



A Study on the Impact of Delivery Operations on Last-Mile Delivery Performance in Quick Commerce

Joanna T¹, R. Surendher²

¹MBA Student, Department of Management Studies, Jerusalem College of Engineering, Chennai – 600100, India

²Project Guide, Department of Management Studies, Jerusalem College of Engineering, Chennai – 600100, India

DOI : <https://doi.org/10.55248/gengpi.07.0926.3108>

ABSTRACT:

Quick Commerce platforms promise delivery within minutes, which makes last-mile delivery performance a critical determinant of the customer experience. This study examines the impact of delivery operations, namely Delivery Speed, Order Accuracy and Real-Time Order Tracking, on Last-Mile Delivery Performance in Quick Commerce from the customer's perspective. Primary data were collected through a structured questionnaire from 100 Quick Commerce users selected by convenience sampling and were analysed using percentage analysis, chi-square analysis, correlation analysis and multiple regression analysis. Sixty percent of respondents are satisfied with last-mile delivery performance, although 71% usually receive orders within the promised time and 53% have received wrong or missing items. The chi-square test found no significant association between gender and preference for Quick Commerce over traditional stores ($\chi^2 = 3.14$, $p = 0.534$). Order Accuracy has a strong positive relationship with Consumer Repurchase Behaviour ($r = 0.918$, $p < 0.001$). Delivery Speed and Real-Time Order Tracking together explain 76% of the variation in Customer Satisfaction ($R^2 = 0.76$), with Real-Time Order Tracking ($\beta = 0.62$) contributing more than Delivery Speed ($\beta = 0.29$). The findings suggest that platforms should deliver on time consistently, improve accuracy at the picking and packing stage, and make real-time tracking more accurate and reliable in order to strengthen last-mile delivery performance.

Keywords: Quick Commerce, Last-Mile Delivery, Delivery Speed, Order Accuracy, Real-Time Order Tracking, Customer Satisfaction

Introduction:

The Rise of Quick Commerce

The spread of smartphones, internet connectivity and digital payments has moved consumers from traditional retail to e-commerce, and customer expectations have shifted from convenient online ordering towards faster, more reliable and more transparent delivery. This shift gave rise to Quick Commerce (Q-Commerce), a model that fulfils and delivers orders, mainly groceries, food, household essentials and personal-care products, within a very short period. Unlike conventional e-commerce, where delivery may take a day or more, Q-Commerce relies on dark stores and micro-fulfilment centres, localised inventory and technology-enabled delivery systems to reduce the distance and time between the order and the customer.

India's Quick Commerce industry continued to expand rapidly through 2025 and 2026. Depending on scope and methodology, industry estimates place the 2026 market size between roughly USD 3.6 billion and USD 6.8 billion. The combined dark-store network of the three leading platforms, Blinkit, Swiggy Instamart and Zepto, grew from around 3,400 locations in mid-2025 to more than 5,000 by May 2026, with Blinkit holding close to half of the market. Flipkart Minutes and BigBasket are among the other platforms competing on delivery speed, product availability, price and customer experience.

Delivery Operations and Last-Mile Performance

Last-mile delivery, the final movement of an order from the dark store to the customer, is the most visible stage of the Q-Commerce supply chain. Delivery partners must deal with traffic, weather, parking limits and incorrect addresses while customers expect extremely short delivery times. Three operational factors are central to this stage. Delivery Speed is the ability of the platform to deliver an order within the expected time. Order Accuracy is the delivery of the correct products and quantities, which depends on inventory, picking and packing processes. Real-Time Order Tracking is the visibility provided to customers about order status and estimated arrival. Speed alone is not enough: a wrong or missing item reduces satisfaction even when the order arrives quickly.

Review of Literature and Research Gap

Earlier studies show that delivery timeliness strongly shapes satisfaction and loyalty. Teotia [1] reported that 85% of quick-commerce users consider delivery speed very or extremely important, and Harter, Stich and Spann [6], using more than two million orders, found that late deliveries reduce

satisfaction and lengthen the time to the next purchase more than equally early deliveries improve them. Le, Khoa and Ngo [10] found order accuracy to be the strongest order-fulfilment driver of satisfaction and repurchase intention, while Ngo et al. [11] found that accuracy builds trust but does not by itself raise satisfaction among Generation Z consumers. Bintang, Purnomo and Lestiani [2] showed that real-time tracking and delivery timeliness both significantly affect satisfaction ($R^2 = 0.758$), and Dhanya and Nanthini [4] found that customers prefer accurate and timely tracking updates. Studies of last-mile delivery [5, 7] identify delays as the most common customer complaint, followed by damaged goods and incorrect items.

These studies generally examine the factors separately or in a general e-commerce setting. None of the studies reviewed examines Delivery Speed, Order Accuracy and Real-Time Order Tracking together as delivery-operation factors influencing Last-Mile Delivery Performance across Quick Commerce platforms in India. The present study addresses this gap from the customer's perspective, along with the relationship of these factors with Customer Satisfaction and Consumer Repurchase Behaviour.

Methodology:

The study adopts a descriptive research design and combines primary and secondary data. Primary data were collected through a structured questionnaire prepared in Google Forms and circulated among active Quick Commerce users in Chennai, selected by convenience sampling. Of 113 responses received, 100 usable responses remained after removing incomplete and invalid entries, and these formed the basis of the analysis. The questionnaire recorded demographic and usage details and measured agreement with statements on customer preference, Delivery Speed, Order Accuracy, Real-Time Order Tracking and Last-Mile Delivery Performance on a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). Secondary data were gathered from books, journals, research articles and industry reports. The data were analysed using percentage analysis, chi-square analysis, Pearson correlation analysis and multiple regression analysis.

Objective:

1. To study the impact of delivery operations on last-mile delivery performance in Quick Commerce.
2. To evaluate customer preference for Quick Commerce based on gender.
3. To find the relationship between Order Accuracy and Consumer Repurchase Behaviour in Quick Commerce.
4. To determine the impact of Delivery Speed and Real-Time Order Tracking on Customer Satisfaction in Quick Commerce.

Data Analysis and Interpretation

1. PERCENTAGE ANALYSIS

Table 1: Profile and usage behaviour of respondents (N = 100)

Variable	Frequency (percentage)
Age	Below 18 years: 9 (9%); 18–25 years: 46 (46%); 26–35 years: 40 (40%); 36–45 years: 5 (5%); above 45 years: 0
Gender	Male: 42 (42%); Female: 58 (58%)
Occupation	Student: 32 (32%); Salaried employee: 51 (51%); Self-employed / business owner: 15 (15%); Homemaker: 2 (2%)
Duration of use	Less than 3 months: 14 (14%); 3–6 months: 4 (4%); 6 months–1 year: 22 (22%); 1–2 years: 15 (15%); more than 2 years: 45 (45%)
Ordering frequency	Daily: 14 (14%); 2–3 times a week: 30 (30%); once a week: 23 (23%); 1–3 times a month: 26 (26%); rarely: 7 (7%)
Monthly spending	Below Rs. 500: 21 (21%); Rs. 500–1,500: 40 (40%); Rs. 1,500–3,000: 12 (12%); Rs. 3,000–5,000: 17 (17%); above Rs. 5,000: 10 (10%)

INFERENCE

The sample is predominantly female (58%) and young, with 86% aged between 18 and 35. Salaried employees (51%) and students (32%) together form 83% of respondents. The respondents are experienced users: 45% have used Quick Commerce for more than two years and 67% order at least once a week, while 40% spend Rs. 500–1,500 per month.

Table 2: Responses to the statements on delivery operations and last-mile performance (N = 100)

Statement	Disagree (%)	Neutral (%)	Agree (%)
Customer preference			
Prefer Quick Commerce over traditional stores	13	16	71
Delivery Speed			
Usually receive orders within the promised time	13	16	71
Fast delivery increases my satisfaction	15	26	59
Prefer platforms delivering within 10–30 minutes	12	23	65
Delivery speed influences my choice of platform	10	16	74
Have experienced delays in orders	11	27	62
Quick, timely delivery encourages repurchase	12	18	70
Order Accuracy			
Usually receive the correct items	9	18	73
Order accuracy is important to me	16	26	58
Have received wrong or missing items in the past	13	34	53
Accurate fulfilment increases my trust	21	18	61
Likely to repurchase from accurate platforms	14	21	65
Errors make me consider switching platforms	10	21	69
Real-Time Order Tracking			
Regularly use the tracking feature	16	17	67
Tracking helps me plan my time	13	27	60
Accurate tracking increases my confidence	13	15	72
More satisfied when I can track in real time	17	23	60
Tracking reduces my anxiety about delays	12	18	70
Tracking influences my choice of platform	23	28	49
Last-Mile Delivery Performance			
Overall satisfied with last-mile delivery	13	27	60
Delivery personnel handle orders with care	11	18	71
Packaging is satisfactory on delivery	12	36	52
Delivery issues affect my overall experience	15	23	62
Trust platforms for a consistent last-mile experience	17	22	61

Statement	Disagree (%)	Neutral (%)	Agree (%)
Would recommend my platform based on delivery	12	26	62
Improvements would enhance my satisfaction	11	21	68

Disagree = Strongly Disagree + Disagree; Agree = Agree + Strongly Agree.

INFERENCE

Delivery Speed: Overall, 71% of respondents prefer Quick Commerce to traditional stores and 71% usually receive their orders within the promised time. Speed matters to customers, as 65% prefer 10–30 minute delivery, 74% say it influences their choice of platform and 70% are encouraged to repurchase by timely delivery. However, 62% have still experienced delays.

Order Accuracy: While 73% usually receive the correct items, 53% report having received wrong or missing items in the past. Accuracy carries consequences for the platform: 61% say accurate fulfilment increases their trust, 65% are likely to repurchase from platforms that deliver accurately, and 69% would consider switching because of errors.

Real-Time Order Tracking: A majority of respondents (67%) regularly use tracking, 72% say accurate tracking increases their confidence in the platform, and 70% say it reduces their anxiety about delays. Only 49% say tracking influences their choice of platform, which indicates that tracking is valued more as a service quality feature than as a reason for choosing a platform.

Last-Mile Delivery Performance: Overall, 60% are satisfied with last-mile delivery, 61% trust platforms to provide a consistent experience and 62% would recommend their platform. Delivery personnel are seen as careful by 71%, but only 52% are satisfied with packaging, 62% say delivery issues affect their overall experience, and 68% believe improvements in speed, accuracy and tracking would raise their satisfaction.

2. CHI-SQUARE TEST

H₀: There is no significant association between gender and customer preference for Quick Commerce platforms.

H₁: There is a significant association between gender and customer preference for Quick Commerce platforms.

Table 3: Chi-square tests

Test	Value	df	Asymptotic Sig. (2-tailed)
Pearson Chi-Square	3.14	4	.534
Likelihood Ratio	3.33	4	.505
Linear-by-Linear Association	1.31	1	.253
N of Valid Cases	100		

INTERPRETATION

(0.534 > 0.05) Since the p-value (0.534) is greater than the 0.05 level of significance, the null hypothesis is not rejected. There is no significant association between gender and preference for Quick Commerce over traditional stores. Although 76.2% of male respondents (32 of 42) and 67.2% of female respondents (39 of 58) agreed or strongly agreed that they prefer Quick Commerce, this difference is not statistically significant. The likelihood ratio (p = 0.505) and linear-by-linear association (p = 0.253) lead to the same conclusion.

3. CORRELATION ANALYSIS

Order Accuracy was computed as the mean of five statements (correct items received, importance of accuracy, wrong or missing items, trust from accurate fulfilment and switching due to errors). Consumer Repurchase Behaviour is represented by the statement “I am likely to repurchase from a platform that consistently delivers accurate orders”.

H₀: There is no significant relationship between Order Accuracy and Consumer Repurchase Behaviour in Quick Commerce.

H₁: There is a significant relationship between Order Accuracy and Consumer Repurchase Behaviour in Quick Commerce.

Table 4: Correlation between Order Accuracy and Consumer Repurchase Behaviour

Variables	Order Accuracy	Consumer Repurchase Behaviour
Order Accuracy (Pearson r)	1.000	.918
Consumer Repurchase Behaviour (Pearson r)	.918	1.000
Sig. (2-tailed)		.000
N	100	100

INTERPRETATION

(0.000 < 0.05) Since the p-value is less than 0.05, the null hypothesis is rejected. The Pearson coefficient of 0.918 indicates a strong positive and statistically significant relationship between Order Accuracy and Consumer Repurchase Behaviour: respondents who perceive higher accuracy are more likely to repurchase. The coefficient of determination ($r^2 = 0.84$) shows that about 84% of the variation in repurchase behaviour is shared with Order Accuracy. Correlation, however, indicates association and does not by itself establish cause and effect.

4. MULTIPLE REGRESSION ANALYSIS

H₀: Delivery Speed and Real-Time Order Tracking do not have a significant impact on Customer Satisfaction in Quick Commerce.

H₁: Delivery Speed and Real-Time Order Tracking have a significant impact on Customer Satisfaction in Quick Commerce.

Table 5: Model summary and ANOVA (dependent variable: Customer Satisfaction)

R	R Square	Adjusted R Square	Std. Error	F (df = 2, 97)	Sig.
.87	.76	.76	.50	155.04	.000

Table 6: Regression coefficients, 95% confidence intervals and collinearity statistics

Variable	B	Std. Error	Beta	t	Sig.	95% CI (B)	VIF
(Constant)	.34	.20	.00	1.67	.098	-.06 to .74	—
Delivery Speed	.30	.09	.29	3.25	.002	.12 to .48	3.23
Real-Time Order Tracking	.60	.09	.62	6.94	.000	.43 to .77	3.23

INTERPRETATION

(0.000 < 0.05) The model is a good fit: Delivery Speed and Real-Time Order Tracking together explain 76% of the variation in Customer Satisfaction ($R = 0.87$, $R^2 = 0.76$) and the model is statistically significant ($F = 155.04$, $p < 0.001$). Both predictors are individually significant, and Real-Time Order Tracking ($\beta = 0.62$, $p < 0.001$) contributes more strongly than Delivery Speed ($\beta = 0.29$, $p = 0.002$). The fitted equation is Customer Satisfaction = $0.34 + 0.30$ (Delivery Speed) + 0.60 (Real-Time Order Tracking). Tolerance (0.31) and VIF (3.23) indicate no serious multicollinearity. The null hypothesis is therefore rejected and the alternative hypothesis (H₁) is accepted.

Results

The study examined how delivery operations relate to last-mile delivery performance in Quick Commerce. Most respondents (60%) are satisfied with last-mile delivery, but satisfaction is tempered by delays (experienced by 62%) and by wrong or missing items (53%). The chi-square test ($\chi^2 = 3.14$, $p = 0.534$) showed no significant association between gender and preference for Quick Commerce, indicating that preference is not influenced by gender. The correlation analysis showed a strong positive relationship between Order Accuracy and Consumer Repurchase Behaviour ($r = 0.918$, $p < 0.001$). The regression analysis showed that Delivery Speed ($\beta = 0.29$, $p = 0.002$) and Real-Time Order Tracking ($\beta = 0.62$, $p < 0.001$) are significant predictors of Customer Satisfaction, jointly explaining 76% of its variation ($R^2 = 0.76$). These findings suggest that while gender does not affect preference, the operational features of delivery, particularly accurate fulfilment and reliable tracking, are critical to customer satisfaction and repurchase.

Conclusion

In conclusion, this study shows that Delivery Speed, Order Accuracy and Real-Time Order Tracking each play an important part in shaping the customer experience of Quick Commerce, and that platforms cannot rely on fast delivery alone. Customers are generally satisfied with last-mile performance, but a majority said that delivery issues affect their overall experience and that order errors would make them consider switching platforms. Real-Time Order Tracking had a stronger effect on Customer Satisfaction than Delivery Speed, and Order Accuracy was strongly related to repurchase behaviour.

These insights suggest that Quick Commerce platforms should deliver on time consistently rather than only quickly, improve accuracy through better picking and packing checks and resolve order errors quickly, and invest in accurate and reliable real-time tracking. Route optimisation, AI and IoT can improve delivery efficiency, while training of delivery personnel, better packaging standards, regular tracking of delivery KPIs and customer feedback can strengthen service quality. As preference does not differ significantly by gender, a gender-neutral delivery strategy is appropriate.

The findings should be read in light of the study's limitations. The sample of 100 respondents from Chennai was selected by convenience sampling and is dominated by young urban users, and the correlation and regression results show association within this sample that cannot be generalised to all Quick Commerce users. Future research could use a larger and more diverse sample, include factors such as pricing and product availability, and apply techniques such as structural equation modelling.

References:

1. Teotia, V. S. (2025). Impact of delivery speed on customer satisfaction in online shopping: A focus on quick commerce. *International Journal of Scientific Research in Engineering and Management*, 9(5). <https://doi.org/10.55041/IJSREM49149>
2. Bintang, A., Purnomo, A., & Lestiani, M. E. (2026). Logistics service cost as a moderator of the effects of real-time tracking and delivery timeliness on Shopee customer satisfaction. *Al-Kharaj: Journal of Islamic Economic and Business*, 8(3). <https://doi.org/10.24256/kharaj.v8i3.11956>
3. Deepak Raj, G., & Thandayudhapani, S. (2024). Evolution of e-commerce logistics: Global trends and implementations. *ComFin Research*, 12(2), 42–45. <https://doi.org/10.34293/commerce.v12i2.7466>
4. Dhanya, K., & Nanthini, E. (2026). A study on customer perception of order tracking features in e-commerce application with special reference to Tirupur City. *International Journal of Creative Research Thoughts*, 14(3), e710–e714. <https://ijert.org/papers/IJCRT2603558.pdf>
5. Gautham, B. (2025). Challenges in last-mile delivery logistics for e-commerce companies. *International Journal of Creative Research Thoughts*, 13(12), i604–i612. <https://www.ijert.org/papers/IJCRT2512985.pdf>
6. Harter, A., Stich, L., & Spann, M. (2024). The effect of delivery time on repurchase behavior in quick commerce. *Journal of Service Research*, 28(2), 211–227. <https://doi.org/10.1177/10946705241236961>
7. Jawali, R. R., & Ramya, S. (2024). A study on challenges and optimization of last mile delivery and its impact on customer satisfaction. *International Journal for Multidisciplinary Research*, 6(4). <https://doi.org/10.36948/IJFMR.2024.V06I04.24486>
8. Joshi, A. A. (2025). A comprehensive analysis of quick commerce: Trends, predictions, and strategic insights. *International Journal of Progressive Research in Engineering Management and Science*, 5(1), 839–845.
9. Kumar, I., & Chidambara. (2024). A systematic literature review and bibliometric analysis of last-mile e-commerce delivery in urban areas. *Urban, Planning and Transport Research*, 12(1), Article 2357577. <https://doi.org/10.1080/21650020.2024.2357577>
10. Le, D. T. A., Khoa, B. T., & Ngo, M. T. (2026). Logistics service quality in e-commerce: The impact of order fulfillment systems on customer repurchase intention. *Journal of Distribution Science*, 24(1), 45–56. <https://doi.org/10.15722/jds.24.01.202601.45>
11. Ngo, T. T. A., An, G. K., Dao, D. K., Nguyen, N. Q. N., Nguyen, N. Y. V., & Phong, B. H. (2025). Roles of logistics service quality in shaping Generation Z customers' repurchase intention and electronic word of mouth in e-commerce industry. *PLOS ONE*, 20(5), e0323962. <https://doi.org/10.1371/journal.pone.0323962>
12. Sharma, V. P., Prakash, S., Singh, R., Ojha, R., & Ramtiyal, B. (2025). Strategic insights into last-mile delivery: Modelling the Industry 4.0 enabler for e-commerce industry. *RAUSP Management Journal*, 60(1), 149–174. <https://doi.org/10.1108/RAUSP-07-2024-0146>
13. Singh, S., & Pandey, S. (2025). Optimizing efficiency in last-mile delivery: Enhancing Indian e-commerce logistics for a seamless customer experience. *International Journal of Progressive Research in Engineering Management and Science*, 5(5), 2000–2015. <https://doi.org/10.58257/IJPREMS41564>
14. Siwach, S. (2026). Quick commerce in India: Trends, challenges, and growth opportunities. *International Journal of Research and Innovation in Social Science*, 10(19), 10–13. <https://doi.org/10.47772/IJRISS.2026.10190002>