Systematic Review of Last-Mile Delivery Optimization and Procurement Efficiency in African Logistics Ecosystems

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Abstract- ***This systematic review explores the evolving landscape of last-mile delivery optimization and procurement efficiency within African logistics ecosystems. As the final and often most complex leg of the supply chain, last-mile delivery poses unique challenges in Africa due to infrastructural limitations, urban congestion, low addressability, and the prevalence of informal markets. Similarly, procurement inefficiencies driven by fragmented regulatory frameworks, limited digital adoption, and inconsistent supplier performance hamper supply chain effectiveness across the continent. This systematically analyzes peer-reviewed literature, case studies, and industry reports published over the past fifteen years to identify prevailing trends, technological innovations, and policy interventions aimed at enhancing logistical performance. The review categorizes strategies for optimizing last-mile delivery into technological advancements (e.g., mobile platforms, GPS tracking, drones), alternative delivery models (e.g., gig economy, public-private partnerships), and urban-rural adaptations. Procurement efficiency is examined through the lens of digital procurement tools, supplier relationship management, and government-led reforms. Cross-cutting themes such as data integration, the role of analytics, and the impacts of external shocks like the COVID-19 pandemic are also addressed. Notable case studies from countries such as Kenya, Nigeria, South Africa, and Ghana highlight localized innovations and emerging best practices. Despite growing interest and some successful interventions, the review identifies critical gaps including poor infrastructure, limited technological readiness, data scarcity, and policy fragmentation. It concludes with a call for increased multi-stakeholder collaboration, targeted capacity-building, and sustained investment in digital logistics systems. This review contributes to a clearer understanding of the mechanisms needed to build resilient, efficient, and inclusive logistics networks across Africa and provides a foundation for future research and policy development in the field.***

Indexed Terms- ***Systematic review, Last-mile, Delivery optimization, Procurement efficiency, African logistics, Ecosystems***

I. INTRODUCTION

Logistics plays a fundamental role in shaping the economic development of nations, serving as the backbone of trade, industrial productivity, and service delivery (Alonge *et al*., 2021; Okolie *et al*., 2021). Efficient logistics systems reduce transaction costs, improve market access, and enhance the competitiveness of economies by ensuring timely and reliable movement of goods and services. In Africa, where intra-continental trade and access to global markets are increasingly prioritized through initiatives like the African Continental Free Trade Area (AfCFTA), the effectiveness of logistics, particularly at the last mile, is of critical importance (Akinsooto, 2013; Oluokun, 2021).

However, last-mile delivery the final leg of the delivery process from a distribution center to the end user presents distinct challenges in African contexts (Jessa, 2017; Dienagha *et al*., 2021). Infrastructural deficits, such as poor road conditions, limited

transportation networks, and inadequate warehousing facilities, severely hinder efficient delivery. Rapid urbanization has led to the proliferation of informal settlements with unstructured address systems, further complicating the logistics chain (Ogungbenle and Omowole, 2012; Elumilade *et al*., 2021). Additionally, the predominance of informal economies and fragmented regulatory environments complicates the development of standardized logistics practices. These factors collectively result in high delivery costs, delayed shipments, and reduced service reliability.

Parallel to last-mile delivery, procurement efficiency constitutes a critical dimension of logistics systems, directly impacting both cost-effectiveness and service quality. Efficient procurement mechanisms enable organizations to acquire goods and services at the right time, quality, and price, ensuring optimal inventory management and budget utilization (Ogunsola *et al*., 2021; Austin-Gabriel *et al*., 2021). In African logistics ecosystems, procurement practices are often hampered by limited technological integration, lack of transparency, and inadequate institutional capacity. Improving procurement efficiency is therefore pivotal not only for reducing operational costs but also for strengthening supply chain resilience and responsiveness (Adekunle *et al*., 2021; Hussain *et al*., 2021).

Given these contextual dynamics, the purpose of this review is to conduct a systematic review of the strategies, technologies, and policy interventions that have been implemented to optimize last-mile delivery and enhance procurement efficiency within African logistics ecosystems. The review seeks to synthesize current knowledge, identify best practices, and illuminate gaps that warrant further investigation or innovation.

To achieve this, this review is guided by three core research questions: (1) What methods are currently being used to optimize last-mile delivery in African countries? (2) What strategies have proven effective in improving procurement efficiency across different logistics sectors? (3) What are the key barriers and enabling factors influencing the success of last-mile and procurement innovations in the African context?

By systematically addressing these questions, the review aims to provide a comprehensive understanding of how African logistics systems can evolve to support broader economic and social development goals through more efficient, inclusive, and technologically empowered supply chains.

II. METHODOLOGY

This systematic review was conducted in accordance with the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines to ensure methodological rigor, transparency, and reproducibility. A structured search strategy was developed to identify relevant academic and grey literature that addressed last-mile delivery optimization and procurement efficiency within African logistics ecosystems. The databases consulted included Scopus, Web of Science, PubMed, and Google Scholar, along with regional databases such as African Journals Online (AJOL) and grey literature repositories including World Bank, African Development Bank, and UNCTAD publications.

Keywords and search terms were developed based on a combination of Boolean operators and controlled vocabulary, including “last-mile delivery,” “procurement efficiency,” “logistics,” “supply chain,” “Africa,” “urban delivery,” “e-commerce logistics,” and “infrastructure.” The search was limited to articles published between 2010 and 2025 in English and French, reflecting the most recent developments and the predominant academic languages in Africa.

The selection process followed a two-phase screening approach. In the first phase, titles and abstracts of identified studies were independently screened by two reviewers for relevance. In the second phase, full-text articles were assessed to determine eligibility based on predefined inclusion and exclusion criteria. Studies were included if they (i) focused on last-mile delivery or procurement practices within African logistics ecosystems, (ii) provided empirical, theoretical, or case-based insights, and (iii) were published in peer-reviewed journals or recognized institutional reports. Exclusion criteria comprised studies not geographically focused on Africa, those unrelated to logistics or procurement, and publications lacking methodological transparency.

Data extraction was carried out using a standardized form to capture key information including author(s), year of publication, country or region of focus, study objectives, methodological approach, findings related to last-mile or procurement optimization, and identified barriers and enablers. Thematic synthesis was used to analyze the data, allowing for the categorization of studies under key themes such as technological innovations, infrastructure challenges, policy interventions, business models, and capacity-building efforts.

The quality of included studies was assessed using a modified version of the Mixed Methods Appraisal Tool (MMAT), which allowed for evaluating the methodological soundness of qualitative, quantitative, and mixed-methods studies. Any discrepancies in screening or appraisal were resolved through consensus or consultation with a third reviewer.

This methodological approach ensured a comprehensive, balanced, and contextually relevant review of literature that informs policy and practice in optimizing last-mile delivery and procurement efficiency across diverse African logistics environments.

2.1 Thematic Review of Last-Mile Delivery Optimization

Last-mile delivery, often regarded as the most complex and costly segment of the logistics chain, has become a major focus for optimization efforts within African logistics ecosystems (Ike *et al*., 2021; Abisoye and Akerele, 2021). Given the continent's unique economic, infrastructural, and geographic challenges, a variety of technological, infrastructural, and business model innovations have emerged to enhance last-mile performance. This thematic review synthesizes key developments in technological innovations, infrastructure and transport systems, business models and strategies, as well as the persistent challenges and limitations impacting last-mile delivery across Africa (Adeleke, 2021; Okolie *et al*., 2021).

Technological innovations have been central to efforts aimed at overcoming the structural barriers to efficient last-mile delivery. Mobile applications have proliferated, enabling businesses and consumers to coordinate deliveries, track shipments in real time, and improve service transparency (Odedeyi *et al*., 2020; Akinade *et al*., 2021). GPS tracking technologies, integrated into these mobile systems, have significantly enhanced route planning and fleet management, reducing delivery times and improving reliability even in areas with poor physical address systems. Moreover, the deployment of drones for delivery purposes, particularly in countries like Rwanda and Ghana, has illustrated the potential of aerial logistics solutions in overcoming geographical barriers, such as poor road infrastructure and difficult terrains, particularly for urgent health supplies (Adeleke and Peter, 2021; Oladosu *et al*., 2021). Digital logistics platforms have also expanded rapidly, integrating traditional logistics with ride-hailing technologies. Services like SafeBoda in Uganda and Sendy in Kenya combine courier services with digital marketplaces, enabling decentralized and flexible delivery options that cater to both urban and peri-urban populations.

Infrastructure and transport systems, however, continue to pose significant constraints and opportunities for last-mile delivery optimization. Urban delivery networks are often characterized by congestion, unregulated traffic patterns, and informal settlement structures, complicating efficient routing. In rural areas, inadequate road connectivity, limited public transportation options, and the sheer expansiveness of the terrain present even more profound barriers (Otokiti *et al*., 2021; Chukwuma-Eke *et al*., 2021). The impact of road quality is particularly acute: unpaved and poorly maintained roads not only delay deliveries but also increase vehicle maintenance costs and reduce delivery reliability. Nevertheless, some governments and private actors have begun investing in infrastructure upgrades specifically tailored to logistics needs, including designated delivery corridors and smart city planning initiatives aimed at integrating transport and logistics systems (Fredson *et al*., 2021; Adebisi *et al*., 2021).

Innovative business models and delivery strategies have also played a pivotal role in adapting last-mile solutions to African contexts. Crowdsourced delivery models leverage independent couriers who use their own vehicles or bicycles, offering flexible and often cost-effective delivery options. Platforms such as Droppa in South Africa and Kobo360 in Nigeria exemplify the rise of gig-economy logistics tailored to local realities. Local third-party logistics providers (3PLs) have gained prominence, offering specialized services that are attuned to regional operational environments (Onukwulu *et al*., 2021; Egbumokei *et al*., 2021). Another significant trend is the establishment of micro-distribution centers and decentralized hubs, which enable goods to be stored closer to consumers, thus reducing the distance and time associated with final deliveries. These hubs are often integrated with mobile technology solutions to optimize inventory management and dispatch operations.

Despite these advancements, a range of challenges and limitations continues to constrain the optimization of last-mile delivery. Security concerns, particularly in areas with high crime rates, pose significant risks for both couriers and goods, leading to increased insurance and operational costs (Onukwulu *et al*., 2021; Afolabi and Akinsooto, 2021). The lack of formal address systems in many urban and rural settings complicates delivery accuracy and efficiency, often necessitating additional communication and coordination with customers. Fuel costs, subject to high volatility in African markets, further strain the economics of last-mile delivery, particularly for small operators. Additionally, fragmented regulatory environments across African countries create inconsistencies in operational

standards, taxation, and licensing, impeding the scalability of logistics innovations across borders (Adekunle *et al*., 2021; Elujide *et al*., 2021).

In summary, while technological innovations, infrastructural improvements, and adaptive business models have significantly enhanced last-mile delivery in Africa, persistent infrastructural, regulatory, and security challenges highlight the need for holistic, multi-stakeholder approaches to achieve sustainable and scalable optimization (Elujide *et al*., 2021; OJIKA *et al*., 2021). Addressing these limitations will be critical to unlocking the full economic and social potential of Africa's rapidly evolving logistics ecosystems.

2.2 Review of Procurement Efficiency in Logistics

Efficient procurement processes are fundamental to achieving cost-effective and responsive logistics systems as shown in figure 1. In Africa, the logistics sector is increasingly recognizing the critical role of procurement efficiency in enhancing supply chain performance, reducing costs, and ensuring timely delivery of goods and services (Alonge *et al*., 2021; Okolie *et al*., 2021). This review explores the thematic dimensions of procurement efficiency in logistics, with a focus on process optimization, cost and time effectiveness, sectoral approaches, and persistent institutional barriers.

Procurement process optimization has been a central focus in modern logistics management, with significant advancements stemming from the adoption of digital technologies (Alonge *et al*., 2021; OJIKA *et al*., 2021). E-procurement systems have enabled organizations to automate procurement activities, from supplier selection and bidding to invoicing and payment. These systems improve transparency, reduce paperwork, and facilitate better tracking and reporting of procurement activities. In Africa, platforms such as Nigeria's Bureau of Public Procurement portal and Kenya's Integrated Financial Management Information System (IFMIS) have been introduced to curb inefficiencies in public procurement. Similarly, supplier management platforms have enabled better supplier performance evaluation, contract management, and risk mitigation (Akinsooto *et al*., 2014; Onukwulu *et al*., 2021). A key consideration in procurement optimization is the choice between centralized and decentralized models. Centralized procurement, often adopted in government or large-scale institutions, allows for volume discounts and standardized procedures but may suffer from rigidity and slower responsiveness. Decentralized models, preferred by many private sector firms and NGOs operating in diverse regions, allow for context-specific purchasing and faster decision-making, although they can lead to inconsistencies and higher administrative overheads.

Cost and time efficiency remain the primary metrics for evaluating procurement performance. Bulk procurement strategies, particularly in sectors such as healthcare and education, have proven effective in securing lower unit prices and reducing logistics costs (Odio *et al*., 2021; Nwaozomudoh *et al*., 2021). Vendor consolidation where organizations limit the number of suppliers they use enhances bargaining power and simplifies procurement management, though it may increase dependency risks. The application of just-in-time (JIT) procurement and lean procurement practices, borrowed from manufacturing paradigms, is gaining traction in African logistics. JIT strategies reduce inventory holding costs by aligning procurement closely with demand, though they require robust supply chain coordination and reliable transportation networks. In the African context, JIT models must be cautiously adapted due to infrastructural limitations and supply volatility. Nonetheless, lean procurement approaches focused on eliminating waste, streamlining workflows, and improving process integration are showing positive outcomes in both public and private logistics operations (Babalola *et al*., 2021; Onukwulu *et al*., 2021).

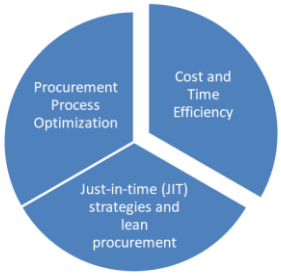

Figure 1: Review of Procurement Efficiency in Logistics

The distinction between public and private sector procurement strategies reveals key differences in efficiency and implementation. In public sector logistics, particularly in health supply chains, procurement practices are often shaped by donor-driven frameworks and government regulations (Oyedokun, 2019; Oyegbade *et al*., 2021). Case studies from countries like Rwanda and Ethiopia demonstrate successful public health procurement models, especially in vaccine distribution and essential medicine supply. These models emphasize pooled procurement, national distribution frameworks, and the use of data-driven demand forecasting tools. Conversely, in private sector contexts such as retail and

manufacturing, procurement practices are more market-driven, with a greater focus on competitive advantage, service-level agreements, and strategic supplier relationships. Corporations like Shoprite and Dangote Industries have implemented advanced procurement systems that align with global standards, showcasing the role of private sector innovation in shaping regional logistics performance (Akinsooto *et al*., 2012; Agho *et al*., 2021).

Despite progress, several barriers and institutional gaps continue to hinder procurement efficiency in African logistics ecosystems. Corruption and a lack of procurement transparency are among the most significant challenges, particularly in public sector procurement (Fredson *et al*., 2021; Egbuhuzor *et al*., 2021). These issues often result in inflated costs, substandard goods, and loss of public trust. Furthermore, many logistics organizations face deficits in procurement capacity, including insufficient training, lack of professional procurement staff, and inadequate use of data analytics. Addressing these gaps requires sustained investment in institutional reforms, professional development, and the promotion of ethical procurement practices.

Enhancing procurement efficiency in African logistics systems demands a multi-dimensional approach that combines technological innovation, strategic planning, and institutional capacity-building (Geels, 2019; Adewoyin, 2021). By leveraging digital tools, aligning procurement models with organizational needs, and addressing systemic barriers, stakeholders can significantly improve the reliability, cost-effectiveness, and impact of logistics operations across the continent.

2.3 Systematic Review

The systematic review of last-mile delivery optimization and procurement efficiency in African logistics ecosystems reveals an intricate web of interdependent factors influencing performance, scalability, and inclusiveness (Adewole, 2019; Nkwanyana and Agbenyegah, 2020). Through a synthesis of the thematic findings, key patterns emerge concerning what strategies have been effective and where notable gaps remain. These insights also provide critical guidance for policy formulation and practical implementation across various stakeholder groups.

The review demonstrates that technological innovation particularly digitalization has had a transformative impact on last-mile delivery in Africa. Mobile applications, digital logistics platforms, GPS tracking, and the integration of ride-hailing services have improved delivery tracking, reduced costs, and increased customer satisfaction. Furthermore, procurement efficiency has seen measurable gains through the implementation of e-procurement systems and centralized supplier management tools, especially in public health and retail logistics (Handfield *et al*., 2019; Bag *et al*., 2020).

These successes are most prominent in urban and peri-urban settings where infrastructure, network coverage, and market density support the scalability of technological interventions. In rural or informal contexts, however, limitations in connectivity, address systems, and transport infrastructure restrict the applicability and effectiveness of these solutions. Similarly, while bulk procurement and vendor consolidation are widely recognized as best practices for improving cost-efficiency, their implementation is often hindered by inconsistent supplier availability, logistical constraints, and weak institutional coordination (Massoud *et al*., 2019; Marzban and Mohammadi, 2020).

Decentralized delivery models, such as crowdsourced logistics and micro-distribution centers, also emerge as promising innovations that are more adaptable to Africa's fragmented and informal retail ecosystems. These models improve service coverage and create local employment opportunities, yet they require sustained investment in capacity building and operational standardization. Despite the presence of innovative delivery strategies, challenges persist in terms of security, fuel costs, and regulatory fragmentation, underscoring the need for context-specific adaptation of global best practices.

Notably, several gaps in the literature remain. First, empirical evaluations of the long-term cost-benefit outcomes of new logistics technologies are limited. Second, there is insufficient analysis of rural logistics challenges and opportunities, particularly in landlocked and low-density regions (Prasad *et al*., 2019; Dubolazov *et al*., 2020). Third, gender dimensions and inclusivity in last-mile delivery employment and entrepreneurship are largely underexplored. Finally, there is a need for comparative studies across countries to identify region-specific enablers and constraints, which would aid in developing nuanced, evidence-based strategies.

To enhance last-mile delivery and procurement efficiency, stakeholders must adopt a multifaceted approach. For governments, investment in transport infrastructure particularly rural roads and urban traffic systems remains foundational. National logistics strategies should be aligned with regional integration goals under frameworks such as the African Continental Free Trade Area (AfCFTA), ensuring cross-border

harmonization of standards, digital systems, and regulatory processes (Vinodh and P, A, 2019; Yasmine and Yudoko, 2020).

Regulatory reforms should also focus on creating conducive environments for digital innovation and private sector participation. Governments can establish regulatory sandboxes to trial new logistics technologies and facilitate public-private partnerships to co-invest in shared logistics infrastructure (Litvinenko, 2020; Ørtenblad *et al*., 2020).

Non-governmental organizations (NGOs) and development agencies have a role in piloting inclusive and community-based logistics models, particularly in underserved regions (Dubey *et al*., 2020; Masefield *et al*., 2020). These initiatives should be accompanied by impact evaluations to build the evidence base and promote scaling. For businesses, strategic investment in digital procurement platforms and last-mile delivery networks is essential. Collaboration with local third-party logistics providers (3PLs), integration of IoT and AI in operational workflows, and the adoption of sustainable logistics practices such as the use of electric vehicles and eco-friendly packaging can significantly enhance competitiveness and social responsibility.

Capacity building is a cross-sector priority. Governments and private actors should invest in logistics education and vocational training, targeting youth and marginalized groups to bridge human capital gaps and foster a more resilient logistics workforce (Thekdi and Aven, 2019; Kaplinsky and Morris, 2019).

The review underscores that while substantial progress has been made in modernizing logistics operations in Africa, challenges remain that require coordinated, context-specific, and evidence-driven responses. A holistic approach that integrates technology, infrastructure, policy, and human capacity is essential (Addo, 2019; Loosemore *et al*., 2020). Future research should explore the intersection of logistics innovation with inclusivity, environmental sustainability, and regional development, ensuring that Africa's logistics transformation supports equitable and long-term economic growth.

2.4 Cross-Cutting Themes

The optimization of last-mile delivery and procurement efficiency in African logistics systems is shaped by several cross-cutting themes that extend beyond isolated interventions (Hager *et al*., 2019; Stoyanova *et al*., 2020). These include digitalization and data utilization, sustainability concerns, the influence of policy and regulation, and the importance of human capital development as shown in figure 2. Together, these dimensions form a holistic foundation for long-term improvement in logistics performance across the continent.

Digital transformation is arguably the most transformative force in African logistics. The integration of big data, artificial intelligence (AI), and the Internet of Things (IoT) is significantly reshaping how logistics operations are planned, executed, and evaluated. Big data analytics allows companies to extract actionable insights from vast volumes of information generated by customer transactions, vehicle movement, and supply chain interactions (Boone *et al*., 2019; Bhattarai *et al*., 2019). This data supports predictive analytics for demand forecasting, route optimization, and inventory management. For example, AI algorithms can dynamically reroute deliveries based on real-time traffic conditions or weather disruptions, thereby improving punctuality and reducing fuel consumption.

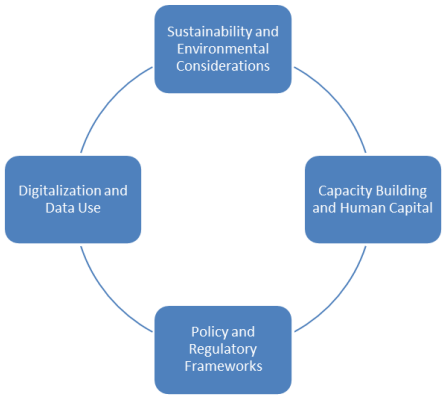

Figure 2: Cross-Cutting Themes

IoT devices, such as GPS trackers, RFID tags, and connected sensors, play a pivotal role in end-to-end visibility of goods in transit. These tools facilitate real-time monitoring of temperature-sensitive items (such as vaccines) and ensure compliance with safety standards. In procurement, digital platforms support e-tendering, supplier audits, and contract performance analytics, leading to increased transparency and accountability. Across Africa, startups and established firms alike are adopting these technologies, though widespread implementation still faces infrastructural and affordability challenges.

Sustainability has become a growing concern in the African logistics ecosystem, driven by the continent's vulnerability to climate change and the increasing demand for environmentally responsible practices (Ogwu, 2019; Steiner, 2019). Green logistics initiatives are emerging in response to these pressures.

These include efforts to reduce carbon emissions through route optimization, the use of electric or hybrid delivery vehicles, and the implementation of low-emission zones in urban areas.

Electric mobility, while still nascent, is gaining traction with the introduction of electric two- and three-wheelers for last-mile deliveries in countries like Rwanda and Kenya. These vehicles offer lower operational costs and reduced environmental impact. Additionally, innovations in packaging such as biodegradable materials and reusable containers are being explored to minimize waste and promote circular economy principles. Sustainability goals are also influencing procurement practices, with organizations increasingly seeking to source goods from environmentally certified suppliers and to reduce the carbon footprint of their supply chains.

Effective policy and regulatory frameworks are essential for creating an enabling environment for logistics efficiency (Zhang *et al*., 2020). At the national level, several African countries have developed or are developing logistics strategies that prioritize infrastructure development, digital integration, and regulatory harmonization. These policies seek to address systemic inefficiencies and attract private sector investment in logistics services.

Regionally, the African Continental Free Trade Area (AfCFTA) represents a major policy milestone with significant implications for logistics. By reducing trade barriers, standardizing customs procedures, and improving cross-border transport regulations, AfCFTA aims to enhance intra-African trade and streamline supply chains. However, disparities in regulatory enforcement, data privacy concerns, and infrastructure readiness remain obstacles to full policy realization. There is a growing consensus on the need for policy coherence between national logistics strategies and regional trade initiatives to ensure synchronized development.

The success of any logistics system is ultimately dependent on the capabilities of its human resources. In Africa, there is a pressing need to build capacity through education, training, and professional development. The logistics sector suffers from a shortage of skilled personnel, particularly in areas such as supply chain analytics, procurement management, and warehouse operations (Kilibarda *et al*., 2019; Heaslip *et al*., 2019). Training programs and academic curricula often lag behind industry needs, contributing to persistent skill gaps.

To address this, partnerships between governments, academia, and private companies are crucial. Initiatives such as vocational training, certification programs, and internships can help cultivate a new generation of logistics professionals. Moreover, the integration of digital skills into training modules is essential to prepare the workforce for a rapidly digitalizing logistics environment.

Cross-cutting themes such as digitalization, sustainability, policy alignment, and capacity building are central to the transformation of last-mile delivery and procurement efficiency in African logistics ecosystems but also support broader goals of economic development, environmental stewardship, and regional integration (Rinkkala *et al*., 2019; Wallet *et al*., 2019).

CONCLUSION

This systematic review has provided a comprehensive analysis of the strategies, technologies, and institutional frameworks shaping last-mile delivery optimization and procurement efficiency in African logistics ecosystems. Key insights highlight the central role of digital technologies such as mobile applications, GPS tracking, and e-procurement platforms in enhancing delivery performance and procurement transparency. Innovative delivery models, including crowdsourced logistics and decentralized micro-hubs, have proven effective in bridging infrastructural gaps, particularly in urban and peri-urban environments. Furthermore, the integration of bulk procurement, just-in-time (JIT) strategies, and supplier management systems has improved cost-effectiveness and service delivery, especially in public health and retail supply chains.

However, the review also identified significant limitations. These include inadequate infrastructure, limited technological penetration in rural areas, fragmented regulatory environments, and skill shortages in logistics management. Additionally, there are gaps in the literature regarding longitudinal impact assessments, rural logistics, and the inclusion of gender and equity dimensions. The predominance of case studies from a few countries also limits the generalizability of findings across diverse African contexts.

Looking ahead, the future of African logistics lies in the continued convergence of digitalization, sustainability, and regional policy harmonization. Emerging technologies such as AI, IoT, and electric mobility offer transformative potential, provided that supporting infrastructure and regulatory frameworks are adequately developed. Strengthening institutional capacity, investing in human capital, and fostering cross-border collaboration under frameworks like AfCFTA will be critical to unlocking inclusive and resilient logistics ecosystems. With targeted interventions and sustained

investment, Africa can leapfrog legacy challenges and build agile logistics systems that support broad-based economic growth and social development.

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