

**“A DESCRIPTIVE STUDY ON THE EFFECTS OF E-
GROCERY DELIVERY SERVICES ON DIGITAL
CONSUMPTION, POOR DIETARY HABITS, AND THE
URBAN ENVIRONMENT IN URBAN CITIES OF INDIA”**

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Abstract:

Urbanization in India has greatly affected the behavior of consumers, environment, and health. The introduction of quick commerce e-grocery delivery has affected the behavior of consumers through increased ordering and dependency on technology. These innovations are convenient and save time; however, they have implications in terms of environmental sustainability, emissions, wastage of packaging, and dietary consumption. The present study is based on secondary data (2019-2025) and will address the multifaceted effects that result from them. The results reveal that there are increased emissions, traffic pollution, waste of packaging, and unhealthy consumption practices.

Introduction:

The process of digitalization and high smartphone usage and retail growth based on platforms are the reasons for rapid urbanization in India. The development of online grocery shopping systems that include quick commerce has caused a considerable structural change in consumer behavior with deliveries being performed in 10-20 minutes. The platforms like Zepto, Blinkit, and Swiggy Instamart utilize digital retail eco-systems and dark stores and logistics models.

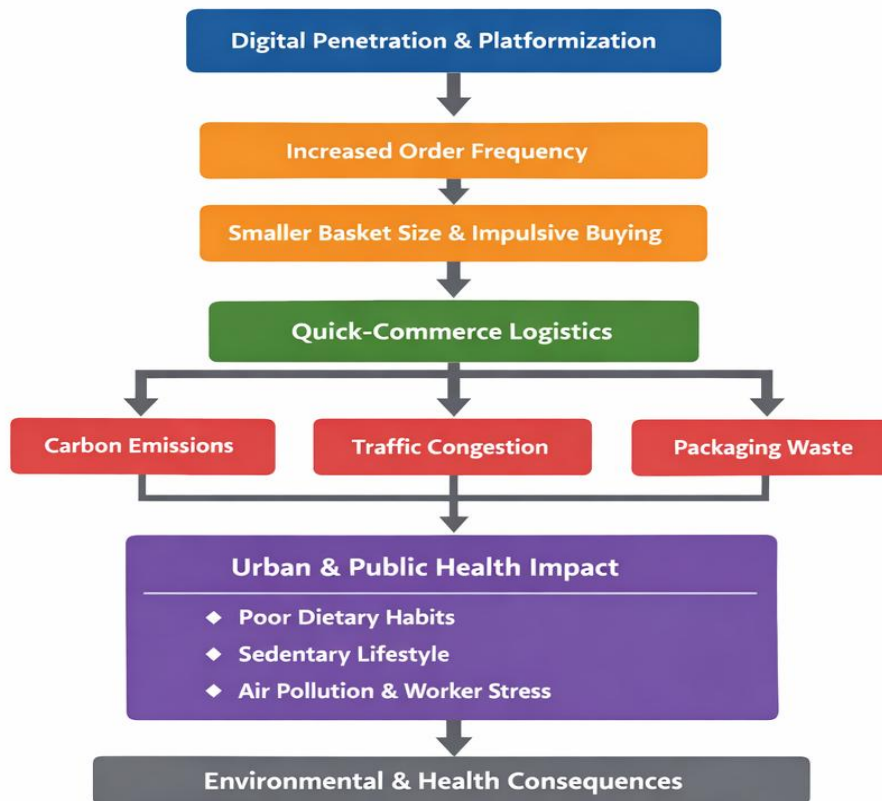
While considering these aspects, only few research studies explore its implication on large-scale urban problems such as trash accumulation, heavy traffic, and carbon emission due to last mile activity's nature, unavailability of small size order, and strictness over packaging. Also, fast delivery technologies have shown significant increases in transportation emissions and waste packaging than conventional retailing methods.

Digitalized food environment might create an urge for more regular consumption of manufactured and ready to eat food items which can influence the public health outcome and nutritional quality. Although many literatures focus on the subjectivity of environmental sustainability and logistics optimisation, yet a comprehensive study regarding intersected issues between digitalization, environment and health cannot be found in existing literature in case of India's quick-commerce business area.

Therefore, the current investigation explores multi-dimensioned impacts by employing recent secondary data from 2019–2025.

Visual Representation of the Conceptual framework of the study

Impact of Quick-Commerce E-Grocery Delivery in Surat City



Review of Literature:

(AMEEN, 2025) Consumer behavior has significantly changed in terms of how they approach purchases since Quick Commerce was introduced. Studies have shown that the availability of E-grocery delivery within a few minutes at the consumer's doorstep has changed the frequency of orders, the quantity of orders placed, and increased dependency on online platforms for shopping. Customers are drawn to e-grocery delivery apps because they allow them to exchange time spent on physical shopping for more productive uses.

(SINGH, 2025) Sudden scarcity of products, superficial discounts, and a ceiling price set to cut down delivery cost make it questionable whether these apps would survive in the long run in the Indian market.

(Manas, Vol. 4 No. 6 (2024)) Although e-grocery delivery has many advantages, there are some underlying problems that cannot be disregarded because they relate to the environment and human health. Quick commerce does generate last-mile activity, according to the studies, but it can be advantageous based on operational decisions, vehicle selection, and effective delivery management.

(Eunhye Son, Volume: 7 Issue: 1, 131 - 139, 31.03.2024) Quick commerce is convenient, but at what cost? Frequent orders contribute to packaging waste because each product, small or large, is packed in single-use packaging. The convenience of quick and ready-made meals from the E-grocery delivery apps has led to an increase in the purchasing of quick meals, potentially compromising diet quality.

(Natalia Zuniga-Garcia, Krishna Murthy Gurumurthy, Abdelrahman Ismael, Olcay Sahin, Joshua Auld, 20 Mar 2024) Consumers are satisfied with quick delivery, but there is concern about its long-term viability in terms of price, quality, and affordability.

Research Gap

Although much has been written about this subject matter, limited attention has been paid to studying the influence of digital adaptations among aged-old and low-income categories. A lot can be learned from small but often-placed orders and ready-to-make meal deliveries.

Environmental issues around food packaging waste and carbon footprinting also deserve mention as areas for investigation. Few systematic investigations have been carried out assessing the carbon impacts associated with 10-minute delivery models vis-à-vis traditional bulk purchase methods across various parts of India.

Objectives:

1. To analyze the impact of e-grocery delivery services on environmental sustainability.
2. To examine the effect on traffic congestion.
3. To evaluate packaging waste generation.
4. To assess the relationship between delivery apps and dietary habits.

Methodology:

This study adopts a descriptive research design focusing on quantitative methods using secondary data sources such as research papers, journals, reports, and government publications (2019–2025). This design provides a comprehensive and analytical understanding of the subject matter.

Results/Discussion:

Objective 1: Impact on Carbon Emissions and Urban Environmental Sustainability

Urban e-grocery delivery service based upon the notion of “quick-commerce” has experienced significant growth in recent years. This development has led to substantial environmental impacts. Carbon emissions generated during last-mile deliveries have been calculated using empirical data derived from a case study, revealing an impact of 1.67 million

tonnes of CO₂-equivalent emitted within urban delivery systems comprising 13.07 billion orders.

Transport-related emissions accounted for 745 kilotonnes CO₂e (0.057kgCO₂e/order). Additionally, because the focus remains primarily upon achieving ultra-fast delivery times, efficiency gains typically achieved via centralized logistics operations have been undermined, resulting in inefficiencies associated with disjointed delivery routes and utilization levels of truck capacity.

Empirical evidence indicates that the delivery mechanism employed by these services results in emissions that are 10–12% greater than traditional delivery systems. Forecasts indicate that, absent sustainable initiatives, demand for urban delivery could grow at a rate of approximately 60% between now and 2030, contributing to 13% of all urban carbon emissions. Given the above, we conclude that green logistics solutions (i.e., application of electric delivery vans or improvement of delivery routing) should be explored.

Objective 2: Impact on Traffic Congestion and Urban Mobility

The widespread use of quick-commerce delivery services results in a high frequency of short distance trips for these services which significantly contributes to urban transport infrastructures' capacity constraints.

As more companies provide last-mile delivery services, we see an increase in delivery vehicle densities which leads to further congestion, fuel usage and delays in city transport networks. According to this research, the volume of deliveries made by delivery vehicles will grow by nearly 36% by 2030, worsening problems associated with urban traffic. However, behavioral models show small changes in customer expectations such as increasing delivery window lengths by five minutes could decrease delivery distances by up to 30%, while decreasing lifecycle emissions by approximately 20%.

Objective 3: Impact on Packaging Waste and Material Consumption

With the growing popularity of e-grocery delivery services, there's been an alarming surge in the utilization of protective coatings and single-use packaging, resulting in a notable hike in packaging waste. Studies show that internet food shopping results in approximately 4.8 times more packaging waste per unit than normal offline retailing system.

This explosion in packaging trash presents a considerable challenge to urban waste management systems, especially with heavy usage of composite plastics and non recyclable materials. Recycling centers become overwhelmed, leading to increasing landfill accumulation. These results emphasize the necessity for sustainable packaging innovation and stringent regulation framework to alleviate environmental degradation.

Objective 4: Impact on Unhealthy Dietary Habits and Digital Food Consumption

While direct research into this area is at an early stage, findings derived from studies into online food delivery apps can be used as a point of comparison. It seems that the growing dependence upon such digital ordering platforms has driven changes in people's diets towards more convenience and ready-to-eat foods.

In a cross-sectional survey, researchers sought to understand how often college students ordered meals using delivery applications – nearly 72% of these orders were for fast food [15]. This indicated a preference for calorie-dense, nutritionally inferior products, likely driven by these platform's ease-of-use, time-saving and attractive digital interface. This kind of impulsive behaviour appears likely to exert a negative impact upon individuals' longer term health outcome and their nutritional profile.

Conclusion:

Increased Carbon Emissions: Compared to conventional delivery methods, ultra-fast delivery models increase emissions by roughly 10–12%, reducing logistical efficiency. Increasing urban carbon burdens are a result of high-frequency, small-basket orders.

Increased Traffic Congestion: In highly populated areas, the rise in last-mile delivery vehicles—which is expected to reach 36% by 2030—intensifies traffic congestion, fuel consumption, and mobility stress.

Growing Packaging Trash: Compared to offline shopping, online grocery models produce up to 4.8 times as much packaging trash, which puts additional strain on municipal waste management systems.

Unhealthy Consumption Patterns: Regular app-based ordering encourages impulsive purchases and convenience meals, which may have an impact on long-term health outcomes and nutritional quality.

Convenience vs. Sustainability Trade-Off: Although quick-commerce improves time efficiency, it raises questions about public health, environmental sustainability, and long-term economic viability.

The quick-commerce e-grocery industry in India is a paradigm shift in urban digital consumption. Nonetheless, evidence from current research (2019–2025) indicates that urgent scholarly and governmental attention is needed to address the environmental and health externalities of ultra-fast delivery models.

A complicated sustainability challenge is indicated by increased carbon emissions from dispersed logistics, increasing transportation, excessive packaging waste, and changing

nutrition patterns. The trade-off between convenience and sustainability becomes crucial: urban systems absorb environmental and infrastructure stress while consumers benefit from time efficiency.

According to the study's findings, quick-commerce growth may exacerbate environmental deterioration and public health hazards in Indian cities in the absence of regulatory action, green logistics adoption (EV fleets, delivery bundling), innovative sustainable packaging, and awareness of digital consumption.

To produce localized empirical data for policy design, future studies should include health effect assessments and city-level carbon models.

References:

- AMEEN, R. (2025). Influence of 10-Minute Grocery Apps on Urban Indian Consumer Shopping Behavior. *International Journal of Scientific Research in Engineering and Management (IJSREM)*.
- Eunhye Son, K. H. (Volume: 7 Issue: 1, 131 - 139, 31.03.2024). Sustainable spatial strategies for mitigating air pollution in quick commerce environments. *Environmental Research and Technology*.
- Manas, S. (Vol. 4 No. 6 (2024). Is Quick Delivery Related to Quick-Commerce Environmentally Sustainable? *EJ-DEVELOP*.
- Natalia Zuniga-Garcia, Krishna Murthy Gurumurthy, Abdelrahman Ismael, Olcay Sahin, Joshua Auld. (20 Mar 2024). Understanding The Impacts of On-Demand Delivery of Prepared Meals and Grocery. *SSRN*.
- SINGH, P. (2025). The Feasibility of New 10 Min Delivery Comes with a Dark Reality of Social Loneliness: A Design-Led Consumer Tactics Approach. *International Journal of Scientific Research in Engineering and Management (IJSREM)*, 1-9.

Websites and Reports

- <https://apnews.com/article/climate-online-shopping-expedited-shipping-fulfillment-center-e809c3508a15033f4707dc2abbb6de69>
- https://www.unep.org/news-and-stories/story/e-commerce-grows-electric-delivery-vehicles-offer-opportunity-cut-urban?utm_source=chatgpt.com
- https://uniathena.com/how-10-minute-delivery-apps-harming-sustainability?utm_source=chatgpt.com
- https://uniathena.com/how-10-minute-delivery-apps-harming-sustainability?utm_source=chatgpt.com

- https://www.nature.com/articles/s41598-026-40145-x?utm_source=chatgpt.com#citeas

