International Journal of Management and Humanities (IJMH)
ISSN: 2394-0913 (Online), Volume-11 Issue-8, April 2025

Business Opportunities for Q-Commerce of Pomegranates and other Fresh Fruits in Maharashtra

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Abstract*: Quick Commerce (Q-commerce) represents the next stage in the evolution of retail, emphasizing hyperlocal delivery powered by digital platforms and optimized supply chains. Maharashtra, a prominent agricultural state in India, is renowned for its fresh fruit production, particularly pomegranates. This paper explores the potential of Q-commerce in Maharashtra, focusing on challenges, opportunities, and innovative strategies. Case studies from leading Q-commerce platforms provide insights into successful models. The study concludes with recommendations for building a robust ecosystem by leveraging digital tools, farmer networks, and logistical advancements to transform Maharashtra's agricultural marketing landscape.

***Keywords*: Consumer Behavior, Digital Supply Chains, Pomegranate Marketing, Q-Commerce.**

Abbreviations:
Q-commerce: Quick Commerce
D2C: Direct-to-Consumer
NABCONS: NABARD Consultancy Services Pvt. Ltd.

I. INTRODUCTION

The rise of Quick Commerce (Q-commerce) reflects a shift in consumer expectations, driven by urbanization, technological advancements, and an increasing demand for convenience. The domestic demand for fruit and vegetable in India is projected to grow at 4% to 7% annually during 2015-2025, according to McKinsey & Company [1]. Maharashtra, one of India's leading agricultural hubs, plays a vital role in the country's fresh fruit supply chain. The diverse agro-climatic conditions of Maharashtra support the production of high-value fruits such as pomegranates, mangoes, and grapes. With Q-commerce platforms like BigBasket and Zepto adopting hyperlocal delivery models, Maharashtra's agricultural economy is poised for transformation. This paper examines how Q-commerce can address challenges such as perishability, market access, and logistics while enabling farmers and consumers to benefit from a more efficient supply chain. The increasing urban population and rising demand for fresh, high-quality produce delivered directly to consumers' doorsteps has created a ripe market for Q-commerce in Maharashtra.

This trend is especially visible in metropolitan areas like Mumbai and Pune, where busy lifestyles and the proliferation of smartphones are fueling the demand for faster, on-demand services, according to a blog by Store Hippo - an ecommerce platform development company [2].

Maharashtra is one of the leading agricultural states in India, contributing significantly to the nation's fruit production, particularly pomegranates. The state is renowned for its favorable agro-climatic conditions, which are well-suited for cultivating high-value fruits, including pomegranates. The top pomegranate-producing districts in Maharashtra include Solapur, Sangli, and Ahmednagar, which are known for their high yields and quality produce. In recent years, advancements in agricultural practices, such as improved irrigation techniques and the adoption of sustainable farming practices, have contributed to increased productivity and fruit quality, provided by (Jadhav, 2024) [3]. Despite its potential, traditional supply chains often result in inefficiencies such as high post-harvest losses and dependency on intermediaries. Q-commerce, with its emphasis on direct-to-consumer (D2C) models, offers a solution by ensuring better price realization for farmers and enhanced quality for consumers.

II. RESEARCH QUESTIONS

A. How can Q-commerce address logistical challenges, improve supply chain efficiency, and benefit both farmers and consumers in Maharashtra's fresh fruit market?
B. What economic and consumer trust impacts can Q-commerce have on Maharashtra's domestic and export markets for fruits like pomegranates, and which strategies can drive its growth?

III. RESEARCH METHODOLOGY

This research is based on secondary data analysis, employing a mixed-methods approach that combines quantitative data and qualitative case studies. Secondary data was collected from government reports, industry publications, and academic journals to assess production trends, revenue, and supply chain efficiencies. Case studies were selected based on their relevance to Maharashtra's agricultural context and their success in improving logistics and market access for farmers.

IV. SCOPE OF STUDY

The study focuses on Maharashtra, a key player in India's agricultural sector, with an emphasis on the distribution and marketing of fresh fruits, particularly pomegranates. It examines both domestic and export markets, considering the impact of Q-commerce on farmers, consumers, and supply chain stakeholders. The analysis spans urban and semi-urban areas in Maharashtra. While the primary focus is on pomegranates, insights are extended to other major fruits, offering a holistic

Manuscript Received on 30 January 2025 | First Revised Manuscript Received on 09 February 2025 | Second Revised Manuscript Received on 17 March 2025 | Manuscript Accepted on 15 April 2025 | Manuscript published on 30 April 2025.
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view of Q-commerce's potential in Maharashtra.

V. DATA ANALYSIS AND DISCUSSION

A. Q-commerce Supply Chain for Fresh Fruits

i. *Upstream: Procurement and Sourcing:* Direct farm linkages and traceability systems are critical to building trust and ensuring quality. By sourcing directly from farmers, Q-commerce platforms eliminate intermediaries, thus increasing profit margins for producers and reducing costs for consumers. Digital tools such as blockchain enhance transparency and accountability in the supply chain.

ii. *Midstream: Storage and Logistics:* Cold-chain logistics and AI-powered sorting systems play pivotal roles in preserving freshness and minimizing losses. Strategically located storage hubs and real-time inventory tracking help Q-commerce platforms optimize delivery efficiency.

iii. *Downstream: Consumer Delivery:* Hyperlocal delivery models ensure that fruits reach consumers within hours of order placement. Platforms leverage data analytics for demand forecasting and route optimization, offering personalized shopping experiences and timely deliveries.

iv. *Demand Drivers:* Urbanization, rising health consciousness, and the proliferation of smartphones are fueling Q-commerce growth. Tailored promotional campaigns and convenient access to premium-quality fruits like pomegranates are attracting urban consumers.

B. Major Case Studies of Q-commerce in Maharashtra (India)

i. *KisanConnect's Farmer-Centric Model:* KisanConnect stands out as a platform dedicated to eliminating intermediaries in the supply chain, directly connecting farmers with consumers. By providing real-time data on market demand, KisanConnect empowers farmers to plan their harvests efficiently, minimizing waste and maximizing profitability. The platform also focuses on educating farmers about sustainable practices and quality control, enhancing the overall value of their produce. With a robust logistics network and integration with urban delivery systems, KisanConnect ensures timely and fresh delivery of fruits like pomegranates to urban consumers. This approach not only boosts farmer incomes but also ensures affordability and quality for consumers.

ii. *Swiggy Instamart's Integration with Local Farmers:* Swiggy Instamart has leveraged its extensive delivery network to become a key player in Maharashtra's Q-commerce landscape. Partnering with local farmers and aggregators, it sources fresh fruits, including pomegranates, ensuring traceability and quality. The platform uses advanced analytics to predict demand patterns, optimize inventory, and reduce wastage. With its fast delivery service and consumer-friendly interface, Swiggy Instamart has become a reliable option for urban dwellers seeking convenience. The integration of eco-friendly practices, such as reduced packaging waste, further aligns the platform with sustainability goals while supporting the livelihoods of local farmers.

iii. *Dunzo's Urban Model:* Dunzo has established itself as a frontrunner in Q-commerce by combining technology and hyperlocal logistics. Operating extensively in urban hubs like Pune and Mumbai, the platform leverages artificial intelligence to predict demand and optimize delivery routes. Its micro-warehousing strategy ensures that fresh produce, including pomegranates, is stored close to consumer clusters, reducing delivery times to under 30 minutes. Dunzo collaborates with local farmers to procure high-quality fruits, ensuring fair prices and minimal wastage. By integrating digital payment systems and real-time tracking, the platform has enhanced consumer convenience and trust. Dunzo's focus on sustainability is evident in its efforts to reduce packaging waste and promote eco-friendly practices.

iv. *BigBasket's Farmer Connect Program:* BigBasket's Farmer Connect Program is a transformative initiative aimed at bridging the gap between farmers and consumers. By directly sourcing fruits such as pomegranates from Maharashtra's farmers, the program eliminates intermediaries, ensuring higher margins for producers and competitive pricing for consumers. BigBasket employs a robust cold-chain system to maintain the freshness of produce throughout its supply chain. The platform also integrates advanced inventory management tools to minimize wastage and optimize stock levels. Additionally, BigBasket offers farmers training in sustainable farming practices and quality control to meet consumer expectations. Its commitment to transparency and traceability has made it a trusted platform among both farmers and urban consumers.

C. Key Benefits of Quick commerce of Pomegranates and Other Fresh Fruits

i. *Efficiency of Fresh Fruit Distribution in Maharashtra:* Q-commerce enhances the efficiency of fresh fruit distribution by reducing intermediary layers through direct farmer-platform integration, enabling real-time inventory management, and using predictive analytics for demand forecasting. The hyperlocal model ensures that fresh produce reaches consumers swiftly, minimizing spoilage and preserving quality. Additionally, advanced cold-chain logistics and data-driven route optimization contribute to reducing waste and improving operational efficiency, suggested by (Kong, 2023) [4]. Notably, Maharashtra's agricultural market for fresh fruits has seen an increase in demand through Q-commerce channels in urban areas like Mumbai and Pune.

ii. *Logistical and Technological Challenges in Maharashtra's Q-Commerce Supply Chain:* Key challenges include inadequate cold-chain infrastructure leading to post-harvest losses, fragmented farmer networks complicating procurement, and high operational costs of rapid deliveries. Additionally, regulatory hurdles such as compliance with food safety standards and inconsistent taxation policies pose significant barriers. Technological challenges include the need for scalable AI-driven tools and integrating smallholder farmers into digital platforms, according to Deloitte [5]. A researcher noticed significant amount of fresh produce in

Maharashtra experiences spoilage due to inadequate cold-chain systems, resulting in significant financial losses for both farmers and retailers, according to (Chandra *et al.*, 2007) [6].

iii. *Benefits for Farmers Through Q-Commerce Platforms:* Farmers gain improved price realization by bypassing intermediaries and directly accessing Q-commerce platforms. They also benefit from real-time demand data, allowing them to plan their harvests better and reduce wastage. Platforms like KisanConnect provide farmers with training in quality control and sustainable farming practices, further enhancing their profitability and market access. In Maharashtra, farmers integrated with Q-commerce platforms

iv. *Economic Impacts on Domestic and Export Markets:*

- *Enhanced Price Realization for Farmers:* By eliminating intermediaries, Q-commerce enables farmers to access better price realization. For F&Vs, some Q-commerce platforms are directly engaging with farmer networks and investing in cold chain infrastructure to build direct supply chains, according to JM Financial Research [7]. Farmers integrated with Q-commerce platforms programs have opportunity to increase their income due to direct access to consumers. Additionally, eliminating middlemen allows farmers to capture a larger share of the retail price, significantly increasing their earnings. The adoption of smartphone and internet services have played the major role in connecting farmers with E-commerce and improving quality of crop production. A study from Vodafone found that Lack of information is a major barrier to improving yields and therefore incomes for India's smallholder farmers. Since 2007, the Reuters Market Light (RML) mobile information service of Vodafone has helped many farmers overcome this challenge by delivering personalised agricultural advice and news, local weather forecasts and updates on market prices direct to their phone. It resulted that farmers using the RML service have benefited from an average increase in income of 5–15% annually in India [8].
- *Increased Market Access:* Q-commerce platforms enable farmers to access a broader market. For instance, Maharashtra exported 56,407 tons of pomegranates in 2023. In 2024, in just nine months, exports have reached 22,360 tons, with European and Gulf countries showing increasing interest, according to the news article published by 9. India Seatrade News [9]. This growth was primarily driven by better logistics and direct connections to international markets through platforms like BigBasket and Zepto. These platforms have expanded the reach of local farmers to urban and international markets, boosting both domestic and export revenues.
- *Reduction in Wastage and Post-Harvest Losses:* In India, inadequate cold-chain infrastructure leads to post-harvest losses of up to 30% of fresh produce, according to (Chandra *et al.*, 2007) [6]. Q-commerce platforms that employ cold-chain logistics and AI-powered sorting systems reduce spoilage significantly, improving overall supply chain efficiency. A report showed that optimized logistics in Q-commerce can reduce wastage by 20-30%, leading to more fresh produce reaching the market and improving profitability for both farmers and consumers, according to (Kong, 2023) [4].
- *Boost to Export Revenue:* The integration of Q-commerce into the logistics system has made Maharashtra's fresh fruit exports more competitive. In particular, pomegranate exports, which account for INR 20 billion in revenue annually have benefitted from enhanced supply chain management, according to (Chandra *et al.*, 2007) [6]. This has led to better compliance with international quality standards, expanding market reach. With the increasing role of Q-commerce platforms, there has been a rise increase in the export of fruits from Maharashtra in the last few years.
- *Economic Growth in Rural Areas:* According to a study by the Ministry of Rural Development, rural e-commerce in India has contributed to a 14% increase in rural income [3]. The adoption of Q-commerce in rural areas can help smallholder farmers gain access to larger markets and improve their financial standing, driving economic growth in these regions.

v. *Strategies to Enhance Consumer Trust and Engagement:*

- *Transparency through Traceability:* Most of urban consumers prefer platforms that offer traceability and transparency in sourcing. Q-commerce platforms can build trust by offering consumers detailed information about the origin of their pomegranates, ensuring quality and safety, which drives consumer confidence.
- *Consistency in Quality:* Consistent quality is a key factor in building consumer trust. A study found that majority of consumers reported higher satisfaction with fresh produce delivered through Q-commerce platforms, citing the guaranteed freshness and quality of the fruits as a major reason for their loyalty, according to (Dhisha *et al.*, 2024) [10]. Platforms that focus on quality assurance and offer a standardized experience can expect to retain customers in the long run.
- *Real-Time Delivery Tracking:* real-time tracking for deliveries status helps Q-commerce platforms to build trust and increase in customer satisfaction. The ability to track the progress of their orders helps consumers feel more in control of their purchasing experience and reassures them about the reliability of the service.
- *Convenience and Faster Service:* Convenience is one of the main drivers of Q-commerce growth. A survey by Capgemini Research Institute showed that satisfied consumers, particularly in metropolitan areas, are willing to pay a premium for faster delivery [11]. with the increasing prevalence of home delivery options, 66% of consumers are willing to give up personally selecting fresh items in exchange for the convenience of having their groceries delivered. Platforms like Zepto, Instamart, and Blinkit have won the market share in Q-commerce industry by fetching orders in 10-15 minutes.

The growing demand for instant access to high-quality produce has spurred the growth of Q-commerce, especially in metropolitan areas.

- *Sustainability Practices*: Sustainability is increasingly important to consumers. A survey conducted by Deloitte India found that more than half of consumers in Maharashtra prefer platforms that practice sustainable sourcing and reduce packaging waste [5]. Platforms that adopt eco-friendly practices, such as sustainable packaging and responsible sourcing, can build consumer loyalty while contributing to environmental sustainability.

D. Strategies to Drive Q-commerce Growth:

- *Strengthening Cold-Chain Infrastructure*: Cold-chain inefficiencies cost the agriculture sector in India around INR 133 billion annually due to spoilage, according to the news article by NDTV Convergence Limited in 2013 [12]. The Ministry of Food Processing Industries (Government of India) had commissioned a study through NABARD Consultancy Services Pvt. Ltd. (NABCONS), namely, "Study to determine Post harvest losses of Agri Produce in India" in 2022 with reference duration August 2020 to May 2022. The study found that among fruits category covering 11 fruits (apple, banana, citrus, grapes, guava, mango, papaya, sapota, pineapple, pomegranate and muskmelon) selected for study, post-harvest losses were in the range of 6.02% in pineapple to 15.05% in guava. Among 14 vegetables (cabbage, cauliflower, green peas, mushroom, onion, potato, tomato, tapioca, bottle gourd, brinjal, beans, radish, capsicum and okra) the estimated post-harvest losses ranged from 4.82% in tapioca to 11.61% in tomato. Lack of proper storage and improper handling practices by various stakeholders in market channels were the major contributing factors towards postharvest losses. Agriculture sector contributes 19.9 percent to the national GDP (2020-21). The also study has estimated a monetary loss of ₹1,52,790.42 crore for 54 crops and commodities [13]. Strengthening cold-chain infrastructure is critical for Q-commerce growth. Investments in robust cold storage and transportation systems can minimize post-harvest losses and maintain product quality.
- *Farmer Digital Literacy and Training:* The adoption of digital platforms by farmers is crucial for scaling Q-commerce. A study found that farmers who received digital literacy and IT training saw a increase in crop profitability by using tech-based solutions for inventory and market demand prediction [3]. Offering such training will ensure seamless integration into the Q-commerce ecosystem, benefiting both farmers and consumers.
- *Collaborations and Partnerships:* Public-private partnerships can address infrastructure gaps in rural areas and improve logistics. A study indicated that collaborative efforts in agriculture can increase farm productivity, according to (Agarwal *et al.*, 2023) [14]. Strengthening these partnerships can enhance the overall efficiency of Q-commerce in the agriculture sector, benefiting both farmers and consumers.
- *Expanding Rural and Semi-Urban Access:* Rural India accounts for over 65% of India's population, but the share of online delivery in rural consumers is very low, due to factors like limited internet penetration, poor infrastructure, and lower disposable income in rural regions; the majority of Q-commerce activity concentrated in urban areas of India. Expanding Q-commerce to these regions can unlock untapped markets. Tailoring platforms for these areas, with affordable pricing and localized services, will drive growth and help bridge the rural-urban divide.
- *Advanced Analytics and Demand Forecasting:* The use of AI and machine learning can help predict demand patterns more accurately. According to a report by the Indian Institute of Technology [16], the adoption of AI-based demand forecasting models has resulted in a 30% reduction in inventory waste in fresh produce markets [17], according to (Zatsu *et al.*, 2024) [15]. Implementing such technology can optimize stock levels, minimize wastage, and ensure the timely delivery of fresh fruits to consumers [18].
- *Consumer Engagement and Loyalty Programs:* Platforms should use data-driven insights to offer personalized experiences to consumers. A report by McKinsey in 2022 showed that consumers in urban India engage more with platforms that offer loyalty programs and personalized promotions [1]. Q-commerce platforms can leverage these insights to build long-term customer relationships [19].

E. Challenges in Implementing Q-Commerce

- *Cold Chain Deficiencies:* Insufficient cold chain infrastructure continues to be a significant barrier in Q-commerce, especially for fresh fruits like pomegranates.
- *Fragmented Farmer Networks:* Smallholder farmers dominate Maharashtra's agricultural landscape, but their limited exposure to digital tools and fragmented supply chains make it challenging to integrate them into Q-commerce platforms.
- *Regulatory Hurdles:* Strict food safety regulations, transport restrictions, and inconsistent taxation policies add layers of complexity for Q-commerce companies.
- *Consumer Awareness*: While urban consumers increasingly adopt Q-commerce platforms, awareness in rural and semi-urban areas remains low.
- *Operational Costs*: Maintaining rapid delivery times, fresh produce quality, and competitive pricing requires significant operational investment.
- *Logistical Challenges*: The "last-mile delivery" segment of Q-commerce often faces logistical inefficiencies in terms of route optimization, delivery personnel availability, and handling perishables effectively.

Published By:
Blue Eyes Intelligence Engineering
& Sciences Publication (BEIESP)

VI. SUGGESTIONS AND RECOMMENDATIONS

A. **Strengthen Cold-Chain Systems:** Developrobust cold storage and transportation infrastructure to minimize post-harvest losses and maintain the quality of fruits like pomegranates.

B. **Invest in Digital Literacy Programs:** Train farmers in using digital platforms for better integration into Q-commerce supply chains, helping them access larger markets and improve earnings.

C. **Forge Public-Private Partnerships:** Collaborate with private investors and government initiatives to enhance infrastructure, streamline logistics, and make Q-commerce more accessible in semi-urban and rural regions.

D. **Expand Rural Access:** Tailor Q-commerce platforms to smaller towns and rural areas, focusing on affordability and awareness to attract new consumer segments and unlock untapped markets.

E. **Leverage Data-Driven Insights:** Use AI and analytics to predict demand trends, optimize inventory, and enhance the overall efficiency of Q-commerce operations.

VII. CONCLUSION

Q-commerce has the potential to revolutionize Maharashtra's agricultural economy by bridging gaps in logistics, accessibility, and profitability. The sector is projected to grow significantly, with the Indian Q-commerce market expected to reach USD 40 billion in revenue by FY 2030, up from just USD 2 billion in 2022, according to Deloitte [5]. Tier-2 and 3 cities are propelling the next phase of growth in India's retail sector, fueled by shifting consumption patterns and increased purchasing power. In 2022, these cities accounted for over 60% of the total orders, outpacing tier-1 markets. Tier-3 cities experienced a 65 percent order volume growth, tier-2 cities witnessed a 50 percent growth, while tier-1 cities saw 10 percent growth.

For Maharashtra, this translates into higher incomes for farmers, reduced wastage, and more efficient delivery models for fruits like pomegranates. Integrating advanced logistics, cold-chain systems, and digital platforms can increase export competitiveness and meet international demand for high-quality fruits. Furthermore, Q-commerce platforms like Swiggy Instamart and KisanConnect are already demonstrating how technology-driven solutions can enhance consumer trust and farmer profitability.

By leveraging data analytics, promoting rural participation, and fostering public-private partnerships, Maharashtra is well-positioned to become a global leader in fresh fruit Q-commerce.

DECLARATION STATEMENT

I must verify the accuracy of the following information as the article's author.

- **Conflicts of Interest/ Competing Interests:** Based on my understanding, this article has no conflicts of interest.
- **Funding Support:** This article has not been funded by any organizations or agencies. This independence ensures that the research is conducted with objectivity and without any external influence.
- **Ethical Approval and Consent to Participate:** The content of this article does not necessitate ethical approval or consent to participate with supporting documentation.
- **Data Access Statement and Material Availability:** The adequate resources of this article are publicly accessible.
- **Authors Contributions:** The authorship of this article is contributed solely.

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AUTHOR'S PROFILE

Ms. Dhanashri D. Landge, A results-driven Senior Market Research Analyst with over 8 years of experience in the Information and Communication Technology (ICT) sector, specializing in client interactions and syndicated & consulting projects. Proven track record in enhancing customer satisfaction through effective client communication, from requirement gathering to feedback resolution. Demonstrates expertise in data analysis, statistical modeling, and market trend forecasting, contributing to significant improvements in research service quality. Committed to leveraging strong analytical skills and problem-solving abilities to deliver impactful insights and value for stakeholders. She is a dedicated academic professional, currently pursuing a Ph.D. in Marketing at Savitribai Phule Pune University. She holds an MBA in Marketing and a Bachelor of Engineering in Computer Science. Her research primarily focuses on marketing strategies related to the marketing mix for pomegranates at both the state and national levels. The work explores adoption trends of digital marketing (sales and promotions) in the fresh fruit sector, the impact of COVID-19 on the market, and the social upliftment of farmers.