from consumers comparing their expectations with the service they actually received. Recent findings suggest that LSQ affects customer satisfaction and continued purchase intentions in retail industries (Rashid & Rasheed, 2024), and the rapid growth of e-commerce over the past few decades has made logistics a key determinant of the success and long-term viability of e-commerce businesses. As a result, improving the quality and control of logistics services has become crucial for businesses, as these activities significantly affect customer experience and loyalty to e-commerce firms (Vu & Nguyen, 2025).

2.4 Digital Payment Adoption and Logistics Service Quality

The usability of digital payment systems plays a crucial role in shaping customer satisfaction, especially among younger generations. Usability includes a smooth payment process, easy navigation, and a wide selection of convenient payment options. Service quality, including responsive customer support, payment security, and user data protection, also affects customer satisfaction (Setyawati & Murwanti, 2024). Digital payment systems are becoming increasingly popular among working people because they allow transactions to be completed through a streamlined process without visiting a bank. Reddy and Reddy (2024) also found that service quality dimensions, such as adaptability, security, and ease of use, have significantly increased customer satisfaction with the digital payment options offered.

H1: Digital payment adoption has a significant positive effect on logistics service quality.

2.5 Trust in Last-Mile Delivery and Logistics Service Quality

According to El Aissoug et al. (2026), in the African market, where logistical challenges, last-mile delivery constraints, and limited infrastructure are common, assessing LSQ is important for understanding consumer satisfaction in e-commerce. LSQ, which includes dimensions such as delivery timeliness, availability, the condition of the goods, and the ease with which consumers can return products, has a significant impact on consumer satisfaction and loyalty across different purchasing situations. Under such circumstances, infrastructural limitations,

which are common in many African regions, become even more critical. The researchers suggested that, to improve LSQ and e-consumer satisfaction, African e-commerce platforms should invest in IoT-enabled live tracking systems and develop localized last-mile delivery hubs. Furthermore, Trung et al. (2025) concluded that all LSQ factors have a significant effect on consumers' perceived value, thereby influencing their satisfaction and loyalty in last-mile delivery operations.

H2: Trust in last-mile delivery has a significant positive effect on logistics service quality.

2.6 The Moderating Role of the Lack of a Standardized Addressing System

In e-commerce, a standard addressing system is crucial to the effectiveness of last-mile delivery. The difficulty that last-mile delivery riders face in reading addresses and locating customers has increased delivery times and costs and has adversely affected businesses (Abdul Rahman et al., 2022). In Somalia, while numerous challenges exist, the absence of adequate infrastructure remains one of the main obstacles (Rage, 2025). Accurate addressing is important for geospatial analysis and effective last-mile delivery. Nonetheless, many street-based addressing systems in developing countries are neither complete nor systematically applied, although they are not entirely absent (Ansori et al., 2026). In Kenya, Mogire et al. (2022) reported that all the e-retailers studied found the inadequate national addressing system challenging for last-mile delivery drivers. This was attributed to the lack of building numbers and street names, which required delivery drivers to contact customers personally to verify their exact locations. Similarly, Omar et al. (2025) highlighted that the absence of a postal code system in Jordan complicated home delivery, whereas a GIS-based addressing system significantly improved both delivery and customer trust. While these findings provide important insights into operational challenges in Kenya and Jordan, limited empirical evidence exists on the extent to which similar challenges affect last-mile delivery in Somalia, highlighting a gap in the literature.

H3: The lack of a standardized addressing system moderates the relationship between trust in last-mile delivery and logistics service quality.

3. Methodology

This is a correlational study conducted in a non-contrived setting, with the aim of understanding the relationships among trust in last-mile delivery, digital payment adoption, and LSQ and of investigating the role of the lack of a standardized addressing system in the relationship between trust in last-mile delivery and LSQ. The study adopts a customer perspective, meaning that every individual who uses e-commerce is considered a potential participant.

The study follows a positivist research philosophy, which, according to Park et al. (2020), involves a quantitative approach to examining a phenomenon. The data were collected non-intrusively; respondents participated voluntarily and were assured of the anonymity and confidentiality of their information. The study employed purposive sampling, as it aimed to collect responses from individuals living in Mogadishu who use mobile money services and shop online. The sample size was determined using a 20:1 sample-to-variable ratio; since there are four variables in this study, the minimum required sample size was 80 responses. This study collected 100 responses. The data were analyzed using SPSS.

All 100 responses collected met the sampling criteria. With regard to gender, the majority of respondents were female (55%), while 45% were male, reflecting the broader gender composition of online retail consumers in Mogadishu. In terms of age, the largest group of respondents was aged 18–28 years (74%), followed by those aged 29–38 years (18%) and 39–48 years (8%). Regarding educational background, 11% of the participants held a high school certificate, 12% a diploma, 62% a bachelor's degree, 12% a master's degree, and 3% a PhD. With respect to online shopping frequency, 18% of the participants stated that they rarely shop

online, 49% shop online once or twice a month, 15% three to five times a month, 9% six to ten times a month, and 9% more than ten times a month.

4. Results

To assess the influence of demographic variables on trust in last-mile delivery and LSQ, a one-way ANOVA was conducted. As presented in Table 1, there is no significant variation in either trust in last-mile delivery or LSQ across the demographic variables of gender, age, education, and monthly shopping frequency. Therefore, no demographic variable was controlled for in the regression analysis.

Table 1: One-Way ANOVA Results

	TLD		LSQ	
Variable	***F***	***p***	***F***	***p***
Gender	1.46	.230	0.056	.813
Age	0.069	.933	1.04	.357
Education	0.150	.963	1.00	.410
Shopping frequency	1.44	.227	1.97	.105

Note. $N = 100$. TLD = trust in last-mile delivery; LSQ = logistics service quality.

Table 2: Descriptive Statistics, Reliability, and Correlation Coefficients

Variable	***M***	***SD***	**1**	**2**	**3**	**4**
1. DPA	3.93	0.829	(0.768)			
2. TLD	3.63	0.638	.485*	(0.739)		
3. LSAS	3.53	0.726	.321*	.319*	(0.715)	
4. LSQ	3.55	0.696	.327*	.374*	.704*	(0.867)

Note. $N = 100$. Cronbach's alpha values are shown in parentheses on the diagonal. DPA = digital payment adoption; TLD = trust in last-mile delivery; LSAS = lack of a standardized addressing system; LSQ = logistics service quality. * $p < .01$.

Table 2 summarizes the descriptive statistics, reliability coefficients, and Pearson correlations. The descriptive analysis for DPA revealed an overall mean of 3.93 ($SD = 0.829$), indicating a positive attitude among participants toward the adoption and use of digital payment. The mean for TLD was 3.63 ($SD = 0.638$), indicating a slightly more moderate perception of trust in the last-mile delivery process. LSAS showed a mean of 3.53 ($SD = 0.726$), indicating that participants view the current lack of a standardized addressing system as a major hurdle in last-mile delivery. Finally, LSQ had a mean of 3.55 ($SD = 0.696$), indicating that participants view the current LSQ as satisfactory.

The internal consistency reliability of the scales was assessed using Cronbach's alpha. All constructs demonstrated acceptable reliability, ranging from 0.715 to 0.867: digital payment adoption (0.768), trust in last-mile delivery (0.739), lack of a standardized addressing system (0.715), and logistics service quality (0.867).

The correlation analysis indicates that digital payment adoption has a significant positive relationship with trust in last-mile delivery ($r = .485$, $p < .01$), suggesting that higher levels of trust in last-mile delivery services are associated with the adoption of digital payments. DPA also has a significant positive relationship with LSQ ($r = .327$, $p < .01$), indicating that higher digital payment adoption is associated with higher perceived service quality. Trust in last-mile delivery has a significant positive relationship with the lack of standardized addressing systems

(r = .319, p < .01) and with LSQ (r = .374, p < .01), suggesting that customers who report greater trust in last-mile delivery also perceive higher LSQ. Finally, the lack of standardized addressing systems has a significant positive relationship with LSQ (r = .704, p < .01), indicating that addressing systems and service quality are linked in the minds of the respondents.

Table 3: Regression Analysis

Path	β	*SE*	*p*	LLCI	ULCI
DPA → LSQ	.164	.091	.076	−.017	.345
TLD → LSQ	.307	.116	.009	.078	.537
TLD × LSAS → LSQ	.098	.089	.272	−.079	.275

Note. N = 100. DPA = digital payment adoption; TLD = trust in last-mile delivery; LSAS = lack of a standardized addressing system; LSQ = logistics service quality; LLCI and ULCI = lower and upper limits of the 95% confidence interval.

Regression analysis was conducted to test the hypothesized relationships (Table 3). The results show a significant relationship between trust in last-mile delivery (independent variable) and LSQ (dependent variable) (β = .307, p = .009); hence, H2 is supported. In contrast, digital payment adoption does not significantly predict LSQ (β = .164, p = .076); hence, H1 is not supported. Finally, the moderation analysis shows that the lack of a standardized addressing system (moderator) does not moderate the relationship between trust in last-mile delivery and LSQ (β = .098, p = .272); therefore, H3 is not supported, and no moderation plot is presented. No demographic variable was controlled for in the regression analysis, since the one-way ANOVA results showed that none of these variables was significant.

5. Discussion

The high level of mobile money adoption and usage in Somalia has facilitated the digital transformation of many retail businesses, with established retailers adopting multichannel strategies to improve the performance of their physical stores and start-ups opting for pure-play e-commerce. This consumer-driven digital development, however, is growing at a pace that highlights the gap between the country's poor physical logistics infrastructure and its rapidly growing digital businesses. Hence, this study investigated the relationships among digital payment adoption, trust in last-mile delivery, LSQ, and the lack of standardized addressing systems.

H1 examined the effect of digital payment adoption on LSQ. The results show that digital payment adoption has no significant effect on LSQ, indicating that consumers view the use of digital payment as a baseline expectation rather than a differentiator; hence, it does not significantly affect LSQ.

H2 proposed that trust in last-mile delivery has a significant positive effect on LSQ, and the results supported this hypothesis. This suggests that customer perceptions of the reliability and trustworthiness of the delivery process affect overall service quality and that trust serves as the primary behavioral driver bridging the gap between the digital and physical aspects of e-commerce in Somalia. H3, which proposed that the lack of a standardized addressing system moderates the relationship between trust in last-mile delivery and LSQ, was not supported. This indicates that the lack of a formal addressing system in Mogadishu does not significantly weaken the relationship between consumer trust and LSQ. This suggests that consumers in Mogadishu compensate for the lack of a formal addressing system by relying on informal coordination with delivery agents and digital business owners, and that trust in delivery agents

and business owners substitutes for inadequate infrastructure, allowing businesses to thrive despite these limitations.

6. Conclusion

The aim of this research was to determine the effects of digital payment adoption and trust in last-mile delivery on LSQ, with the lack of a standardized addressing system moderating the relationship between trust in last-mile delivery and LSQ. The rapidly growing digital business sector in Somalia has raised questions about the gap between the digital and physical aspects of e-commerce in Mogadishu. While digital aspects, such as platforms and financial technology, are well developed, physical (logistics) aspects, such as roads, addressing systems, and security, appear to hinder the development of these businesses. Hence, this study was conducted to test the effect of underdeveloped logistics on e-commerce service quality. According to the results, the use of digital payments does not have a significant effect on LSQ, whereas trust in last-mile delivery does. Lastly, the results indicate that the lack of a standardized addressing system does not moderate the relationship between trust in last-mile delivery and LSQ, suggesting that the absence of a formal addressing system does not significantly affect customer perceptions of service quality within the scope of this model.

6.1 Practical Implications

The study has practical implications for digital business owners and logistics companies. Digital business owners should understand the importance of LSQ to customers and how customers' trust in last-mile delivery can affect both business owners and logistics companies. The study also has practical implications for entrepreneurs entering the e-commerce sector, for whom logistics is the backbone of the business. To build a stronger customer base, they should invest in efficient and trustworthy logistics agents.

6.2 Limitations and Future Directions

Because of time constraints, this study was unable to collect a larger sample. Increasing the sample size to 200 would be more appropriate, given that this study was conducted from the consumer's perspective; the larger the sample, the better the representation. Future researchers should study this topic from the perspective of logistics providers or e-commerce business owners, since this study was conducted from the consumer perspective. Future research should also consider replacing the moderating variable with other logistics constraints, such as security and poor infrastructure.

Conflict of Interests

The author declares no conflict of interests.

Ethical Approval Statement

This study was approved by the Institutional Review Board of Hormuud University. Written informed consent was obtained from all participants, and anonymity and confidentiality were maintained throughout the data collection and analysis process. The data collected were used solely for academic purposes.

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