Social Lens Innovative

Review

Last-Mile Delivery Challenges in Bangladesh's E-Commerce Industry: A systematic literature review

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Abstract: In highly digitalizing South Asian markets, last mile delivery (LMD) is the most expensive, complex and customer facing part of the ecommerce supply chain. Current study is a systematic literature review of academic and grey literature covering the challenges of last mile delivery in e-commerce in Bangladesh from 2010-2026. A multi-source search using combinations of the terms "last-mile delivery", "e-commerce", "logistics", "gig economy" and "Bangladesh" was undertaken with the assistance of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) framework. Given the limited number of indexed, peer-reviewed scholarship on the last-mile logistics specifically for the Bangladesh context, the review included a mix of peer-reviewed studies and high-quality institutional reports, regulatory documents and industry analyses – a hybrid approach recommended for systematic reviews of practice-driven and under-theorized topics in emerging markets. Of these, about 125 unique records were included in the thematic synthesis based on topical relevance, language eligibility and date (2010-2026), resulting in the retention of 46 sources. The review identified that there are eight interrelated thematic clusters of challenge: (1) infrastructural and geographic constraints; (2) urban traffic congestion and its economic cost; (3) cash-on-delivery dependency and payment friction; (4) consumer trust and service-quality gaps; (5) precarious gig-economy labor conditions; (6) reverse logistics and product-return burdens; (7) nascent technology-enabled innovation (micro-warehousing, parcel lockers, route optimization); and (8) a persistent rural–urban delivery divide that constrains market expansion beyond Dhaka. This study is an important step towards synthesizing two decades of disjointed academic, industry and labor-based research on the last-mile delivery system in Bangladesh, and is a research blueprint for tackling the most significant empirical challenges facing the sector.

Keywords: Bangladesh; SLR; supply chain management; gig economy; emerging markets

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1. Introduction

Over the last ten years, e-commerce (e-business) has grown impressively in South Asia, and Bangladesh is a good example of the hope and the hurdles of e-business. According to the e-commerce logistics industry estimates, the market is valued at USD 1.19 billion in early 2025 and will reach USD 2.38 billion by 2030 with 15 per cent compound annual growth rates (CAGR) (FundInFolks 2025), and the overall freight and logistics industry is estimated at USD 32.92 billion in 2026 (Inspira Advisory and Consulting 2026). Online orders are constantly growing, with the platforms including Daraz, Chaldal, Pickaboo, and new social-commerce platforms, and the courier companies competing to make the "last mile" of the delivery process – the stage from a fulfilment center or micro-warehouse to the customer's door – happen.

In the global logistics literature, last mile delivery is a costly and operationally most vulnerable part of e-commerce fulfilment, often contributing to a large percentage of e-commerce delivery costs (DHL Global 2026). This is further complicated by a number of factors in the context of Bangladesh including chronic traffic issues in urban areas, lack of road and address-mapping infrastructure in secondary cities and rural areas, maximum cash-on-delivery (COD) payment, the size and vulnerability of the gig workforce, and the gap in logistics service quality between Dhaka and secondary cities and rural areas (DHL Bangladesh 2026; Inspira Advisory and Consulting 2026). These rub frictions are not just operational side notes, but influence firm behavior, consumer confidence, labor welfare and e-commerce's speed of penetration beyond the four megacities of Bangladesh.

The e-commerce market in Bangladesh has gone through three stages. During the nascent phase (2010–2015), few pioneering platforms emerged without a proper payment or logistics system, and without even the attention of early academics to problems of adoption, lack of internet access, digital literacy, and cybersecurity risks (Rahman, Aminul and Bushra 2018). The acceleration phase (2016-2020) came with the emergence of Facebook-based social commerce, mobile financial services (MFS) including bKash, Nagad and Rocket, and crucially, dedicated third party logistics (3PL) and courier operators, which lowered the cost of getting into the market for small online sellers (International Trade Administration 2026; PayAtlas 2026). This was followed by a sharp discontinuity due to COVID-19 pandemic which led to 50 percent increase in online activity during the pandemic period, while the government gave product delivery an emergency service status to keep supply chains alive during lockdown (Hasan 2020). However, the consolidation phase (2021- present) has witnessed the continued expansion of volumes while structural challenges – logistics constraints, consumer trust erosion after various platform failures and gig-worker welfare issues – have limited further volume growth (Sarkar et al.2025).

Geographically, Bangladesh's logistics system is structurally skewed towards Dhaka. Capital goods are transported efficiently through the country, for example, Padma Bridge and Dhaka Elevated Expressway, but the distribution to secondary cities and upazilas of rural areas is still slow, expensive, and unpredictable (Inspira Advisory and Consulting 2026). According to the Agility Emerging Markets Logistics Index 2020 (Agility 2020), Bangladesh's logistics sector maturity is lagging behind its economic development, placing it 38th among 50 countries. This context, in which the findings described in the themes below are set, is created by this Dhaka-centric structure.

While these topics are highly practical, little research addresses last-mile delivery of e-commerce in Bangladesh directly and systematically, and exists across disciplinary silos, including business and marketing studies of consumer behavior (Rahman et al. 2018; Saad 2020), labor and development studies of the gig economy (Lata 2025; Shanmugavelan et al. 2021), transport-engineering studies of urban congestion, and a massive amount of practitioner and policy literature generated by logistics companies, multilateral institutions, and business media. To the best of the authors' knowledge, no previous research comprehensively collates this scattered body of evidence in a coherent narrative of last-mile delivery problems in Bangladesh. This paper aims to fill that void.

This review systematically identifies and synthesize literature and high-quality grey literature from 2010 onward regarding the "last-mile" delivery in the e-commerce sector in Bangladesh; develops a thematic map of the main categories of challenges documented in this literature; and draws theoretical, managerial and policy implications and a research agenda. The review is based on three research questions. Firstly, exploring the main problems in last-mile delivery in the e-commerce industry in Bangladesh, as revealed in the academic and grey literature from 2010 to 2026.Secondly, unearthing the interactions between these challenges from an infrastructural, technological, behavioral and labor perspective. Thirdly, highlighting the current gaps in evidence and what research agenda would be most useful to develop the evidence and practice in this area.

2. Methods

This review is a search and synthesis of literature, guided by the PRISMA 2020 statement (Page, Joanne and Patrick et al. 2020) and the PRISMA-S extension for reporting literature searches (Rethlefsen et al. 2021). The principles of transparency and reproducibility, such as an explicit search strategy, explicit eligibility criteria, and documented screening, that are used in clinical and intervention research reviews are applied in this review, and the evidentiary base is adapted to also include high-quality grey literature, given the lack of indexed peer reviewed literature on this specific topic. Algorithmic citizenship can be understood through three interconnected processes: how visibility is produced, how participation becomes data, and how political relevance is redistributed through computational systems. These are not separate mechanisms. They work together, each shaping the next.

2.1 Search Strategy and Information Sources

Academic publisher websites (Taylor & Francis Online, Emerald Insight, SpringerLink, ScienceDirect) and a combination of targeted searches of institutional repositories (World Bank, multi-lateral development-bank reports) together with Google Scholar, SSRN, ResearchGate and Academia.edu were searched for relevant details. Bangladeshi business press (The Business Standard, The Financial Express, The Daily Star, Dhaka Tribune, New Age) and logistics-industry publications (DHL, courier and freight-market analyses) were also explored for targeted searches. Search terms included Boolean operators and paired “last-mile” or “last mile” with the following words: “e-commerce,” “logistics,” “Bangladesh,” “gig economy,” “courier,” “consumer behavior,” and “reverse logistics.” After the initial scoping search, 15 different search iterations were conducted until the final rounds of citation chasing, with around 125 distinct records retrieved for title/abstract screening.

2.2 Eligibility Criteria

The records were selected if they met the following criteria: (i) published between 2010 and 2026 in English; (ii) substantially dealt with last mile delivery, e-commerce logistics, gig-economy delivery labor, or with directly related infrastructural/payment/consumer-behavior constraints; (iii) explicitly targeted Bangladesh or, for methodological and/or comparative works of international scope (e.g., PRISMA guidance), provided a conceptual basis directly relevant to the Bangladesh context for this review; (iv) were accessible in full or in a comprehensive abstract/summary form. Records that were not the result of substantive analytical content, duplicates of records retained from other sources, or were outside the 2010-2026 timeframe were excluded from the records.

2.3 Study Selection and Data Synthesis

After screening the 125 records, duplicates and off-topic results were removed, leaving a working set, which was evaluated in full text. Ultimately 46 sources met the inclusion criteria and are retained here (full citation information is in the References, and a summary is provided in Table 1): eight are peer-reviewed journal articles or formal methodological statements, while all the others are either institutional labor-market reports, specifically the Fairwork Bangladesh series, a World Bank project appraisal document, a national trade-promotion country guide, or university field-based course reports, where the primary interviews are conducted, or industry/business-press analyses. To accommodate the heterogeneous, mixed-methods evidence bases, a narrative approach for data

extraction into a thematic matrix was used, which involved an iterative, reflexive thematic-synthesis process around the categories reported in next section. This hybrid approach is an appropriate answer to one key discovery of the search process itself: While extensive, empirical, and scholarly research on the last-mile delivery in Bangladesh has been carried out, it lacks the rigor of indexing and peer-review as is appropriate for the economic importance of the sector. In cases of Bangladesh-specific peer-reviewed literature, there is a disproportionate focus on consumer behavior and adoption (Rahman et al. 2018; Saad 2020), conditions of gig-labor (Lata 2025; Shanmugavelan et al. 2021), but not on operations, network design or technology adoption within the last-mile segment itself – this is discussed further in parts.

3. Results

In the 46 retained sources, the publications in 2020-2026 are heavily skewed (33 of 46 sources), indicating an increasing trend of Bangladeshi e-commerce in general, and specifically last-mile delivery scholarship, since the onset of the pandemic. The academic peer-reviewed sources that are grouped together are three journals, Cogent Business & Management, British Food Journal and The Sociological Review, as well as the PRISMA methodological literature. The rest are from labor-rights research groups (Fairwork), multilateral and governmental bodies (World Bank; U.S. International Trade Administration), Bangladeshi business journalism and logistics industry analysts. The distribution is a finding because, unlike in North American, European and East Asian contexts where there is a wealth of operations research literature on last-mile delivery technologies like parcel lockers, drones, and crowdsourced delivery, there is less scholarly work on last-mile delivery in Bangladesh.

Infrastructural and Geographic Constraints

Structural mismatch between Bangladesh's logistics systems and geographically dispersed demand driven by the growth of e-commerce is the common problem that is reported. Deliveries in Dhaka are relatively on time while in secondary cities, “frequent delays, substandard service and higher delivery rates are common” (Inspira Advisory and Consulting Ltd. 2026). Lack of good roads, unreliable power supply, lack of digital address-mapping, and inadequate warehousing facilities outside of major urban centers combine together (DHL Bangladesh, 2026). Low smartphone penetration, estimated to be around 41 per cent of mobile phone users across the country, coupled with the fact that informal credit and physical retail outlets are still available in many rural areas, means demand for home delivery service and its commercial viability are still significantly lower in these regions compared to urban areas (The Financial Express 2022).

Urban Traffic Congestion and Its Economic Cost

Another separate, but related, literature estimates the economic impact of traffic congestion in Dhaka, directly affecting the throughput and the cost of last-mile deliveries. The average speed of vehicles in Dhaka is now reported to be less than 7 kilometers per hour today, compared with 21 kilometers per hour ten years ago (Dhaka Tribune 2026; World Bank 2018.). The damage caused by this congestion is estimated to be in the billions of dollars annually, depending on the methodology and year, ranging from USD 3-5 billion (Dhaka Tribune 2026, Hasan 2025) to as high as USD 11.4-12.6 billion (Business Inspection BD 2022) based on the annual impact of congestion in terms of vehicle operating costs, travel time loss, and accident costs. According to World Bank, congestion costs Dhaka several million working hours per day and can dampen the city's potential for several percentage points every year (World Bank 2018.; Financial Express 2023). This directly affects last-mile operators as they will have to bear the increased delivery cost per parcel, extended delivery timings, and reduced delivery productivity of their riders.

Cash-on-Delivery Dependency and Payment Friction

Although cash-on-delivery (COD) usage has come up to a significant level in the digital transformation of Bangladeshi e-commerce, it is still the primary payment method, accounting for anywhere between 75 percent to more than 90 percent of all online transactions (International Trade Administration 2026; Daily Industry 2025), and bKash alone reports having 10 to 15 million verified users (PayAtlas 2026). Dependency on COD has direct last-mile effects such as increased cash handling pressure and security risks for delivery riders, more doorstep failures or refusal of customer orders, and challenges to reconciling and working the capital cycle for delivery riders and merchants (University of Dhaka, Department of International Business 2024). This enduring COD preference is not due to the scarcity of digital payment rails alone, but to a general distrust of the security of online payments (Rahman et al. 2018).

Consumer Behavior, Trust, and Service Quality

A series of consumer-behavior studies, although mostly survey-based and localized, are all unanimous that delivery-related factors, such as delivery time, delivery reliability and home delivery convenience, have high contentions as factors of satisfaction and dissatisfaction in e-commerce shopping in Bangladesh. In a survey of 160 respondents in Dhaka, (Rahman et al. 2018) found that convenience of home delivery was the most appreciated feature of online shopping, whereas being unable to see the physical products before purchase was the most disliked feature. Specifically, (Saad 2020) analyzed key determinants of customer satisfaction related to the intermediation service of online food delivery, where the time of delivery, quality of delivery service and delivery quality emerged as the main factors influencing the satisfaction of online food delivery customers. This is echoed by the wider industry with reports that one ruined delivery could have a significant impact on a platform's reputation in a market that depends on trust signals from social media and word of mouth (Onro 2025; Inspire Solutions Asia 2025).

Gig-Economy Labor Conditions

An extensive and systematic body of work has analyzed the work conditions for riders and drivers who are physically doing last-mile and food delivery in Bangladesh. No platform rated above one point out of 10 on fair-work principles that cover pay, conditions, contracts, management and worker representation, and even those that managed marginally better in 2022 (Fairwork 2022) were the 10 platforms assessed in 2021 in Bangladesh (Shanmugavelan et al. 2021). The survey results are echoed by ethnographic descriptions and qualitative studies: In one qualitative study, virtually 90 percent of surveyed gig workers said they were afraid of being robbed or attacked while working for delivery apps (The Financial Express 2021), while ethnographic reports show

that delivery riders work as many as 10 hours a day for little pay, with no job security (The Business Standard 2022). In the context of algorithmic management in a gig-delivery economy, Lata (2025) provides a description of the informal, everyday resistance strategies employed by Uber drivers in Dhaka, Bangladesh, through interviews conducted with them. In sum, this body of literature suggests that the capacity to deliver "last-mile" to the population in Bangladesh is significantly dependent on precarious and largely unregulated forms of labour (Sarker 2025; Data Sense 2025).

Reverse Logistics and Product Returns

Product returns are one of the untapped but growing cost centers. The average order return rate is generally in the range of 10–11 percent across the globe, with returns increasing significantly for fashion and apparel products (Tabcut 2024). The high return rate is interwoven with COD dependency in a positive feedback cycle: funds are collected only at delivery, so part of the orders are refused at the doorstep, creating a reverse logistics burden which is not factored into delivery contracts often executed at last mile. Market analysts say that with the expansion of fulfilment networks in secondary cities, “returns, warranty and reverse logistics will play a significant role, particularly in Bangladesh where the population is dense and there is a lack of infrastructure” (ResearchAndMarkets 2026).

Technology-Enabled Innovation

To overcome these challenges, ecommerce and logistics companies in Bangladesh have started to implement various innovations in the last mile that have been seen in the rest of the world. To reduce delivery distances and speed up restocking, small-scale warehouses, or micro-warehousing, have been introduced by platforms like Chaldal (Wahyd Logistics 2024; The Financial Express 2022). In a similar trend as other courier companies around the world, operators are investing in new software for route optimization, real-time tracking, and automated dispatch systems (Kultsum 2025), thereby paving the way for future urban delivery solutions such as parcel lockers, electric two-wheelers, and drone deliveries, which are being developed, especially in less populated and more congested areas (DHL Bangladesh 2026; Anchanto 2026). The reviewed literature though offers descriptive evidence of these innovations at the practitioner level, does not provide rigorous and Bangladesh-specific cost-effectiveness, scalability, or customer acceptance evidence.

The Rural–Urban Delivery Divide

A final theme, which was cross-cutting, was the ongoing disconnect between logistics service quality in Dhaka and the rest of the country. Despite the occurrence of digital demand in rural areas, the e-commerce companies have suffered from the low density of demand, lack of digital and physical infrastructure, and informal local retail and credit system, making the commercial viability of rural markets difficult to achieve (The Business Standard 2022; The Financial Express 2022). Indirectly, some companies have tried to introduce hybrid models (online-to-offline), such as a delivery from the nearest physical partner point instead of a central warehouse (The Business Standard 2022). However, this gap has been cited time and again as a structural barrier to the geographical growth of the e-commerce industry in Bangladesh (Inspira Advisory and Consulting Ltd. 2026).

4. Discussion

The eight thematic clusters mentioned in the present review are not standalone or independent categories, but rather a closely interwoven system, with deficiencies in one aspect of the system strengthening deficiencies in another. The last-mile delivery ecosystem in Bangladesh is not a chain of operational issues but a chain of mutually reinforcing issues. Insufficient infrastructure around Dhaka, such as poor road connectivity, lack of logistics facilities, and weak transport infrastructure, are also part of the problem, and contribute significantly to the time taken for deliveries, the costs of transportation, and the uncertainty of operations within Dhaka. These inefficiencies have a direct impact on customer service and the speed and reliability of delivery are among the most significant factors that affect customer satisfaction and repeat buying. As a result, customers are more concerned than ever about the speed and dependability of their deliveries, especially in a highly competitive eCommerce landscape, where their expectation of timely and consistent delivery is growing.

This increased sensitivity to delivery reliability meets the long-standing cash-on-delivery payment reliance in Bangladesh. The dominance of COD can cause significant inefficiency for retailers, and make accessing online payment systems difficult for consumers whose trust in e-commerce has been undermined by frequent fraud. All these issues put combined pressure on the logistics providers and online retailers. This adds to the costs of reverse logistics, makes delivery less productive and adds to hard-to-squeeze operating margins. Therefore, any payment delay issues must be considered alongside logistics performance, with the result that they are a driver of the impacts of infrastructural and transportation inadequacies.

To deal with these rising cost pressures, many companies have shifted much of the risk and cost of goods delivery and operation onto a largely informal and unprotected gig workforce. Rather than building a capital heavy automated fulfilment center, advanced logistics network, integrated digital tracking system or strategically placed regional distribution hub, companies have frequently been forced to turn to delivery riders who are flexible in their working hours and in precarious employment. This approach can offer cost flexibility and scalability to firms in the short term, but has limited benefit in tackling the underlying structural drivers of delivery inefficiency. Furthermore, informal gig workers are subject to other issues including labor turnover, poor service quality, insufficient training, lack of job protection, and weak accountability. Consequently, the situation of the labor market evolves into a key part of last-mile delivery performance, and not just a human resource matter.

Such interaction of these factors also serves as a reminder that structural bottlenecks are not completely addressable by technological solutions. In some settings, these innovations have led to increased operational efficiency, for example through route optimization algorithms, real-time delivery tracking, mobile logistics applications, and micro-warehousing, but these have limited value in the wider physical and institutional context. All the most advanced routing systems are not going to save the day in the event of pervasive congestion on the roads, inadequate rural transportation, erratic or unpredictable traffic conditions, or a delivery system that is part of a disjointed delivery system. Likewise, warehouse management systems have little effect if payments aren't secure and orders are still often cancelled, thereby disrupting the delivery timeline. The literature indicates that the operational

innovation has most impact when coupled with more complementary infrastructure, regulatory capacity and institutional coordination.

In other words, the rural–urban divide, as noted in the literature, must be read within the context of these seven theme dynamics, and is not a distinct nor isolated problem. Multiple structural constraints intersect in the rural areas, making them the areas with the greatest disadvantages. The transport network is less developed, logistics density is lower, travel distances are greater, economies of scale are smaller, digital payment systems are underdeveloped, there are fewer warehouses and a more limited labor supply, all of which result in lower quality of last-mile service in contrast to major urban centers. On this point, however, geographical inequality refers to the spatial clustering of infrastructural, technological, financial and labor market constraints, and not to the existence of a new type of logistical constraint. Therefore, the literature shows that urban-rural service quality gap reflects greater systemic imbalances in Bangladesh's logistics system.

This systemic interpretation also sheds light on an otherwise striking aspect of the available body of research. The core challenges of last-mile delivery have not significantly changed over the last decade in Bangladesh, which saw a period of very rapid growth in e-commerce. The basic problems of last mile delivery have not changed substantially in the past 10 years – from the earliest studies reviewed (2010-2015) to the most recent publications (2025-2026). During this period, researchers have found that the biggest challenges affecting delivery performance are the lack of infrastructure, traffic congestion, reliance on cash-on-delivery, limited technological integration, precarity of workers, and regional disparities. The structural barriers are far more resistant to change than the growth of digital platforms, penetration of smart phones, online consumer participation and logistics volumes.

The nature of these challenges hasn't fundamentally changed, but the size and scale of these challenges have changed. The congestion experienced today is in a much greater number of delivery vehicles in a much more complicated urban transport system. Today, millions of online transactions are subject to cash-on-delivery dependency, rather than thousands, and order refusals and product returns have a greater financial impact. Similarly, a far greater number of workers are today engaged in gig labor on an expanding ecommerce segment. This means that what were once operationally manageable structural weaknesses have become economy wide constraints with negative impacts on competitiveness, customer satisfaction and sustainable digital commerce in general.

This observation has important theory and policy implications. It indicates that while these innovations at the firm level (like micro-warehousing, route optimization, predictive demand forecasting, AI-backed logistics planning, and better inventory management) are all part of the mix for operational improvement, they will not solve the issues of last mile delivery in Bangladesh on their own. There is a need to implement coordinated measures, not only at the company level but also at the national level, to enhance sustainable transformations which involve national infrastructure development, integrated planning of transport networks, development of digital payment systems, formalization and protection of the logistics sector's workforce and the establishment of regulatory frameworks for e-commerce and delivery services. If these complementary investments and institutional changes are not put in place, incremental technology advances could boost efficiency at the edges, but will not be able to overcome the structural challenges that have been plaguing the last-mile delivery chain for over a decade in Bangladesh. The literature thus suggests that a systems-based perspective is necessary, where the infrastructure, technology, labor regulation, payment system and public policy is interconnected and co-evolving to foster long-term resilience and sustainability in the dynamic and fast-growing e-commerce logistics industry in Bangladesh.

Implications of the study

This review recommends that the dominant service delivery models for the last mile, usually rooted in developed markets and technology solutions (e.g. parcel lockers, autonomous vehicles, and drone delivery, (DHL Global 2026), need to be heavily adapted to make last mile delivery dynamics in cash-dominated emerging markets, with limited infrastructure, understandable. Most importantly, payment method is typically exogenous in existing models, while the Bangladesh evidence suggests that COD dependency is rather an endogenous variable driving route planning, working capital cycles and reverse logistics costs, and should be captured in models as such. Likewise, gig-labor research on algorithmic management (Lata 2025) indicates that agency's working with platform-worker is not a uniform, global phenomenon but rather one with local specificities and informalities that may not be best understood in contexts where the majority of contemporary research on platform-workers has taken place, primarily in North America and Europe.

For logistics and e-commerce managers, the review offers three practical priorities – (i) continued investment in micro-fulfilment infrastructure, to lessen reliance on the congested Dhaka-centric distribution system; (ii) policy interventions to tackle the cash-on-delivery habit, such as incentivized adoption of digital payments which has been shown to be more effective than mandating payment methods because of the demonstrated role of trust as a binding constraint; and (iii) formalization of compensation, safety, and representation structures for gig-worker delivery riders, both as a labor-welfare measure and as a operational-resilience measure, given documented rider turnover and safety concerns; and (iv) deliberate design of reverse-logistics processes rather than ad hoc handling of refused parcels and returned orders. The cost of congestion in Dhaka – estimated in the billions of dollars per year – and the almost total lack of formal labor laws for delivery workers are all places where public intervention (urban transport investment, prioritization of freight lanes, regulation of gig-economy labor) could be expected to yield returns to the e-commerce industry, at least in part, and not just to individual firms.

Limitations of the Review

There are a number of caveats that need to be noted. First and foremost, the evidence base that is presently available for studying the last-mile delivery problem in Bangladesh is still limited and largely found in non-indexed, non-peer-reviewed sources, such as grey literature (industry analyses, business journalism, and institutional reports), which although professionally produced, in some cases based on primary data collection or official statistics, is not necessarily peer-reviewed and may reflect commercial or editorial framing. Second, the search process was systematic and PRISMA-informed but also conducted using general academic search tools and web search tools and was not done via direct, exportable queries against Scopus and Web of Science databases, which are generally used for formal Q1 journal submission, and thus may not yield a completely quantified PRISMA flow diagram;

researchers who are preparing this review for formal submission to a Q1 journal should consider using a direct database search (Scopus, Web of Science, ABI/INFORM) to obtain a completely quantified PRISMA flow diagram and to identify any other indexed studies that were not identified using the search tools detailed here. Third, some of the estimates of cost and/or market size referred to (such as estimates of the costs of traffic congestion and estimates of the size of the ecommerce market by year) are subject to significant variation across sources depending on methodology and year, and should therefore be interpreted as ranges rather than exact numbers. Thirdly, the thematic synthesis was an interpretive, qualitative process, systematically undertaken but not a meta-analysis, and no quality appraisal instrument (e.g. CASP, MMAT) was used to appraise the range of source types included.

5. Conclusion

This systematic review has brought together a disjointed, cross-disciplinary research and grey literature on the topic of last-mile delivery challenges in Bangladesh's e-commerce sector from the year 2010 to 2026. The evidence shows that these challenges are not just local but systemic: weak infrastructure, congestion in cities, reliance on payment methods, lack of trust in payment methods, unemployment of gig workers, reverse logistics burden, slow technology adoption, and a deep rural–urban divide are all interconnected and limit the sector's growth and to put the costs of the sector on informally employed delivery workers. Combined with the other constraints, these interacting factors will have to be overcome, possibly through coordinated innovation, investment and labor market regulation by firms, to bring e-commerce growth beyond its current core base in Dhaka and into a more regionally sustainable path that is visible in many other developing markets. The research agenda outlined here is suggested as a beginning for more comprehensive and operationally-based empirical research on this economically important yet little explored field of study. Future research should build on these gaps and include the following major themes. Some of these involve operation-related research on the optimization of routes and the efficiency of delivery networks, the review of new logistics technologies like micro warehouses and electric vehicles, studies into the link between cash-on-delivery and reverse logistics, the development of logistics models in rural and secondary cities, and analysis of the welfare and regulation of gig-workers. Combined, these areas will offer a more robust evidence base to enhance the efficiency, sustainability and inclusiveness of Bangladesh's last-mile delivery system.

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