Packages and Parcels Delivery by Inter-City Informal Transport Service Operators in Ogun State, Nigeria

Dimeji R. Sonde[1], Abdulwazil, O. Imam[2], Olamide, E. Fabiyi[3], Victor A. Ogundele[4]

[1]Department of Transport Management, Olabisi Onabanjo University, Ago-Iwoye, Ogun State, Nigeria
[2] Department of Geography and Environmental Education, Lagos State University of Education, Nigeria
[3] Department of Procurement, Logistics and Supply Chain Management, University of Salford (Manchester)
[4] Department of Transport Management, Ladoke Akintola University of Technology, Ogbomosho, Nigeria

Abstract The study investigates the impact of Person-to-Person (P2P) package and parcel delivery via informal public transportation in Nigeria, which dominates inter/intra-urban mobility in developing countries. A concerning trend is the unchecked dispatch of parcels through informal means, such as parks, without proper verification by drivers or their agents. To examine this, a multi-stage sampling approach was used: the population was first stratified into drivers and commuters, then snowball sampling identified those with relevant experiences, and purposive random sampling was employed for questionnaire distribution. Findings show that most drivers rely solely on senders' verbal declarations about parcel contents, enabling the smuggling of illegal substances. Respondents generally agreed that P2P package delivery negatively affects society. ANOVA results revealed a statistically significant relationship ($p = 0.000 < 0.05$), and the R-square value of 77% indicates a strong explanatory power of the model on illegal substance movement. The null hypothesis was rejected, confirming that informal parcel delivery poses societal risks. The study concludes that informal transport services facilitate smuggling and recommends that drivers conduct physical checks on parcels before transportation to mitigate the risks associated with unverified deliveries.

Keywords Package/Parcel delivery, Informal Transport, P2P delivery, Illegal goods

JEL L91, L92, R4, R41

1. Introduction

Immobility can be likened to a lifeless body in which the flow of blood through the arteries has ceased. Reviving such a body requires the supply of blood, which may be obtained either through hospitals or from relatives. The former represents a formal blood supply system, while the latter constitutes an informal source. Regardless of the source, all blood must undergo adequate screening before transfusion. Due to the high rate of emergencies in hospitals, informal blood supply has often become a necessary alternative to complement formal systems.

A similar analogy applies to urban transportation systems. Urban residents require daily mobility between their places of residence and work. However, as the effectiveness of formal public transportation systems declined, informal transport services expanded significantly, eventually accounting for over 80% of urban mobility demand in many developing cities. In countries such as Nigeria, where formal public transport systems are limited, irregular, and insufficient, informal transport modes including minibuses, tricycles, and motorcycles have become indispensable. These modes possess the flexibility to navigate difficult terrains and routes that are often inaccessible to formal transport services (Afolabi and Akinbo, 2020).

In many developing countries, informal public transport constitutes the dominant mode of inter- and intra-urban mobility, largely due to limited access to high-capacity formal public transportation (Kassa, 2014). One major distinction between informal and formal transport systems lies in regulatory compliance. Informal transport operators often lack the necessary licenses, permits, and registrations required for legal operation. Weak regulatory enforcement enables these services to fill the gaps created by inadequate formal transport provision. Consequently, several scholars describe informal public transport as a complementary system that enhances urban mobility while contributing to economic development through employment generation and contributions to gross domestic product, particularly for low-income groups (Selim, 2010).

Technically, informal transport services operate without official endorsement from public authorities. This absence of regulation implies that many vehicles and drivers do not meet established safety, fitness, or insurance standards. The sector is typically characterized by small-sized vehicles that are individually owned or leased, and often old and poorly maintained. Informal transport largely provides paratransit

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services, offering door-to-door or route-flexible operations with adaptable pricing structures. Operating in a largely laissez-faire environment, operators often working on thin profit margins frequently engage in intense and sometimes unsafe competition for passengers, parcels, and freight.

Beyond passenger transportation, informal transport operators increasingly became involved in freight and parcel delivery. Recognizing the income potential, operators expanded their services to include inter-city freight movement. This development benefited customers by enabling same-day or near-immediate delivery of parcels and goods. Consequently, the informal transport sector evolved from a purely passenger-focused system to one that also plays a significant role in parcel and freight transportation. A parcel is typically defined as a wrapped item weighing less than 75 kilograms, smaller than a Euro-pallet, and not requiring palletization. Timely parcel delivery is critical for business efficiency and long-term urban economic growth. While Business-to-Consumer (B2C) and Consumer-to-Consumer (C2C) deliveries dominate urban parcel flows, business-to-business (B2B) deliveries also account for a substantial share of urban freight activities.

The transformation of the retail environment has further reshaped logistics and transportation systems. Firms that adapted quickly to new distribution channels and delivery services have thrived, particularly those involved in last-mile B2C and C2C deliveries. Urban parcel delivery involves diverse receivers including retailers, hospitality establishments, businesses, government offices, healthcare and educational institutions, as well as individual residents, workers, and visitors each requiring distinct distribution channels and vehicle types. These variations contribute to the complexity of last-mile delivery operations.

In Nigeria, the preference for fast, accessible, and demand-responsive services has sustained the relevance of informal transport-based parcel delivery. As demand increased, the number of informal "parcel and freight caretakers" operating within motor parks also grew, effectively introducing informal warehousing functions. Drivers' responsibilities expanded beyond passenger transport to include hand-to-hand delivery of parcels and mail, with vehicle owners and owner-drivers actively participating in these activities.

Despite the absence of formal registration as courier companies, informal transport operators have continued to provide parcel delivery services to date. Notably, some registered private courier firms even incorporate informal transport operators into their logistics chains. Additionally, Person-to-Person (P2P) parcel transfers frequently occur through motor parks without adequate inspection by drivers or their representatives. This unregulated practice underscores the need for systematic research into parcel and package delivery by inter-city informal transport service operators, particularly within the context of P2P logistics.

2. Literature Review

The service industry has experienced significant growth in terms of service speed, cost efficiency, and quality, largely driven by technological advancement and evolving consumer purchasing behaviour. In response, service-oriented firms increasingly seek innovative ways to reduce operational costs and delivery times while ensuring timely product fulfillment. Consequently, delivery services have emerged as a core pillar of the service industry and have attracted growing scholarly attention in recent years (Shbool et al., 2022).

Within this context, the informal transport sector occupies a central position in Nigeria's socioeconomic landscape. Functioning largely as a Demand Responsive Transport (DRT) system, it offers flexible, real-time services at competitive prices. The resilience and operational relevance of Nigeria's informal transport sector are widely acknowledged, as over 75 percent of the urban population relies on it for both work-related and non-work-related travel. Over the decades, however, the roles performed by actors within this sector have evolved in response to changing economic conditions and service demands.

Urban commercial activities and the diverse delivery requirements of goods receivers have further complicated logistics operations. City centres host a wide range of receivers, including retailers, hospitality establishments, businesses, government offices, healthcare and educational institutions, as well as individual consumers such as residents, workers, and visitors. Each category requires distinct distribution channels, vehicle types, and operational approaches depending on shipment characteristics. These variations often overlap and conflict, thereby increasing the complexity of light parcel movements and making last-mile delivery particularly challenging (Aljohani and Thompson, 2018; Dablanc and Rodrigue, 2014).

The rapid expansion of e-commerce has further transformed logistics and delivery systems. E-commerce provides micro, small, and medium-sized enterprises (MSMEs) with unprecedented access to global markets, enabling them to reach far more customers than traditional physical retail would allow. However, the effectiveness of e-commerce depends heavily on key enablers, among which logistics and delivery services are critical. These services ensure that goods purchased online reach consumers promptly and are efficiently returned when necessary (WEF, 2018). Over the past two decades, e-commerce has reshaped the retail sector, forcing traditional retailers to restructure or exit the market due to intense competition from online platforms that offer continuous accessibility, price comparison, and home delivery through digital technologies.

To meet rising urban delivery expectations, several innovative logistics strategies have been introduced. These include the establishment of delivery points and the provision of same-day delivery services aimed at reducing first-attempt delivery failures and clearing delivery backlogs (Comi and Nuzzolo, 2016). Studies have also shown that information technology has significantly influenced consumer shopping behaviour by lowering online shopping costs. Since online

purchases cannot be used immediately, delivery and travel time are perceived as part of the consumer's overall cost, making fast delivery a crucial determinant of customer satisfaction and loyalty (Miyatake et al., 2016).

As competition within the retail sector intensifies—particularly during peak demand periods only firms capable of fulfilling orders and delivering parcels efficiently are likely to remain competitive (Lee and Whang, 2001). In response, many companies have adopted advanced information exchange systems to improve infrastructure utilisation and resource management. Speed has consequently become a dominant competitive strategy in the e-retail market, leading to the widespread adoption of same-day and even ultra-fast (one- to two-hour) delivery options (Savelsbergh and Woensel, 2016). Same-day delivery represents a special demand imposed by customers, often requiring the exclusive use of transport modes such as trucks, vans, motorcycles, or bicycles for individual parcels.

While large e-retailers have successfully leveraged same-day delivery to gain competitive advantage particularly through partnerships between retailers and carriers, as demonstrated in Japan there is an increasing need to develop equitable delivery systems that also support small and medium-sized enterprises (Gessner and Snodgrass, 2015; Hayashi et al., 2014). Despite the growth in e-commerce adoption and associated increases in sales, challenges persist in last-mile delivery operations. Notably, failed home deliveries have increased, prompting logistics providers to continuously refine their delivery strategies (Weltevreden, 2008; Gevaers et al., 2011).

Empirical evidence suggests that consumers place high value on delivery speed and reliability, as failed or unpredictable deliveries impose additional costs, stress, and time burdens (Goebel et al., 2012). As a result, speed and reliability have become critical factors influencing online purchasing decisions. Deliveries to retail outlets also constitute a substantial component of last-mile logistics, encompassing both chain and independent retailers. These deliveries are predominantly carried out using light commercial vehicles and light trucks, reflecting the operational demands of urban freight distribution.

2.1. Gap in Literature

Despite extensive research on last-mile delivery, e-commerce logistics, and informal transport systems, notable gaps persist. Most existing studies emphasize formal logistics providers and technologically advanced delivery models, largely within developed economies, thereby limiting their relevance to developing countries. While the informal transport sector is widely recognized for its role in passenger mobility in cities such as those in Nigeria, its growing involvement in parcel and person-to-person (P2P) delivery remains insufficiently examined. In particular, there is limited empirical evidence on the operational practices, safety implications, reliability, and regulatory challenges associated with unregistered parcel movement through informal transport networks. Moreover, current literature rarely integrates informal transport operators into discussions of urban and inter-city logistics efficiency. This lack of context-specific analysis constrains policy formulation and planning for inclusive and effective delivery systems, underscoring the need for focused empirical investigation in developing country settings.

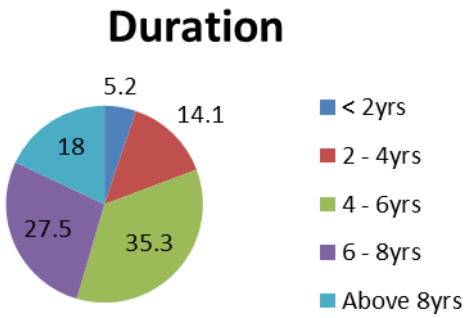
3. Methodology

The South West is the one of the six geopolitical zones of Nigeria representing both a geographic and political region of the country's southwest. It comprises six states – Ekiti, Lagos, Ogun, Ondo, Osun, and Oyo. A sample size of three hundred and six (306) was used for this study. Multi-stage sampling technique was employed. At stage one: the population was stratified into drivers and commuters. Snowball sampling technique was employed to get information from those that experienced the incident along the route. Lastly, purposive random sampling technique was employed to administer questionnaire the respondents.

4. Results and Discussion

Figure 1 revealed that 5.2% of the respondents have been conveying/sending packages through motor packs for less than 2yrs, 14.1% of the respondents have been conveying/sending packages through motor packs between 2 – 4yrs, 35.3% of the respondents have been conveying/sending packages through motor packs between 4 – 6yrs, 27.5% of the respondents have been conveying/sending packages through motor packs between 6 – 8yrs while the remaining of the respondents have been conveying/sending packages through motor packs more than 8yrs. This indicates that majority (80.8%) of the respondents have been conveying/sending packages through motor packs between 4 – 8yrs.

Figure 1. Years of using Park to send parcels



Source: Authors field survey, 2025

Figure 2 showed that 87.6% of the respondents claimed that they confirmed the contents of the parcel while the remaining said they do not confirm the contents. This indicates that most of the drivers claimed that they have the knowledge of the contents inside the parcel.

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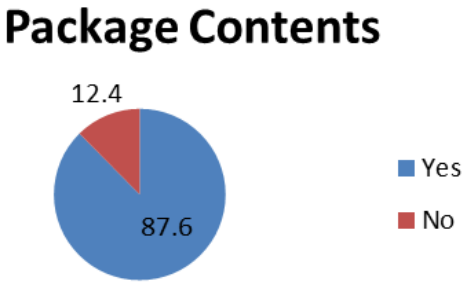
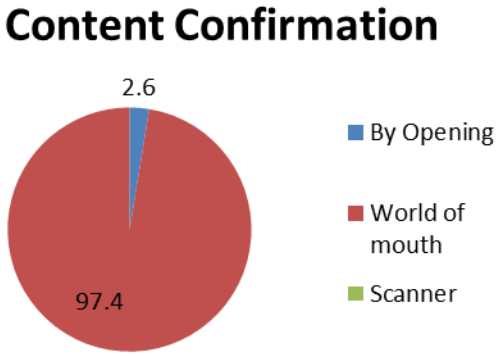
Figure 2. Contents of the Package



Source: Authors' field survey, 2025

Figure 3 revealed how the drivers confirmed the contents of the package. 2.6% of the drivers said that they confirmed by opening the parcels while 97.4% of respondents said by word of mouth from the sender. This indicates that drivers do not really have the full knowledge of the contents in the parcels.

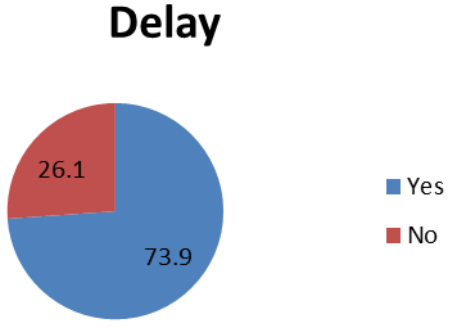
Figure 3. Methods of Confirmation.



Source: Authors' field survey, 2025

Figure 4 showed that 73.9% of the respondents said that they have been delay along the route due to package carried by commercial drivers while the remaining respondents said they have never encounter such delay due to package carried by commercial drivers.

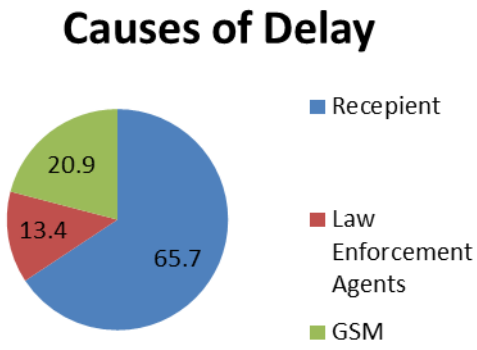
Figure 4. Delay caused by package/parcel delivery



Source: Authors' field survey, 2025

Figure 5 revealed that 65.7 of the respondents said the delay was caused by the recipients, 13.4% of the respondents said the delay was caused by law enforcement agent while the remaining of the respondents said the delay was caused by Global System Mobile (GSM). This indicates that recipients did not show up in time to collect their packages/parcels.

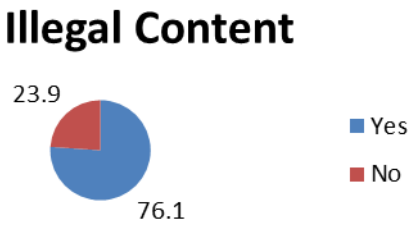
Figure 5. Causes of Delay



Source: Authors' field survey, 2025

Figure 6 showed that 56.1% of the respondents said that law enforcements agent did not found the content of the package illegal while the remaining respondents said the law enforcements agent found the content of the package illegal. This indicates that people use the process (P2P) to convey illegal substance.

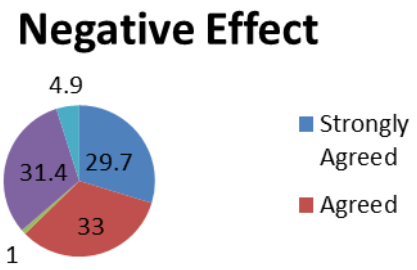
Figure 6. Illegality of the content



Source: Authors' field survey, 2025

Figure 7 revealed that 29.7% of the respondents strongly agreed that P2P conveyance of packages has negative effect in the society, 33.0% of the respondents agreed that P2P conveyance of packages has negative effect in the society, 1.0% of the respondents could not decide whether P2P conveyance of packages has negative effect in the society, 31.4% of the respondents disagreed that P2P conveyance of packages has negative effect in the society while the remaining of the respondents strongly disagreed that P2P conveyance of packages has negative effect in the society. This indicates that majority (62.7%) of the respondents agreed that P2P conveyance of packages by informal transport has negative effect in the society.

Figure 7. Negative effects of P2P package/parcel delivery



Source: Authors' field survey, 2025

Since the P-value (0.000) in the ANOVA table 1 is less than 0.05, there is a statistically significant relationship between the variables at 95.0% confidence level. The R-square statistic indicates that the model as fitted explains 77.2% of the movement of illegal substance. The adjusted R-square statistic, which is more suitable for comparing models with different numbers of independent variables, is 95%. Therefore, the null hypothesis is rejected meaning that package and parcel delivery of goods by informal transport service operators is dangerous to our society.

Table 1. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.879[a]	.772	.693	.27139

ANOVA[b]

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	234.189	4	58.547	255.664	.001[a]
Residual	69.228	301	.229		
Total	303.417	305			

Source**:** Authors' Compilation, 2025

5. Conclusion and Recommendations

Informal transport services typically involve lower costs and this affordability makes it more accessible to individuals and businesses which also reduce traffic congestion. Informal transport services can be tailored to suit the unique needs of senders and recipients. However, this research concluded that, package and parcel delivery of goods by informal transport service operators create an avenue for smuggling of illegal substance within the cities. Therefore, it was recommended that drivers must make sure they ascertain the content of the package/parcel by physical examination at the park and also law enforcement agent should be provided with gadgets to examine such package/parcel without opening it.

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