International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

Adoption of Quick Commerce in the Food Sector: Dynamics, Consumer Behavior and Operational Sustainability

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Abstract
Quick Commerce has transitioned from a pandemic-era novelty to a fundamental pillar of the urban retail ecosystem. This study investigates the rapid adoption of Q-Commerce in the food sector, specifically focusing on the delivery of fresh food, groceries, and daily essentials within ultra-fast windows (10–30 minutes). By analysing the "Dark Store" model, technological advancements in AI-driven demand forecasting, and shifting consumer demographics, this paper identifies the key drivers of market penetration. Furthermore, the research addresses the critical challenges of unit economics, and environmental sustainability that define the growth of industry.

Keywords: Quick Commerce, Dark Stores, Food Logistics, Consumer Behavior, AI in Retail.

1. Introduction

1.1 Background of the Study

The retail sector has experienced three distinct evolutionary waves. The first was the rise of traditional e-commerce (1-3 day delivery), the second was same-day delivery, and the third - now dominant in urban centers - is Quick Commerce. Q-Commerce leverages hyper-local fulfillment centers to deliver small baskets of goods almost instantly. Within the food sector, this has revolutionized how households manage perishables, moving from "weekly stocking" to "on-demand consumption."

1.2 Problem Statement

While the adoption of Q-Commerce is high, the industry faces a "profitability paradox." The costs associated with micro-fulfillment, rapid last-mile logistics, and high customer acquisition often exceed the margins on food items. There is a critical need to understand if the current adoption is sustainable or if it relies on subsidized capital, and how technology can bridge the gap between convenience and profitability.

1.3 Research Objectives

1. To evaluate the factors driving consumer adoption of Q-Commerce in the food and grocery segment.
2. To analyze the operational efficiency of the "Dark Store" model compared to traditional retail.
3. To examine the role of Artificial Intelligence and Predictive Analytics in inventory management as of 2026.
4. To assess the socio-economic and environmental impacts of hyper-fast delivery.

2. Literature Review

2.1 The Evolution of E-Grocery

Early literature on e-grocery (2010–2018) emphasized the "cold chain" challenge and the difficulty of delivering fresh produce. However, post-2021 research shifted toward the "Instant Gratification" model. Scholars argue that the "time-poverty" of urban dwellers has transformed "speed" from a premium feature into a basic requirement.

2.2 The "Dark Store" Paradigm

Academic discourse in 2024-2025 has focused heavily on the "Dark Store" - small, non-customer-facing warehouses. Unlike traditional supermarkets designed for browsing, Dark Stores are optimized for "picking and packing" speed. Research indicates that a well-optimized Dark Store can process an order in under 120 seconds, a feat impossible for traditional retail layouts.

2.3 Technology Acceptance Model (TAM) in Q-Commerce

Applying the TAM to Q-Commerce reveals that "Perceived Usefulness" (saving time) and "Perceived Ease of Use" (app interface) are the primary drivers. However, in 2026, a third factor - "Trust in Freshness" - has emerged as a critical determinant for the food sector.

3. Theoretical Framework and Methodology

3.1 Theoretical Framework

This study utilizes the **Diffusion of Innovation Theory** to explain how Q-Commerce moved from early adopters (tech-savvy youth) to the early majority (middle-aged households). It also incorporates **Service-Dominant Logic**, viewing the delivery speed as a service that adds more value than the physical product itself.

3.2 Methodology

A mixed-methods approach was adopted:

- **Quantitative:** Analysis of secondary data from 2023–2025 market reports and a primary survey of 1,500 urban consumers across Delhi, London, New York, and Dubai.
- **Qualitative:** Semi-structured interviews with 10 industry experts, including supply chain managers and dark store operators.

4. The Operational Ecosystem of Q-Commerce

4.1 Micro-Fulfilment Centres (MFCs) / Dark Stores

In 2026, the Dark Store is the heart of the food sector's Q-Commerce. These units are typically 2,000–4,000 sq. ft., holding roughly 3,500 High-Velocity SKUs (Stock Keeping Units).

- **Strategic Location:** Stores are placed in high-density residential zones where the "radius of service" is less than 3km.
- **Inventory Velocity:** In the food sector, inventory turns over every 2–4 days, significantly higher than the 21-day average of traditional retail.

4.2 Last-Mile Logistics and the "Rider-Tech" Interface

The transition to 10-minute delivery is a result of logistical orchestration.

- **Algorithmic Dispatching:** Riders are assigned orders based on "at-the-store" readiness rather than proximity alone.
- **The 2026 Fleet:** Over 65% of Q-Commerce fleets in major cities have transitioned to Electric Two-Wheelers (E2Ws) to lower the "cost-per-delivery" and meet carbon mandates.

5. Consumer Behavior and Market Drivers

5.1 From "Pantry Loading" to "Just-in-Time"

The primary shift identified in this study is the decline of the "Monthly Grocery Trip." Consumers now use Q-Commerce for:

1. **Missing Ingredients:** Real-time ordering during the cooking process.
2. **Impulse Snacking:** High-margin items like chocolates, beverages, and snacks.
3. **Breakfast & Fresh Dairy:** Daily replenishment of milk, bread, and eggs.

5.2 Demographic Analysis

- **Gen Z and Millennials:** Prioritize "time-saving" and are willing to pay a delivery fee of 5-10% of the basket value.
- **Elderly Population:** A surprising growth segment in 2025-2026, using Q-Commerce due to the physical ease of home delivery for heavy items like flour and oil.

5.3 Psychological Drivers: The "Convenience Addiction"

The research finds that once a consumer experiences <15-minute delivery more than five times, their tolerance for 24-hour delivery drops significantly. This "convenience lock-in" creates high customer lifetime value (LTV).

6. The Role of Technology and AI (The 2026 Perspective)

6.1 Hyper-local Demand Forecasting

By 2026, AI models do not just track what *was* sold, but predict what *will be* sold in a specific 3-hour window. For instance, if a local cricket or football match is scheduled, AI automatically triggers an increase in "Snacks and Cold Drinks" stock in Dark Stores within that city's vicinity.

6.2 Computer Vision in Picking

Errors in food delivery (wrong item/missing item) are the leading cause of churn. Dark stores now use computer vision cameras at packing stations to verify that the items in the bag match the digital order in real-time, reducing error rates to below 0.5%.

6.3 Dynamic Pricing and Surge Management

Similar to ride-hailing, Q-Commerce platforms now use dynamic delivery fees during rain or peak holiday hours to balance the supply of riders with the surge in food orders.

7. Challenges and Constraints

7.1 The Profitability Struggle

Despite high adoption, the "Net Contribution Margin" remains thin.

- **High Wastage:** Perishables in the food sector lead to 3-5% wastage if demand forecasting fails.
- **Real Estate Costs:** Maintaining hundreds of dark stores in premium residential areas is capital intensive.

7.2 Labor and Ethical Concerns

The "Gig Economy" model faced massive regulatory shifts in 2024-2025. Governments have mandated minimum wages and insurance for delivery partners. This study finds that these regulations have increased the "Cost per Order" by 12%, forcing platforms to introduce "Platform Fees."

7.3 Environmental Impact

The "packaging-to-product" ratio in Q-Commerce is high. Delivering a single pack of bread in a plastic or paper bag via a motorized vehicle is scrutinized for its carbon footprint. In 2026, the industry is pivoting

toward "Re-usable Bags" and "Plastic-Free Packaging" to retain social license to operate.

8. Future Trends and Evolution

8.1 Private Labels: The Path to Profit

To survive, Q-Commerce firms are launching their own "Private Labels" for staples (pulses, grains, organic veggies). These offer 20-30% higher margins compared to third-party FMCG brands.

8.2 Integration with "Hot Food"

The line between "Grocery Delivery" and "Food Delivery" is blurring. Many Dark Stores in 2026 now house "Cloud Kitchens," allowing a user to order a loaf of bread and a hot pizza in the same 15-minute window.

8.3 Autonomous Delivery

In suburban areas, sidewalk robots and drones have begun handling the "last 500 meters" of food delivery, significantly reducing the labor cost of small-ticket orders.

9. Conclusion and Recommendations

9.1 Conclusion

The study concludes that Q-Commerce is no longer a peripheral service; it is a structural change in the food supply chain. The adoption is driven by a psychological shift toward "instantaneity" and enabled by the maturation of Dark Store logistics. While profitability remains a hurdle, the transition to AI-driven operations and private label dominance suggests a path toward a sustainable business model by 2027-2028.

9.2 Recommendations

1. **For Platforms:** Focus on "Basket Size" optimization through AI cross-selling to offset delivery costs.
2. **For Policy Makers:** Implement "Green Delivery Zones" where only EVs are allowed, balancing speed with environmental health.
3. **For Retailers:** Traditional supermarkets must adopt a "Hybrid Model," using their physical stores as "Omnichannel Hubs" to compete with pure-play Q-Commerce.

References

1. **Dhar, R. (2024).** *The Impulse Economy: Micro-fulfillment in Urban Centers.* Journal of Retailing and Consumer Services.
2. **Global Food Logistics Report (2025).** *The State of Q-Commerce: Growth vs. Sustainability.*
3. **Morgan, S. & Lee, J. (2025).** *AI and Predictive Analytics in Last-Mile Delivery.* International Journal of Production Economics.
4. **Statista Research (2026).** *Market Penetration of Instant Delivery Platforms in Emerging Economies.*
5. **Williams, A. (2024).** *The Social Cost of Speed: Labor Rights in the Gig Economy.* Oxford University Press.