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## THE RISE OF QUICK COMMERCE IN INDIA: OPPORTUNITIES, CHALLENGES AND THE PATH TOWARD SUSTAINABLE GROWTH

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**\*Dr. Surender Singh**

Associate Professor, Markanda National College, Shahabad Markanda, Haryana, India.

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**\*Corresponding Author: Dr. Surender Singh**

Associate Professor, Markanda National College, Shahabad Markanda, Haryana, India.

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### ABSTRACT

Quick commerce (Q-commerce) represents a new phase of digital retail in which frequently purchased products are delivered to consumers within a very short time, generally through geographically distributed micro-fulfilment facilities and hyperlocal delivery networks. In India, the rapid expansion of Q-commerce has been supported by smartphone adoption, digital payments, urban concentration of demand, platform-based logistics and changing expectations of convenience. This paper examines the principal drivers, consumer implications, operating model, opportunities and challenges associated with Q-commerce in India. The study uses a qualitative exploratory design based on secondary evidence from peer-reviewed research, industry reports, policy documents and authoritative institutional sources. The analysis shows that Q-commerce creates value through proximity, assortment optimization, real-time information, data-driven demand forecasting and last-mile coordination, but its growth also creates questions concerning profitability, labour conditions, data governance, urban traffic and environmental externalities. The paper develops an integrated discussion linking consumer value, operational capability, technology, institutional governance and sustainability. It argues that the long-term development of Q-commerce depends not simply on shorter delivery times, but on improving unit economics, worker protections, responsible data practices, resilient fulfilment networks and environmentally efficient last-mile systems. The paper concludes with implications for platforms, policymakers and researchers and identifies directions for future empirical research.

**KEYWORDS:** Quick commerce; Q-commerce; hyperlocal delivery; dark stores; consumer behaviour; last-mile logistics; gig economy; digital retail; sustainability

## 1. INTRODUCTION

The Indian retail sector is undergoing a significant digital transformation in which speed, convenience and technology increasingly shape the consumer experience. Quick commerce, commonly referred to as Q-commerce, has emerged as a distinct model within this transformation. Unlike conventional e-commerce, which may operate with delivery windows of one or several days, Q-commerce is designed around rapid fulfilment, frequently within minutes, by locating inventory close to concentrations of consumer demand. The model therefore combines digital ordering with a highly localized physical distribution network.

The emergence of Q-commerce in India is closely associated with the expansion of digital consumer markets. Industry evidence indicates that Q-commerce has become a substantial component of online grocery spending, although the strongest concentration of activity has historically remained in metropolitan and Tier-1 markets (Bain & Company, 2023). More recent investment activity also identifies quick commerce as an important segment of Indian consumer technology, reflecting rapid customer adoption and evolving business models (Bain & Company, 2025). These developments suggest that Q-commerce is no longer merely an experimental delivery proposition; it has become an important subject for retail, logistics and platform-economy research.

The value proposition of Q-commerce is built around convenience and immediacy. Consumers can obtain routine necessities without travelling to a physical store or waiting for a conventional e-commerce delivery. At the operational level, this proposition requires dark stores or micro-fulfilment facilities, optimized product assortments, real-time inventory visibility, automated order processing and highly coordinated last-mile delivery. Research on Q-commerce supply chains highlights the central role of dark stores and micro-hubs while also drawing attention to the transport intensity created by frequent last-mile movements (Quick commerce and the evolving business models..., 2024).

The rapid expansion of the model creates a dual research problem. On one side, Q-commerce can improve consumer convenience, broaden digital access and stimulate innovation in retail logistics. On the other, its economic and social sustainability cannot be assumed from growth in orders or investment alone. High fulfilment costs, the need for dense delivery networks, labour concerns, urban congestion, packaging waste and data-governance issues create important constraints. Consequently, understanding Q-commerce requires a framework that considers consumer behaviour, operational efficiency, technological capability and institutional sustainability together.

Against this background, the present study examines Q-commerce in India through a secondary-data-based qualitative review. Rather than measuring the behaviour of a particular sample of consumers, the paper synthesizes available evidence to identify major growth drivers, operating characteristics, opportunities, constraints and policy considerations. The study is intended to contribute to the developing academic discussion on the transformation of Indian retail through digitally enabled instant-delivery models.

## 2. Objectives of the Study

The study has the following objectives:

1. To examine the major factors contributing to the growth of Q-commerce in India.
2. To analyse the role of digital technologies and localized fulfilment systems in Q-commerce operations.
3. To examine the implications of Q-commerce for consumer behaviour and retail-service expectations.
4. To identify the principal economic, operational, labour, environmental and data-governance challenges associated with Q-commerce.
5. To examine emerging opportunities and suggest broad directions for sustainable and responsible development of the Q-commerce ecosystem in India.

## 3. Literature Review

The academic literature on Q-commerce is developing rapidly and spans retailing, logistics, consumer behaviour, information systems, labour studies and sustainability. Early work on the phenomenon emphasized the consumer value of very rapid grocery delivery and the role of digital platforms in overcoming some of the limitations associated with conventional online grocery shopping. Reif (2022), examining European Q-commerce, showed how rapid delivery propositions can address consumer concerns about delivery timing and convenience. Although the institutional and market environment differs from India, the study provides a useful basis for understanding the service-value proposition of Q-commerce.

Recent research has increasingly focused on the structure of the Q-commerce supply chain. Research published in Transportation Research Procedia identifies dark stores and micro-hubs as important components of Q-commerce fulfilment while noting the intensity of delivery flows generated by the model (Quick commerce and the evolving business models..., 2024). This observation is important because Q-commerce shifts part of the retail network away from large centralized fulfilment facilities toward smaller, geographically distributed

facilities positioned close to consumers. Such a configuration can reduce delivery time but may increase facility density, inventory duplication and local traffic.

Indian industry evidence provides additional context. Bain & Company (2023) reported that Q-commerce orders in India had grown rapidly and represented a substantial share of e-grocery expenditure, with activity concentrated in leading cities. The report also highlighted the importance of order density, average order value and additional fees in improving the economics of the model. This suggests that speed alone is not a sufficient basis for a sustainable Q-commerce business model; operational scale and revenue architecture are also important.

Consumer behaviour is another major theme. Research on digital and omnichannel retailing in India has shown that factors such as convenience, reduced delivery delay, reliability and trust can influence consumers' channel decisions (Das, 2014). In the Q-commerce context, these factors are amplified by the promise of immediate fulfilment. The literature reviewed in the original manuscript similarly emphasizes trust, service quality, delivery reliability and product availability as relevant dimensions of consumer choice. However, there remains a need for more India-specific empirical work that distinguishes between routine convenience purchases, urgent purchases and impulse purchases.

Technology forms a further pillar of the Q-commerce model. Artificial intelligence, machine learning, Internet of Things applications and real-time data can support demand forecasting, inventory positioning, assortment decisions and route optimization. Recent research has examined the potential of IoT and machine learning for improving micro-fulfilment and operational performance in Q-commerce environments (The role of IoT in optimizing quick commerce operations..., 2026). At the same time, technology introduces questions about algorithmic decision-making, privacy, transparency and the use of consumer data.

The literature also identifies operational resilience as an emerging research area. Raj, Das and Sawik (2026) developed optimization models for resilient dark-store portfolios, incorporating disruption risk and inventory protection. Their work demonstrates that Q-commerce operations can be studied not only in terms of delivery speed and cost, but also in terms of resilience to disruption. This is particularly relevant for India, where dense urban operations can be exposed to congestion, weather events, supply interruptions and local infrastructure constraints.

Finally, the social and regulatory dimensions of Q-commerce deserve greater attention. Q-commerce relies substantially on platform-mediated labour, and broader research on India's gig economy has identified issues concerning income stability, worker protections and social

security (Ahmad, 2026). In addition, digital retail platforms collect and process substantial amounts of personal and transaction-related information. India's Digital Personal Data Protection Act, 2023 provides an important legal context for data processing and protection (Government of India, 2023). Recent research has also begun to examine dark patterns in Indian Q-commerce interfaces, indicating that digital design practices can influence consumer trust, perceived betrayal and negative word-of-mouth (When design deceives..., 2026).

Overall, the literature demonstrates that Q-commerce is a multidimensional phenomenon. Existing studies address particular aspects—consumer behaviour, logistics, technology, labour or sustainability—but relatively fewer conceptual studies integrate these dimensions specifically within the Indian context. The present paper addresses this integrative gap through a structured secondary-data synthesis.

#### **4. Research Gap**

The review indicates four principal gaps. First, much of the available discussion of Indian Q-commerce is industry-oriented and emphasizes market growth, investment and consumer adoption, while academic research remains fragmented across individual dimensions. Second, consumer convenience is frequently treated as the central outcome, whereas the relationship between rapid delivery, service quality, trust, impulse purchasing and longer-term loyalty requires further empirical investigation. Third, operational studies increasingly address dark stores and resilience, but the interaction between operating efficiency, worker conditions and environmental externalities remains underdeveloped. Fourth, digital governance issues—including data protection and potentially manipulative interface practices—are emerging but have not yet been sufficiently integrated into broader models of sustainable Q-commerce.

The research gap therefore lies not in the absence of studies on Q-commerce, but in the limited integration of its consumer, technological, operational, social, environmental and regulatory dimensions in the Indian setting. A multidisciplinary perspective is necessary because the same operational choices that create faster service may also generate additional delivery movements, labour pressure, data dependence and environmental costs.

#### **5. RESEARCH METHODOLOGY**

The study adopts a qualitative and exploratory research design based exclusively on secondary data. The approach is appropriate because the objective is to synthesize an

emerging body of evidence and identify broad patterns rather than estimate causal effects for a defined population.

Data were drawn from four broad categories: (i) peer-reviewed academic articles and scholarly publications; (ii) reports from established industry and research organizations; (iii) Indian legislation and policy documents; and (iv) relevant institutional and business sources. Priority was given to sources that directly addressed quick commerce, digital retail, logistics, consumer behaviour, gig work, data governance and sustainability.

The analytical technique is thematic content analysis. Evidence was organized into five themes: growth drivers and market development; consumer value and behavioural change; technology and fulfilment operations; economic, labour and environmental challenges; and policy and sustainability implications. Findings were then compared across themes to identify areas of convergence and unresolved issues.

The study has limitations. It does not contain primary survey data, transaction-level platform data or interviews with consumers, delivery workers or managers. Consequently, the paper does not claim statistical generalizability or causal relationships. In addition, Q-commerce is a rapidly changing industry, so market estimates and platform practices may change over time. Future studies should therefore complement this conceptual synthesis with longitudinal, survey-based and operational datasets.

## **6. Drivers of Q-Commerce Growth in India**

### **6.1 Digital adoption and consumer convenience**

The expansion of smartphones, digital payments and app-based retail has reduced the friction associated with online purchasing. Q-commerce builds on this infrastructure by shortening the time between purchase decision and consumption. The proposition is especially relevant for frequently purchased items where consumers value immediate availability more than extensive product comparison.

### **6.2 Urban concentration and hyperlocal fulfilment**

High population density creates the order density required to support localized fulfilment. Dark stores and micro-fulfilment facilities position inventory near demand clusters, enabling short delivery distances. Bain & Company (2023) reported that the leading cities accounted for a large share of Q-commerce orders, illustrating the importance of urban density to the business model.

### **6.3 Technology-enabled coordination**

Q-commerce depends on continuous coordination among consumers, inventory systems, fulfilment centres and delivery workers. AI and machine-learning applications can support demand forecasting, inventory replenishment and route decisions, while IoT technologies can improve real-time visibility. The strategic significance of these technologies lies not simply in automation, but in their capacity to coordinate a high-frequency operating system.

### **6.4 Changing expectations of retail service**

Rapid delivery can alter consumers' reference points for acceptable service. Once consumers become accustomed to short delivery windows for routine products, longer delivery times may be perceived as less convenient. This creates opportunities for Q-commerce platforms but also raises the strategic challenge of maintaining service reliability without allowing speed promises to become economically inefficient.

## **7. Consumer Behaviour and Platform Dynamics**

Consumer behaviour in Q-commerce is influenced by both functional and psychological factors. Convenience, time savings, product availability and delivery reliability constitute functional benefits. Trust in the platform, perceived service quality, prior experience, reviews and promotional communication can influence the consumer's willingness to repeat purchases.

The model may also affect the frequency and nature of purchasing. When a consumer can obtain a small basket of products within minutes, the transaction cost of making an additional purchase becomes low. This can encourage top-up shopping and potentially impulse-oriented purchases. However, such effects should be tested empirically rather than assumed to apply uniformly across consumers.

Consumer expectations are also shaped by reliability. A fast delivery promise has value only when the platform consistently meets it. Therefore, Q-commerce firms need to balance speed with accurate inventory information, order accuracy, product quality and transparent communication. Recent research on dark patterns in Indian Q-commerce suggests that interface design deserves particular attention because deceptive or high-pressure design elements can affect perceived betrayal and negative word-of-mouth (When design deceives..., 2026).

The consumer dimension also has an equity component. Q-commerce adoption is likely to differ by income, location, digital literacy, age and access to reliable digital payments. Industry evidence indicates that India's broader online-shopping population has expanded

substantially beyond major metropolitan centres, although Q-commerce itself has historically been more concentrated in leading urban markets (Bain & Company, 2023). Expansion into smaller cities should therefore be studied as a distinct market-development process rather than treated simply as an extension of metropolitan demand.

## **8. Operational and Technological Architecture**

Q-commerce operations can be understood as a sequence linking digital ordering, localized inventory, rapid picking and packing, rider assignment and last-mile delivery. Dark stores are central because they place inventory within a short distance of consumers. However, maintaining many small facilities can increase fixed costs and duplicate inventory across locations.

Operational efficiency therefore depends on demand forecasting and assortment design. Products with high and predictable demand can be positioned close to consumers, while slower-moving items may be supplied through broader fulfilment networks. Technology can support this process by combining historical demand, time-of-day patterns, location data and inventory information.

Resilience is increasingly important. A disruption at a single dark store can affect service to a concentrated local customer base. Recent optimization research proposes risk-aware approaches to selecting and protecting dark-store networks and pre-positioning inventory (Raj et al., 2026). This indicates that Q-commerce research is moving beyond speed optimization toward risk management and continuity of service.

The operating system is also affected by last-mile traffic. Research on Q-commerce supply chains notes that dark-store networks can create substantial delivery flows because many small orders are transported individually across short distances (Quick commerce and the evolving business models..., 2024). Consequently, operational efficiency should be assessed using broader indicators than delivery time alone, including delivery distance, order consolidation, vehicle utilization, failed deliveries, energy use and service reliability.

## **9. Challenges in Q-Commerce**

### **9.1 Profitability and cost structure**

Rapid delivery requires a dense physical network, technology investment, inventory availability and a large last-mile workforce. These requirements can place pressure on margins. The economics of Q-commerce therefore depend on order density, basket size,

repeat usage, fulfilment efficiency and appropriate revenue mechanisms rather than delivery speed alone (Bain & Company, 2023).

### **9.2 Labour and gig-work concerns**

Delivery workers are an essential part of the Q-commerce system. Platform-mediated work can offer flexible earning opportunities, but broader evidence on India's gig economy also identifies concerns relating to income stability, social protection and employment security (Ahmad, 2026). Q-commerce companies therefore face the challenge of reconciling rapid service commitments with responsible working conditions.

### **9.3 Environmental externalities**

The environmental effects of Q-commerce are complex. Localized fulfilment may shorten individual delivery distances, but a large number of small orders can increase the number of delivery trips and vehicle movements. Packaging intensity and energy consumption in fulfilment facilities add further considerations. Research on dark-store logistics highlights the transport intensity of the model (Quick commerce and the evolving business models..., 2024). Environmental assessment should therefore consider the complete delivery system rather than assuming that shorter delivery distance automatically means lower environmental impact.

### **9.4 Data governance and consumer protection**

Q-commerce platforms rely heavily on personal, location, payment and behavioural data. The Digital Personal Data Protection Act, 2023 establishes a statutory framework relevant to the processing and protection of digital personal data in India (Government of India, 2023). Platforms need transparent data practices, appropriate security safeguards and clear consumer communication.

### **9.5 Service pressure and deceptive design**

The emphasis on immediacy can encourage interface designs that emphasize urgency, scarcity or promotional pressure. Recent experimental evidence from India indicates that certain dark patterns in Q-commerce can increase perceived betrayal, punitive intentions and negative word-of-mouth (When design deceives..., 2026). Responsible platform design should therefore treat consumer autonomy as part of service quality rather than as a secondary concern.

## **10. Opportunities and Future Prospects**

Q-commerce has opportunities beyond the initial metropolitan grocery market. Tier-2 and Tier-3 cities may offer future growth where sufficient population density, digital adoption

and order frequency exist. However, expansion should be based on local demand and unit economics rather than a simple replication of metropolitan store networks.

Product-category expansion is another opportunity. In addition to groceries and household necessities, rapid fulfilment may support selected categories such as personal care, pharmacy-related products where legally permitted, electronics accessories and other urgent-use items. Category expansion should nevertheless be evaluated in terms of inventory complexity, regulatory requirements, product suitability and consumer need.

Technology offers further opportunities. AI-supported forecasting, automated picking, dynamic assortment management, route optimization and predictive maintenance can improve efficiency. The future competitive advantage may therefore shift from simply promising the shortest delivery time toward providing reliable, economical and sustainable rapid fulfilment.

A further opportunity lies in collaborative urban logistics. Partnerships involving local retailers, mobility providers, electric-vehicle ecosystems and municipal authorities could help reduce duplicated infrastructure and improve the environmental efficiency of last-mile delivery. Such models warrant systematic empirical investigation.

## **11. Policy and Managerial Implications**

For policymakers, the development of Q-commerce requires a balanced approach that recognizes innovation while addressing labour, consumer protection, data governance and environmental impacts. The policy framework should provide clarity regarding platform work, worker protection and access to appropriate social-security mechanisms. Data governance should be aligned with the Digital Personal Data Protection Act, 2023 and supported by transparent platform practices.

Urban planning also deserves attention. Dark stores and micro-fulfilment centres occupy a distinctive position between retail and logistics. Municipal planning may therefore need to consider loading activity, traffic management, parking, delivery access and neighbourhood impacts. Environmental policies can encourage cleaner delivery fleets, energy-efficient fulfilment facilities and packaging reduction.

For managers, the main implication is that sustainable Q-commerce should not equate speed with value. Firms should monitor order profitability, customer retention, order accuracy, inventory availability, worker safety, delivery utilization and environmental indicators together. A balanced performance dashboard can help platforms identify trade-offs that are invisible when success is measured only by delivery time.

Finally, transparent digital design should become part of responsible platform management. Consumers should be able to understand prices, fees, availability and promotional conditions without being subjected to misleading urgency or scarcity cues. This is particularly relevant as Q-commerce platforms increasingly compete for frequent, habitual purchasing.

## 12. CONCLUSION

Q-commerce has emerged as a significant development in India's digital retail landscape by integrating rapid fulfilment, localized inventory and platform-based last-mile delivery. Its growth reflects broader changes in digital adoption and consumer expectations, but its long-term sustainability depends on more than rapid market expansion. The evidence reviewed in this paper indicates that Q-commerce creates value through convenience, proximity, technology and operational coordination while simultaneously generating challenges related to profitability, labour conditions, environmental externalities, resilience and data governance.

The principal contribution of the paper is an integrated perspective that connects these dimensions rather than treating Q-commerce solely as a consumer-service innovation. The analysis suggests that the future of the sector should be evaluated through a broader performance lens encompassing economic viability, service reliability, worker welfare, consumer protection, operational resilience and environmental efficiency.

The study is limited by its reliance on secondary evidence and therefore does not establish causal relationships or population-level estimates. Future research should use consumer surveys, platform transaction data, delivery-worker studies, comparative city-level analyses and lifecycle-based environmental assessment. Such research can help determine which combinations of service speed, price, reliability and sustainability produce durable value for consumers and businesses. The evolution of Q-commerce in India will ultimately depend on whether technological and logistical innovation can be aligned with responsible economic, social and environmental practices.

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