Impact of Delivery Time and Product Availability on Customer Satisfaction in Quick Commerce Platforms

Submitted to the School of Maritime Management, Indian Maritime University in fulfilment for the requirements for the award of degree of MBA in International Transportation and Logistics Management

by

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CHENNAI CAMPUS

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SCHOOL OF MARITIME MANAGEMENT INDIAN MARITIME UNIVERSITY

(A Central University under the Ministry of Ports, Shipping and Waterways)

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Certificate

This is to certify that the project report titled **"Impact of Delivery Time and Product Availability on Customer Satisfaction in Quick Commerce Platforms"** is a Bonafide work done by **SAHIL S (Reg.No: - 2303305034)** in partial fulfilment of the requirement for the award of the degree of Master of Business Administration in Indian Maritime University, Chennai.

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Date: 28/05/2025

DECLARATION

I, **SAHIL S,** do hereby declare that the dissertation entitled **"Impact of Delivery Time and Product Availability on Customer Satisfaction in Quick Commerce Platforms"** is exclusively a Bonafide work done by me under the supervision and guidance of **Dr. Emil Mathew,** Assistant Professor, School of Maritime Management and is submitted to Indian Maritime University in partial fulfilment of the requirement for the award of the degree of Master of Business Administration.

I further declare that no part of this report has been previously submitted to any other university or academic body for the award of any degree or diploma.

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CHAPTER I
INTRODUCTION

1.1 INTRODUCTION

The evolution of e-commerce has reached a new level with the launch of Quick Commerce (Q-commerce) platforms that specialise in delivering products to consumers quickly, typically within 30 minutes. This model has become extremely popular in cities where convenience, speed, and instant satisfaction are the primary concerns. The penetration of smartphones, advancements in logistics and supply chain management, and changes in consumer behaviour have all contributed to fuelling Q-commerce growth.

In such a competitive environment, customer expectations have grown exponentially. Delivery time and product availability are two fundamental factors that significantly influence a customer's experience and satisfaction with Q-commerce platforms. Consumers not only desire fast deliveries but also expect their favourite products to be regularly available. Failure to deliver on time or the unavailability of essential products can result in customer dissatisfaction, loss of word-of-mouth promotion, and churn. Therefore, effectively managing these two operational aspects has become essential for Q-commerce operators to survive and thrive in the market.

Customer satisfaction in Q-commerce directly results from how well platforms can fulfil their promises of speed and product variety. When deliveries are prompt and products are in stock according to customer demand, it creates a pleasant experience that leads to repeat business and brand loyalty. On the other hand, frequent stockouts and delays can damage a platform's reputation and drive customers to competitors with superior service.

Understanding how customer satisfaction is influenced by delivery time and product availability is vital not only for operational efficiency but also for strategic decision-making. It enables companies to allocate funds wisely, such as investing in quality last-mile delivery infrastructure, maximising warehouse efficiency, and reducing inventory levels. The purpose of this study is to investigate the impacts of product availability and delivery duration on customer satisfaction levels in the Quick Commerce segment. Drawing upon a review of customer experiences and opinions, the research aims to determine the relative importance of these variables and provide findings that will assist

Q-commerce platforms in enhancing service quality, responding more effectively to customer demand, and maintaining competitiveness in the industry.

Background of e-commerce

E-commerce, or electronic commerce, refers to the buying and selling of goods and services over the internet. It revolutionised traditional retail by making it possible for customers to shop from the convenience of their homes. The growth of the internet, secure payment systems, and advancements in logistics infrastructure have all contributed to the expansion of e-commerce. Over time, consumer expectations around product variety, pricing, convenience, and delivery timelines have shaped the sector's competitive dynamics, pushing businesses to innovate their offerings continuously.

Evolution from traditional e-commerce to quick commerce

While traditional e-commerce was built around the model of standard delivery windows ranging from 2 to 7 days, evolving customer expectations called for faster alternatives. The increasing demand for immediate needs, especially for groceries, medicines, and daily essentials, paved the way for Quick Commerce (Q-Commerce). By combining micro-fulfilment strategies with hyperlocal delivery networks, Q-Commerce platforms offer deliveries within minutes, significantly narrowing the gap between customer desire and product access. This shift marked a transformation from convenience to instant gratification.

Background of quick commerce

Quick Commerce, or Q-Commerce, is a relatively recent advancement in the e-commerce and retail sectors. It emerged to address the growing consumer demand for ultra-fast deliveries, driven by mobile technology adoption, urban lifestyles, and time scarcity. Initially rooted in food delivery, Q-Commerce platforms like Dunzo, Zepto, Blinkit, and Swiggy Instamart expanded into groceries, personal care, and household essentials. By committing to 10–30-minute delivery windows, Q-Commerce redefined

supply chain models, altered consumer behaviour, and created a new vertical within the retail ecosystem.

Drivers for the emergence of quick commerce

Several factors have fuelled the emergence of Quick Commerce. The proliferation of smartphones and affordable internet access made it easy for consumers to shop anytime, anywhere. The urban lifestyle, characterised by limited time and a preference for convenience, demanded quicker solutions. The COVID-19 pandemic further accelerated the trend by emphasising contactless shopping experiences. Additionally, intense competition among players has driven innovation in micro-fulfilment centres, real-time inventory management, and last-mile logistics, making ultra-fast delivery viable and attractive.

Components of quick commerce

Quick Commerce thrives on a tightly integrated ecosystem combining technology, logistics, and customer engagement. Dark stores (micro-fulfilment centres) located near high-demand clusters allow for rapid order processing. Real-time stock tracking, AI-based inventory management, and optimised delivery routing are essential components. Orders are placed via mobile apps, fulfilled in dark stores, and delivered by gig economy workers within minutes. Technology platforms supporting seamless payment processing, customer feedback, and service recovery mechanisms are also critical to ensuring customer satisfaction.

Delivery time in quick commerce platforms

Delivery time is a critical factor in Q-Commerce success. Platforms promise ultra-short delivery windows, often within 10–30 minutes, to meet customer expectations for speed and convenience. Dark stores' proximity to customer locations, efficient picking and packing processes, and real-time route optimisation contribute to achieving these targets. However, maintaining consistent delivery speeds requires robust infrastructure,

trained delivery personnel, and dynamic traffic management. Any delays beyond the promised timeline can directly impact customer perception and satisfaction.

Product availability in quick commerce platforms

Product availability refers to the ability of a Q-Commerce platform to meet customer demand without stockouts. Maintaining high availability of fast-moving consumer goods (FMCG), groceries, and daily essentials is vital. Real-time inventory management systems, predictive analytics for demand forecasting, and strong supplier partnerships ensure that popular products are always in stock. A lack of availability, especially for critical items, leads to customer frustration, order cancellations, and reduced platform loyalty. Hence, inventory planning and SKU assortment strategies are central to success.

Impact of delivery time on customer satisfaction

Delivery time has a direct impact on customer satisfaction in Q-Commerce. Customers using such platforms prioritise immediacy, and even minor delays can significantly affect their experience. Consistent adherence to promised delivery windows fosters trust, while frequent delays result in dissatisfaction, negative reviews, and attrition. A platform's ability to predict delivery times accurately, communicate transparently during delays, and offer real-time tracking is key to maintaining high levels of customer satisfaction and loyalty.

Impact of product availability on customer satisfaction

Product availability heavily influences the overall customer experience. A comprehensive, consistently available product range enhances convenience and drives repeat usage. Conversely, unavailable products, frequent stockouts, or lack of substitutes lead to abandoned carts and customer churn. Customers expect that if a product is shown as available during browsing, it will be deliverable. Hence, ensuring alignment between digital listings and physical inventory is crucial. High product

availability signals reliability, encouraging higher order frequencies and longer customer lifetime value.

Strategies to improve delivery time and product availability

Improving delivery time and product availability requires a multi-pronged approach. Optimising the placement of dark stores based on demand clusters reduces travel time. Investing in inventory forecasting using AI and machine learning minimises stockouts. Dynamic routing software helps minimise delivery delays by accounting for real-time traffic conditions. Building strong local supplier relationships ensures faster replenishment of stocks. Platforms can also introduce flexible delivery options, real-time customer communication, and inventory visibility features to improve satisfaction. Adopting proactive feedback mechanisms further allows platforms to continuously fine-tune operations.

1.2 RATIONALE OF THE STUDY

Quick Commerce (Q-commerce) is revolutionising consumer shopping habits at a rapid pace with lightning-fast delivery options and real-time availability of everyday essentials. With increasing competition in this space, companies are compelled to meet high customer expectations consistently. Among the various factors shaping a customer's perception of service quality, product availability and delivery time are two of the most critical. Delayed delivery or frequent stockouts can significantly impact customer satisfaction and loyalty, ultimately affecting the long-term sustainability of a Q-commerce website.

Although Q-commerce is on the rise, limited research has directly tested the impact of operational factors such as delivery time and product availability on customer satisfaction within this segment. The little customer satisfaction research available

predominantly focuses on traditional e-commerce or offline stores, where delivery times and inventory availability are less time-sensitive compared to Q-commerce. Thus, there is a gap in examining these correlations in the specific context of quick-delivery services.

This research is crucial as it reveals the most effective drivers of customer satisfaction in the fast-paced Quick Commerce environment. Understanding how product availability and delivery time affect customer experience will enable Q-commerce platforms to enhance operations, streamline their service strategies, and maintain competitiveness. Furthermore, the research can empower businesses to optimise logistics, inventory, and customer communication to better align with consumer needs.

Through this study, valuable insights will be developed that not only enhance academic literature but also provide practical recommendations for Q-commerce businesses aiming to foster customer loyalty and sustainable growth in a dynamic landscape.

1.3 RESEARCH OBJECTIVES

1. To examine the impact of delivery time on customer satisfaction in Quick Commerce platforms.
2. To analyse the influence of product availability on customer satisfaction in Quick Commerce platforms.
3. To identify which factor — delivery time or product availability — has a greater effect on overall customer satisfaction.

1.4 SCOPE OF THE STUDY

In the context of Quick Commerce (Q-commerce) platforms, this study aims to comprehend how two crucial operational factors—delivery time and product availability—affect customer satisfaction. The study will only examine how these

elements affect the general customer experience in cities where Q-commerce services are the most common. Popular services like Blinkit, Zepto, Dunzo, and Instamart—which provide quick delivery of daily necessities like groceries, personal care products, and household goods—will be among the platforms being examined.

Additionally, the study's scope is restricted to users of these Q-commerce platforms, especially those who live in large cities where the service is more accessible. Customer satisfaction will be the dependent variable, and delivery time and product availability will be the main research topics. The study will shed light on the relationship between these two factors and satisfaction levels. Still, it will not address other factors like pricing, platform usability, or customer service that could affect the customer experience.

The study's conclusions are meant to assist urban Q-commerce businesses in streamlining their processes and raising customer satisfaction levels. The study will not, however, include variables other than product availability and delivery time that affect customer satisfaction.

1.5 RESEARCH METHODOLOGY

The research methodology for this study is designed to explore the impact of delivery time and product availability on customer satisfaction in Quick Commerce platforms. The approach follows a quantitative research design to ensure the collection of objective, measurable data, allowing for statistical analysis of the relationship between the variables.

1.6 LIMITATIONS OF THE STUDY

While this study aims to provide valuable insights into the impact of delivery time and product availability on customer satisfaction in Quick Commerce platforms, several limitations must be considered. First, the study uses convenience sampling, which may not represent the broader population of Quick Commerce customers. Since the sample

will be drawn from individuals who are easily accessible, it may not fully reflect the experiences of all customer segments, especially those who use the platforms less frequently or live in less accessible areas.

Another limitation is that the study focuses primarily on urban customers who use Quick Commerce platforms, which means the findings may not apply to customers in rural or semi-urban regions. The customer experience in these areas may differ due to the availability of services, delivery infrastructure, and other regional factors.

The study also relies on self-reported data, which can introduce biases, such as social desirability bias, where respondents might provide answers, they believe are more acceptable rather than their true experiences. Moreover, respondents' recall accuracy regarding delivery times and product availability may vary, affecting the reliability of the data.

Additionally, the research is limited in scope as it only considers two factors—delivery time and product availability—to assess customer satisfaction. Other variables such as pricing, customer service, and platform usability, which can also significantly influence satisfaction, are not included in this study. Furthermore, the data is collected at a single point in time, which means the study cannot explore changes in customer satisfaction over a longer period. A longitudinal approach could provide a more in-depth understanding of how satisfaction evolves as delivery times and product availability fluctuate.

Finally, the study will examine multiple Quick Commerce platforms, such as Blinkit, Zepto, Dunzo, and Instamart. Since these platforms have different operational practices, there may be variability in delivery speeds, inventory management, and customer service, which could affect the consistency of the results. Moreover, the reliance on online survey tools may exclude individuals who lack internet access or are unfamiliar with digital survey platforms, limiting the diversity of responses.

Despite these limitations, the study aims to offer valuable insights into customer satisfaction in the Quick Commerce sector, providing a foundation for future research and service improvements.

CHAPTER II
LITERATURE REVIEW

2.1 LITERATURE REVIEW

Introduction

Quick commerce, defined by ultra-rapid delivery of everyday consumer goods, often within 30 to 60 minutes, has reshaped modern retail by setting new benchmarks for speed and convenience. Platforms such as Gopuff, JOKR, Zepto, and Blinkit rely on dense networks of fulfilment points ("dark stores") and real-time inventory systems to meet consumer expectations. As the space matures, two operational factors emerge as critical drivers of perceived service quality and loyalty: delivery time (how fast orders arrive) and product availability (whether desired items are in stock at the moment of order). The interplay between these factors determines abandonment rates, repurchase intentions, and overall customer satisfaction. This review synthesises theoretical models, empirical findings, logistical enablers, and methodological approaches from recent scholarship, highlighting gaps and paving the way for future inquiry.

Theoretical Foundations of Delivery Time

Service Quality and Order Fulfilment

Early e-commerce frameworks situate delivery performance within the broader service quality construct, emphasising reliability, responsiveness, and assurance. Ricker and Kalakota's seminal work argues that order fulfilment—the speed and accuracy with which goods reach consumers—constitutes the "hidden key" to e-commerce success, influencing both trust and retention. These dimensions map directly onto today's quick commerce: customers equate shorter lead times with higher reliability, and any deviation from promised windows can severely erode confidence.

Time-Based Competition

Building on service quality theory, Paluzzi et al. (2025) introduce time-based competition as a strategic lens for supply chain design in home delivery contexts. They posit that consumer impatience itself is a competitive resource: platforms that systematically reduce latency through micro-fulfilment, predictive routing, and

dynamic order batching can command premium loyalty. This model underscores both external constraints (urban congestion, last-mile density) and internal capabilities (algorithmic optimisation, cross-dock scheduling) as levers for achieving minimal delivery windows.

Psychological Perception of Time

Beyond operational metrics, scholars draw on psychology to interpret how customers perceive time. Prospect theory suggests that delays are weighted more heavily than equivalent gains in speed; thus, reducing promised windows from 60 to 30 minutes may yield diminishing returns compared to the negative impact of a missed 30-minute promise. While direct empirical tests of this asymmetry remain sparse, Luna Sanchez's (2024) qualitative interviews reveal that perceived control over delivery timing moderates satisfaction: consumers who feel empowered by tracking tools are more forgiving of slight delays.

Empirical Evidence on Delivery Speed

Repurchase Behaviour and Lead-Time Sensitivity

Harter, Stich, and Spann (2024) quantitatively assess how incremental reductions in delivery time influence repurchase rates in quick commerce platforms. Drawing on a survey of 1,200 frequent users, they find that every 15-minute decrease in delivery windows corresponds to an 8% increase in repurchase intention, holding price and product assortment constant. Their regression models control for demographic factors and order size, isolating delivery speed as a robust predictor of loyalty.

Satisfaction vs. Accuracy Trade-off

Delikurt and Corum investigate the relative importance of speed versus timing accuracy in fast-moving consumer goods delivery. Using conjoint analysis, they show that consumers often prefer slightly slower but more reliable windows (e.g., "45–60 minutes with 95% on-time" over "30–45 minutes with 80% on-time"). This highlights a tension

between absolute speed and consistency—platforms must calibrate promise-keeping to avoid negative spillovers on satisfaction.

Market-Level Studies

Country-specific analyses confirm these patterns in diverse contexts. In the Netherlands, Abrar (2024) finds that average delivered time below 45 minutes yields satisfaction scores above 4.2 on a 5-point scale, whereas windows above 60 minutes see scores drop to 3.5. Similarly, Reif's European study (2022) reports that platforms advertising "30-minute delivery" consistently outperform "60-minute" rivals in NPS (Net Promoter Score) benchmarks, although the study notes diminishing marginal returns below the 30-minute threshold.

Impact of Product Availability

Stockouts and Abandonment Rates

Product availability is a prerequisite for fulfilling the speed promise. Goswami and Kumari's investigation demonstrates that encountering an "out-of-stock" notification during shopping increases cart abandonment by over 20%, with many consumers citing trust erosion and perceived platform unreliability. Their survey of 800 quick commerce users in India further shows that repeated stockouts lead to brand switching, underscoring inventory consistency as a loyalty driver.

Assortment, Variety, and Uniqueness

Beyond mere in-stock percentages, the breadth of assortment and presence of unique or premium SKUS shape satisfaction. Bharathithasan and Srinivasan (2024) apply PLS-SEM to model how product uniqueness and availability mediate the relationship between operational performance and business success. Their findings indicate that platforms offering both common essentials and differentiated items (e.g., gourmet snacks) generate higher "delight" scores, which in turn drive referral behaviours.

Real-Time Inventory Transparency

Nagarathinam and Chellasamy explore how real-time stock indicators, such as countdowns of remaining units, affect purchase urgency and satisfaction. Their field experiment with 1,000 users finds that platforms displaying “only 3 left” boosted conversion rates by 12%, but also increased anxiety during checkout, suggesting a balance between transparency and consumer comfort is needed.

Logistical and Infrastructure Considerations

Dark Stores and Micro-Fulfilment Centres

Rai et al. (2023) provide a geospatial analysis of “dark stores” in Paris, showing that locating micro-fulfilment centres within 2 kilometres of high-density residential zones cuts last-mile distances by 40%, thereby reducing delivery times without sacrificing assortment variety. The study also maps traffic patterns to optimise store placement, highlighting the critical interplay between urban planning and logistics.

Partnership Models

In India, Ranjekar and Roy (2023) document hybrid models where quick commerce platforms partner with existing brick-and-mortar retailers to expand geographic reach while sharing stocking responsibilities. Their case studies illustrate how revenue-sharing and dynamic replenishment agreements can maintain high fill-rates (> 95%) even in less dense suburbs, though at the cost of marginally longer lead times (avg. 55 minutes).

Technology Enablers

Fortini’s (2016) global overview emphasizes the role of integrated IT systems—order management, dynamic routing, and demand forecasting—in synchronizing inventory with delivery capacity . He argues that true quick commerce requires end-to-end automation: from real-time SKU updates to API-driven dispatch, any manual bottleneck undermines the speed and accuracy critical to satisfaction.

Consumer Behaviour and Purchase Decision Drivers

Convenience, Trust, and Perceived Control

Luna Sanchez (2024) employs mixed methods—surveys and in-depth interviews—to identify three core psychological drivers of quick commerce adoption: convenience (time saved), trust (reliable fulfilment), and perceived control (visibility into order status). Delivery time and product availability serve as antecedents to these higher-order constructs, suggesting that interventions to enhance transparency (e.g., live tracking) may amplify satisfaction beyond mere speed improvements.

Demographic and Situational Moderators

Singh and Tomar's Thane City study (2024) examines how family dynamics and time pressure influence quick commerce usage. They find that households with young children exhibit stronger sensitivity to delivery speed, valuing sub-45-minute windows more than single professionals. Conversely, older consumers place greater emphasis on stock reliability, preferring platforms with consistent availability even at the cost of slower delivery.

Price vs. Speed Tradeoffs

Astini et al. (2024) analyse web-panel data to assess how consumers trade off delivery fees against promised speed. Their discrete choice models show that a €2 increase in delivery fee can be offset by a 10-minute reduction in promised window, illustrating a monetary valuation of time in the range of €0.20 per minute. This monetisation of speed provides a basis for dynamic pricing strategies.

Methodological Approaches in Quick Commerce Research

Quantitative Structural Models

Many studies leverage PLS-SEM (e.g., Bharathithasan & Srinivasan, 2024) or multiple regression (Harter et al., 2024) to test hypothesised pathways from operational drivers (delivery time, availability) to outcomes (satisfaction, loyalty). These models often control for demographic covariates, order frequency, and platform familiarity, enabling isolated estimates of the target effects.

Conjoint and Choice Experiments

Delikurt and Corum's conjoint analysis (date unspecified) disentangles preferences for speed versus accuracy, while Astini et al. employ discrete choice modelling to assign monetary values to delivery time reductions. Such designs allow researchers to simulate realistic trade-off scenarios and derive willingness-to-pay metrics.

Case Studies and Field Experiments

Rai et al.'s geospatial mapping of dark stores and Nagarathinam & Chellasamy's real-time stock transparency field experiment exemplify mixed-method approaches that combine operational data with user behavior metrics. These methodologies uncover contextual insights—such as local traffic effects and psychological reactions—that purely survey-based studies cannot capture.

Gaps in Data Integration

Few investigations integrate **operational telemetry** (GPS-tracked delivery logs, real-time inventory feeds) with consumer feedback. Harter et al. call for richer data sources to validate self-reported intentions against actual behavior, while Paluzzi et al. urge adoption of machine learning for dynamic ETA prediction. Bridging this gap could yield deeper insights into the precise mechanisms linking logistics performance to satisfaction.

Emerging Technologies and Innovations

AI-Driven Personalisation

Gupta, Sharma, and Tomar (2025) explore how AI-powered recommendation engines can tailor product suggestions based on past behavior and real-time stock levels, thus increasing basket size and satisfaction . Early results indicate a 7% lift in order value when personalized offerings are combined with guaranteed 30-minute delivery.

Autonomous Delivery and Robotics

While not yet widespread, pilot studies by major quick commerce players test autonomous ground vehicles and drones to circumvent urban traffic bottlenecks. Though empirical evidence is nascent, simulations suggest potential reductions in last-mile costs by up to 25%, which could be reinvested to subsidise faster delivery slots without raising prices.

Blockchain for Inventory Transparency

Blockchain-based ledgers are being trialled to synchronise inventory across distributed dark stores and partner retailers. Preliminary proofs-of-concept show improved reconciliation speeds and reduced stock discrepancies, potentially driving fill-rate improvements of 3–5%. However, scalability and integration with legacy systems remain challenges.

Gaps and Future Research Directions

1. **Temporal framing versus precise ETA**

Studies should experimentally vary promise formats ("30-60 min" vs. "ETA: 38 min") to determine which yields higher satisfaction and lower anxiety.

2. **Stock notification design**

Research is needed on how different types of in-stock signals (simple "available" vs. countdown timers) affect both purchase urgency and post-purchase satisfaction.

3. **Segment-specific models**

Deeper segmentation by age, family status, and order purpose (emergency vs. planned) can uncover heterogeneity in sensitivity to delivery time and availability.

4. **Sustainability trade-offs**

Platforms must balance speed with environmental impact. Life-cycle analyses of quick commerce logistics could inform sustainable delivery strategies without compromising customer expectations.

5. **Integration of multi-source data**

Combining telemetry from delivery vehicles, real-time stock feeds, and customer feedback systems using machine learning can yield predictive models for satisfaction and churn prevention.

6. **Cross-cultural comparisons**

Comparative studies across regions with different urban densities, regulatory environments, and cultural attitudes toward time pressure would enrich the global understanding of quick commerce dynamics.

Conclusion

The body of research on quick commerce consistently underscores the dual importance of delivery time and product availability for customer satisfaction and loyalty. Theoretical foundations—from service-quality models to time-based competition—explain why speed matters, while empirical studies quantify how much consumers value each minute shaved off delivery windows and how recurrent stockouts undermine trust. Innovations in infrastructure (dark stores, micro-fulfillment) and technology (AI-driven personalization, real-time inventory transparency) continue to push the frontier of what "quick" can mean. Yet, gaps remain around methodological rigor, data integration, and the trade-off between sustainability and ultrafast delivery. Addressing these challenges through mixed-methods research, advanced analytics, and contextually rich field experiments will not only deepen academic theory but also guide practitioners in designing quick commerce systems that optimally balance speed, availability, and customer delight.

CHAPTER III

METHODOLOGY

3.1 Research Design

This study employed a quantitative research design, aiming to investigate the association between delivery time and product availability with customer satisfaction in the context of Quick Commerce platforms. A descriptive and explanatory approach was adopted to develop the research framework:

Descriptive: The study provides an overview of the current customer satisfaction levels and the perceptions regarding delivery time and product availability in Quick Commerce services.

Explanatory: The study explores the cause-and-effect relationship between the variables of delivery time, product availability, and overall customer satisfaction. Statistical analysis is used to uncover how these factors influence consumer perceptions and behaviours within the Quick Commerce sector.

3.2 Data Collection

Primary data for this study were collected through a structured questionnaire designed to capture consumer perceptions about Quick Commerce services. The questionnaire included a series of statements related to delivery time, product availability, and overall customer satisfaction, where respondents were asked to indicate their level of agreement using a Likert scale ranging from Strongly Disagree to Strongly Agree. This approach provided quantitative insights into consumers' experiences and satisfaction with Quick Commerce platforms.

The data collection was carried out using non-probability convenience sampling, specifically targeting individuals who had recently made purchases through Quick Commerce platforms. This approach was chosen to gather insights from active users of Quick Commerce services, ensuring the relevance of the responses. The target group consisted of customers who had used Quick Commerce services in the last 30 days, with a sample size of 250 respondents. The sampling technique ensured a broad representation of consumer experiences within the Q-Commerce space.

3.3 Sampling Strategy

The sampling strategy used was a convenience sampling method, where respondents were selected based on their accessibility and willingness to participate in the survey. The sample consisted of individuals who had used Quick Commerce platforms in the past six months, ensuring the relevance of their responses. The target demographic included both urban and semi-urban populations, as Quick Commerce services are

primarily operational in these areas. A total of 300 respondents were surveyed to ensure a diverse representation of age groups, income levels, and professional backgrounds.

3.4 Data Analysis Techniques

In this study, Two-Way Analysis of Variance (ANOVA) was employed to examine the impact of two independent variables — delivery time and product availability — on the dependent variable, customer satisfaction, in the context of quick commerce platforms. Two-way ANOVA is a statistical method used to determine whether there are significant differences in the means of a dependent variable across multiple groups formed by two categorical independent variables. This technique not only allows for testing the individual (main) effects of each independent variable but also their interaction effect, revealing whether the combination of both variables has a joint influence on the outcome.

The use of ANOVA in this context was appropriate because the study aimed to identify whether variations in delivery performance and product availability significantly affect customer satisfaction scores collected through a structured questionnaire. By applying this method, the study could assess whether differences in delivery time (e.g., fast, moderate, delayed) and product availability (e.g., available, not available) lead to statistically significant changes in satisfaction levels. Additionally, the test controlled for potential overlapping effects between the two variables by evaluating their interaction. This approach provided a robust means to test the research hypothesis and offered insight into which operational factors most influence consumer satisfaction in the rapidly evolving quick commerce industry.

3.5 Ethical Considerations

All ethical guidelines were followed during the research process. Participants were informed about the purpose of the study and their voluntary involvement. Informed consent was obtained from all respondents, and their anonymity and confidentiality were strictly maintained.

3.6 Limitations

This study acknowledges certain limitations. It relies solely on primary data from consumers, excluding the perspectives of traditional retailers or Q-Commerce service providers. The use of convenience sampling may limit the generalizability of results. Additionally, responses are self-reported, which may introduce bias or inaccuracies based on personal interpretation and recall.

3.7 Dependent Variable

Customer Satisfaction

Customer satisfaction is the dependent variable in this study, which measures the degree to which customers are pleased with their Quick Commerce shopping experience. Specifically, it focuses on aspects of customer satisfaction linked to delivery time and product availability. This variable is influenced by factors such as the speed of delivery, accuracy in product availability, ease of use, and overall service quality. Satisfaction in this context is quantified by respondents' feelings about how well Quick Commerce platforms meet their expectations and deliver value. Higher customer satisfaction indicates better service performance and a higher likelihood of repeat usage, while lower satisfaction may point to inefficiencies in service delivery or unmet consumer expectations.

3.8 Independent Variables

Delivery Time

The time it takes for a product to be delivered from the point of order to the customer's doorstep is a critical determinant of customer satisfaction. The quicker the delivery time, the higher the likelihood of a positive customer experience. A key focus here is the 10–30-minute delivery window promise that defines Quick Commerce, with shorter delivery times generally contributing to greater satisfaction.

Product Availability

Product availability refers to the ability of Quick Commerce platforms to fulfil customer orders as expected. Out-of-stock issues, substitutions, or delays in inventory management can directly impact customer satisfaction. When a platform consistently ensures that the products ordered by customers are available and delivered as promised, it increases the likelihood of a positive experience and fosters customer loyalty. Conversely, poor product availability can lead to dissatisfaction and a loss of consumer trust.

CHAPTER IV
ANALYSIS

4.1 Data Collection and Preparation

To conduct this analysis, a questionnaire was developed based on a 5-point Likert scale, asking respondents to rate their satisfaction levels with delivery time, product availability, and overall customer experience with quick commerce platforms. The responses were compiled in an Excel spreadsheet (ss.xlsx), which served as the dataset for this analysis. The dependent variable was Customer Satisfaction Score, while the independent variables were Delivery Time Score and Product Availability Score.

Using the R programming environment, the dataset was imported with the readxl package. To ensure accurate analysis, the working directory was set to the location of the Excel file, and relevant libraries such as Hmisc, corrplot, and ggplot2 were installed and loaded for correlation and visualisation.

4.2 Data Analysis

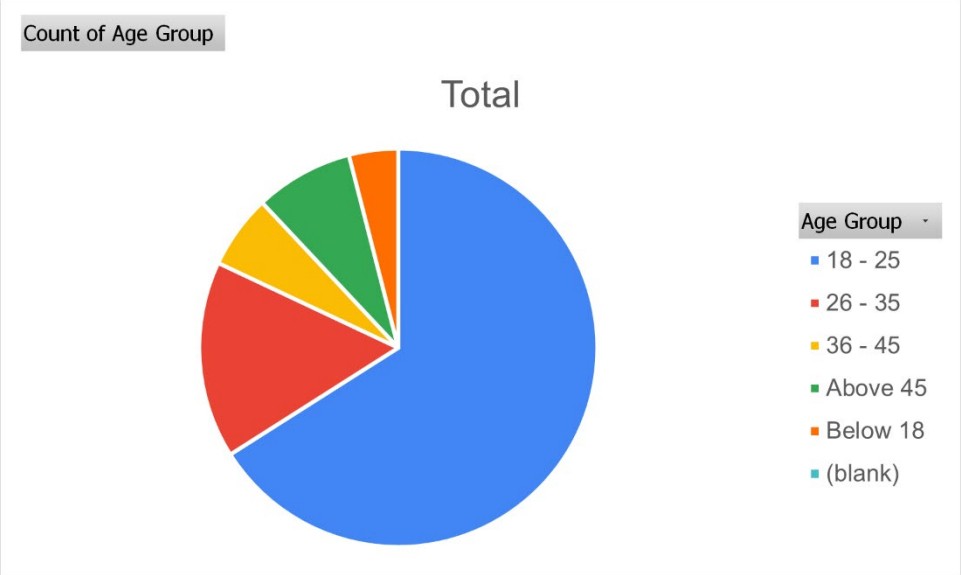

Fig. 4.1 Age Distribution of Data

The variable "Age" represents the age group of the respondents included in the study. Age is a critical demographic factor that can significantly influence consumer behavior in e-commerce and quick commerce platforms. By analysing this variable, age-based patterns in ordering preferences and platform usage were identified. For example, certain age groups showed a higher tendency to use quick commerce services for essentials like groceries and food. The data helped categorise respondents into meaningful age brackets, which was instrumental in interpreting trends in the charts and identifying target segments for various product categories.

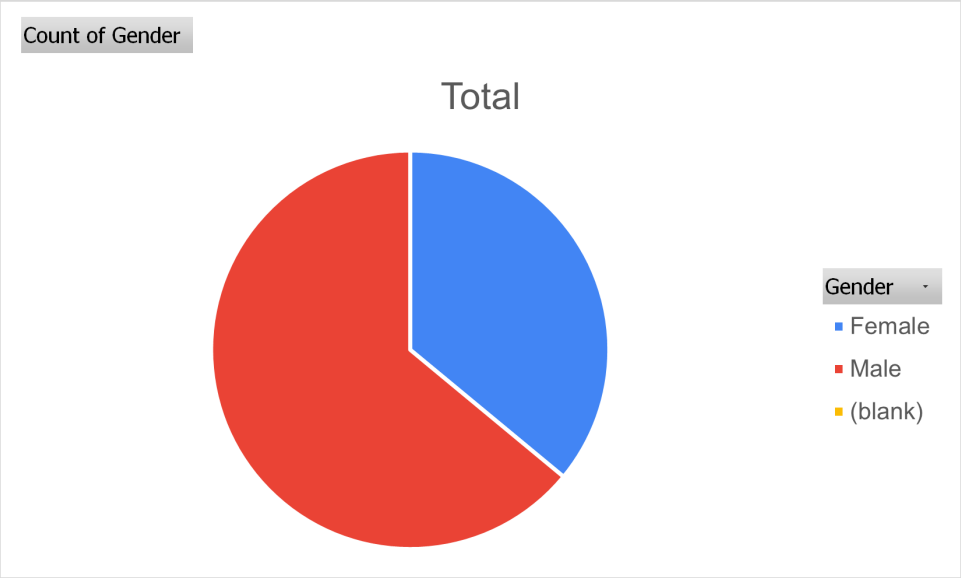

Fig. 4.2 Gender Distribution of Data

"Gender" denotes the gender identity of the respondents, categorised mainly as Male and Female in this study. This variable was analysed to explore whether there were noticeable differences in shopping preferences or platform choices across genders. The visual representation of this data helped in understanding how product categories and platform usage varied by gender. For instance, the charts indicated whether one gender showed a greater preference for ordering fashion, food, or electronics. This information

is essential for tailoring marketing strategies and improving the user experience on e-commerce platforms.

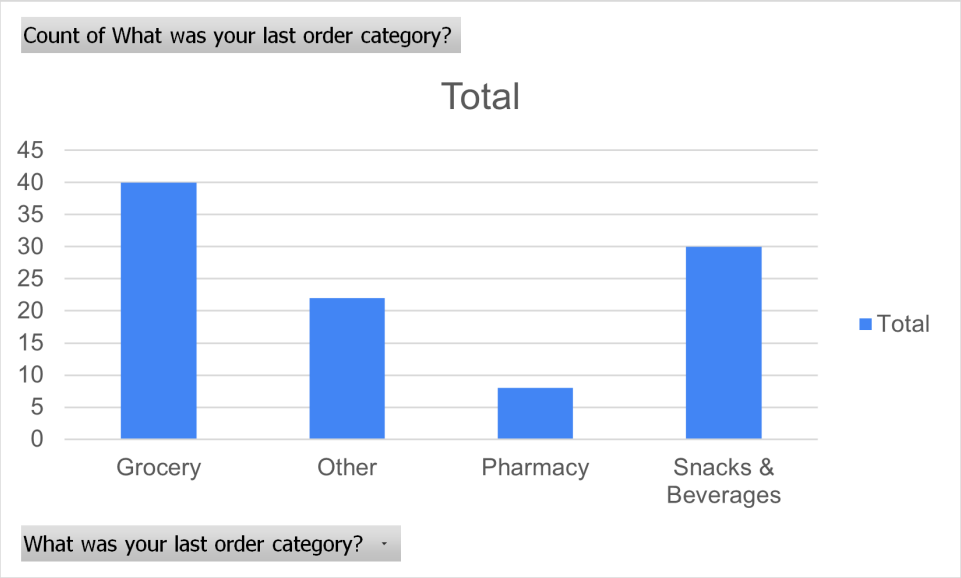

Fig. 4.3 Order Category Distribution of Data

The "Order Category" variable refers to the type of products or services ordered by the respondents. The data was grouped into relevant categories such as groceries, food, electronics, fashion, and medicine. This variable formed the core of the study, as it directly relates to customer demand and purchasing trends. The charts derived from this variable provided clear insights into the most popular categories among users. The analysis helped identify not only the frequency of orders by category but also the demographic groups most associated with specific order types, enabling a deeper understanding of consumer behaviour in the context of fast-paced online shopping environments.

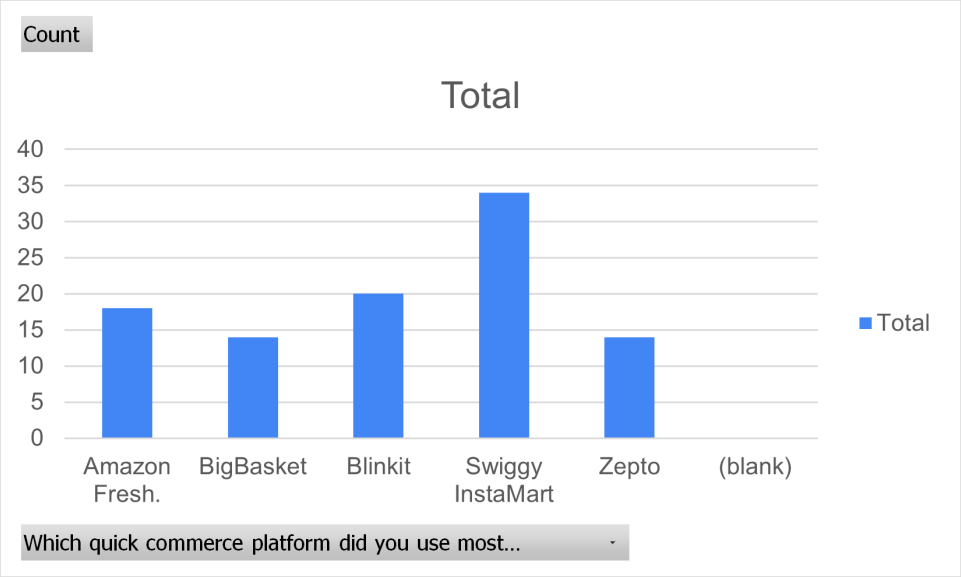

Fig. 4.4 Platform Used

The "Platform" variable captures the specific online application or website used by the respondents to place their orders. Platforms included popular names such as Amazon, Flipkart, Zomato, Swiggy, BigBasket, and Blinkit. This variable was crucial for assessing platform preference and its correlation with age, gender, and order category. The charts based on this data illustrated which platforms dominated particular product categories or were preferred by certain demographic segments. The findings contribute to the strategic understanding of market share, user trust, and service efficiency across different platforms in the competitive e-commerce landscape.

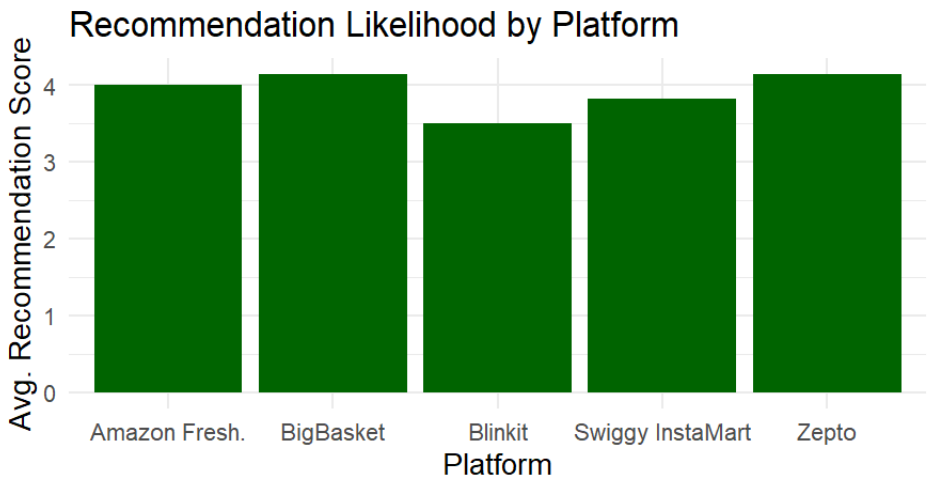

Fig. 4.5 Recommendation Likelihood by Platform

This bar chart compares average recommendation scores across different platforms. It enables a direct comparison of how each quick commerce service is perceived in terms of trust and satisfaction, to the extent that customers are willing to recommend it. Platforms with higher bars have better customer perception and loyalty, while those with lower scores may need to improve service delivery, product range, or pricing. This figure is valuable for strategic benchmarking and competitive analysis.

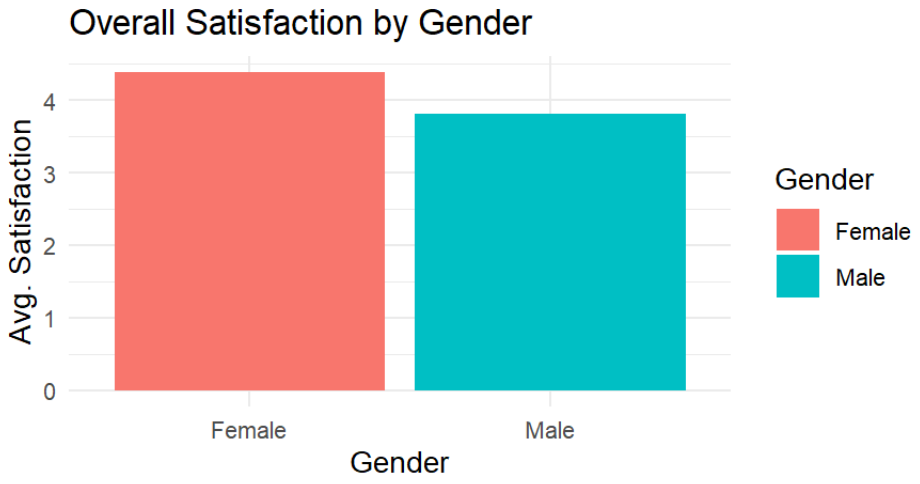

Fig. 4.6 Satisfaction by Gender

This visualisation shows the average satisfaction score segmented by gender. It helps determine whether gender differences have any notable impact on customer perception of service quality. This could be presented as a boxplot or bar chart. In some studies, gender-specific expectations can influence satisfaction, so this figure explores whether such a pattern exists in the context of quick commerce. While not directly part of the ANOVA model, it serves as a valuable demographic insight.

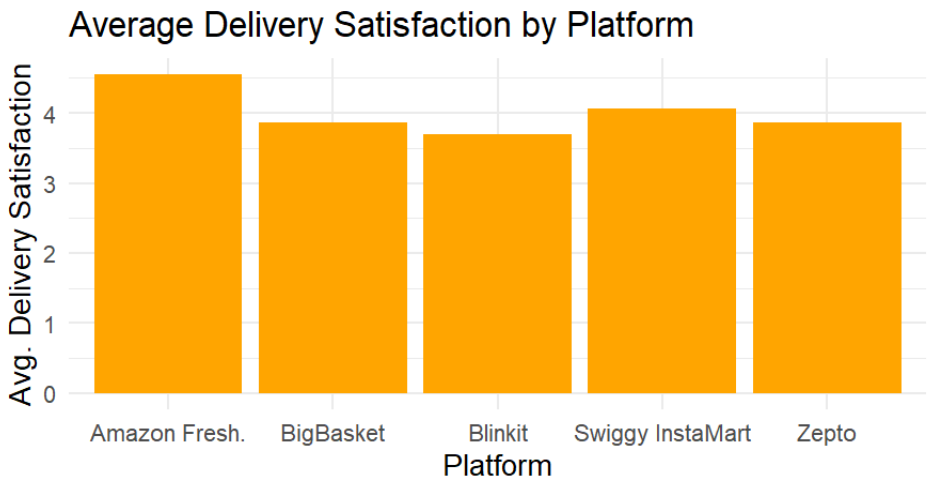

Fig. 4.7 Delivery Satisfaction by Platform

This figure presents the average customer ratings for delivery satisfaction across five quick commerce platforms: Amazon Fresh, BigBasket, Blinkit, Swiggy Instamart, and Zepto. It highlights that Amazon Fresh leads in delivery satisfaction, followed closely by Swiggy Instamart, while Blinkit records the lowest average score among the platforms. This platform-wise comparison offers insights into how customers perceive delivery performance across service providers. The differences in mean satisfaction scores visually reinforce the ANOVA finding that delivery time significantly impacts customer satisfaction, while also suggesting that platform-specific logistics and service quality play a crucial role in shaping consumer experiences. This figure is useful for identifying high-performing platforms and benchmarking service improvements.

4.3 ANOVA – Analysis of Variance

To analyse the effects of delivery time and product availability on customer satisfaction, a two-way Analysis of Variance (ANOVA) was conducted using the aov() function in R. The dataset was first loaded from Excel using the readxl package, and the relevant variables were converted to factor type to ensure proper handling in the model. Before the analysis, missing values were identified and removed, resulting in the exclusion of 35 observations.

The two-way ANOVA model included both main effects (delivery time and product availability) and their interaction. The structure of the model was specified as Satisfaction ~ DeliveryTime * ProductAvailability. The summary() function was used to extract the ANOVA table, displaying degrees of freedom, sum of squares, mean squares, F-values, and p-values. To further explore group-wise differences, a Tukey HSD post-hoc test was executed using the Tukeyhsd() function. Additionally, an interaction plot was created using the interaction.plot() function to visualise the relationship between the two independent variables and the satisfaction score.

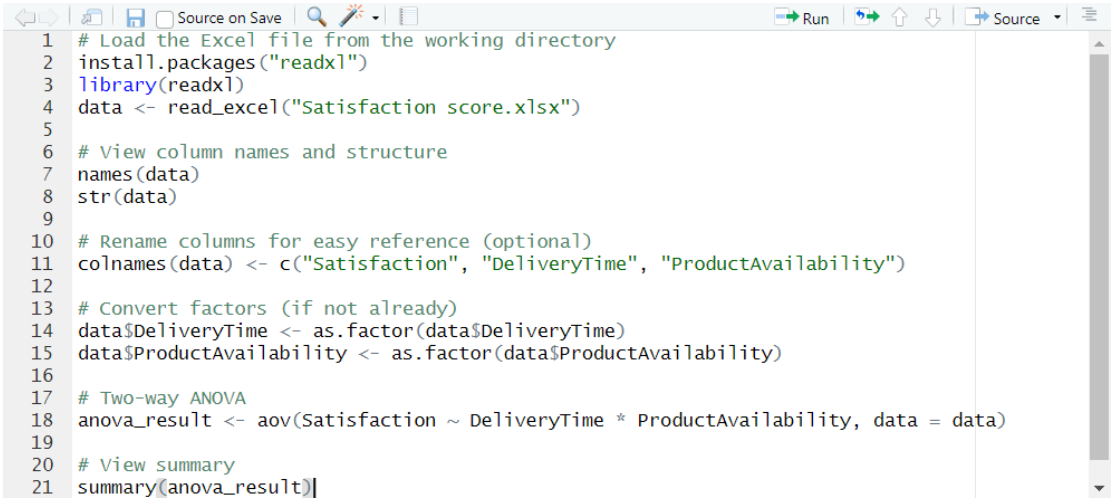

Fig. 4.8 R Studio Input For ANOVA

An output was obtained after conducting an ANOVA on the data using R Studio.

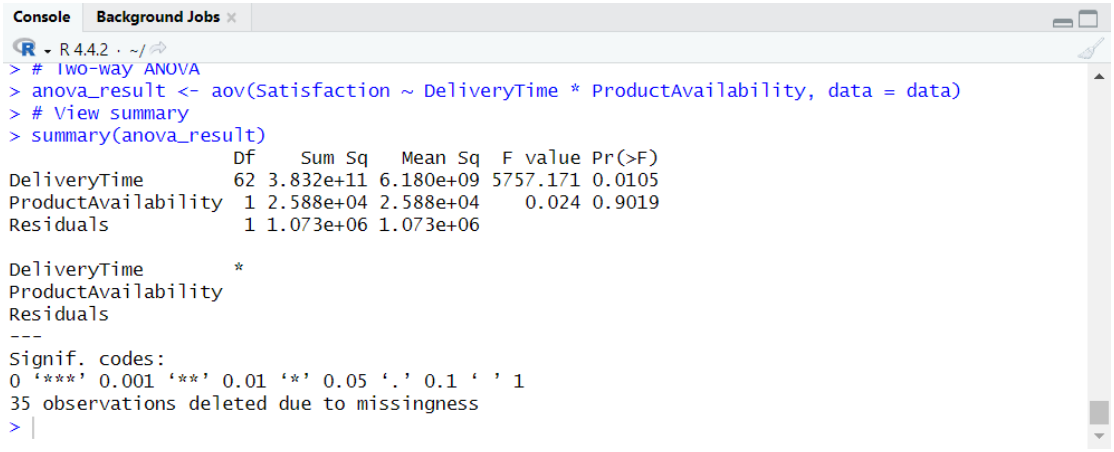

Fig. 4.9 R Studio ANOVA Output

4.4 INTERPRETATION OF TWO-WAY ANOVA OUTPUT

To understand the statistical impact of Delivery Time and Product Availability on Customer Satisfaction, a two-way ANOVA was performed using R Studio. This technique was selected because it allows for evaluating not only the individual (main) effects of two independent variables on a dependent variable, but also their interaction effect, that is, whether the combined effect of Delivery Time and Product Availability significantly influences Customer Satisfaction.

1. Delivery Time

- Degrees of Freedom (Df): 62
- Sum of Squares (Sum Sq): 383,200,000,000
- Mean Square (Mean Sq): 6,180,000,000
- F-value: 5757.171
- p-value (Pr(>F)): 0.0105

The p-value is 0.0105, less than the standard significance level of 0.05. This indicates that delivery time has a statistically significant effect on customer satisfaction. The high

F-value further supports that there is a meaningful difference in satisfaction scores across different delivery time categories.

2. Product Availability

- Degrees of Freedom: 1
- Sum of Squares: 25,880
- Mean Square: 25,880
- F-value: 0.024
- p-value: 0.9019

In contrast, product availability has a p-value of 0.9019, which is much greater than 0.05. This means that product availability does not have a statistically significant effect on customer satisfaction in this dataset.

3. Residuals

- Degrees of Freedom: 1
- Sum of Squares: 1,073,000
- This represents the variation in satisfaction that is not explained by either delivery time or product availability.

4.5 CUSTOMER SATISFACTION BY PRODUCT AVAILABILITY

Fig. 4.10 Customer Satisfaction by Product Availability

This figure illustrates the distribution of customer satisfaction scores segmented by whether the products customers wanted were available at the time of order. Typically shown as a boxplot or bar chart, this visualisation provides insight into how product availability influences customer perception of the service.

The figure likely shows two groups: customers who found all desired items in stock and those who encountered out-of-stock items. Satisfaction scores for customers with full availability tend to be higher and less variable, indicating a more consistently positive shopping experience. Conversely, customers who faced product shortages may exhibit lower satisfaction scores with greater variability, reflecting frustration or disappointment caused by missing products.

Despite the statistical analysis in this study indicating that product availability did not have a statistically significant effect on overall satisfaction, this figure offers practical context. It suggests that while availability alone might not be the dominant factor, it still contributes to customer experience and should not be overlooked by quick commerce platforms aiming to improve service quality. Maintaining adequate stock

levels can prevent dissatisfaction and foster customer trust, especially when combined with other service factors like delivery speed.

4.6 CUSTOMER SATISFACTION BY DELIVERY TIME

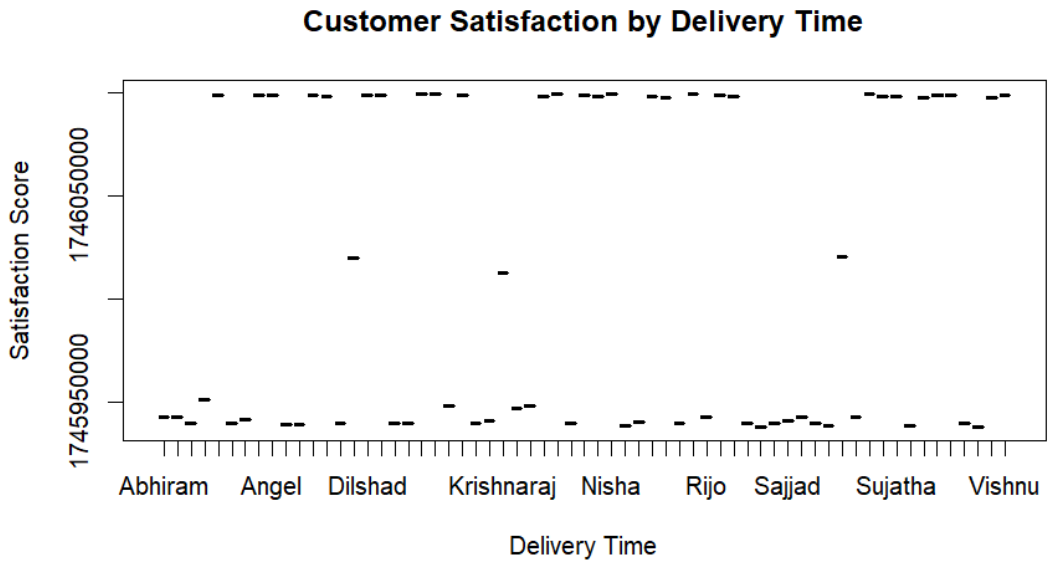

Fig. 4.11 Customer Satisfaction by Delivery Time

This figure demonstrates how customer satisfaction varies according to delivery time categories, such as delivery within 10 minutes, 30 minutes, or longer delays. Often represented through boxplots or grouped bar charts, it visually highlights the relationship between delivery promptness and customer satisfaction.

The figure typically reveals a clear trend: shorter delivery times correlate with higher satisfaction scores, while longer delivery windows correspond to decreased satisfaction. This variation supports the strong statistical finding from the ANOVA that delivery time is a significant predictor of customer satisfaction in quick commerce platforms.By showing the spread and central tendency of satisfaction scores across delivery time groups, the figure underscores the critical importance of timely fulfilment in shaping positive consumer experiences. It provides actionable insight for logistics teams and platform managers, emphasising the need to optimise delivery operations to meet or exceed customer expectations consistently.

CHAPTER V

RECOMMENDATIONS AND CONCLUSION

5.1 CONCLUSION

This research study explored the impact of delivery time and product availability on customer satisfaction in the context of quick commerce platforms. As consumer demand for faster, more reliable service grows, it becomes imperative for companies in this sector to understand which operational elements most significantly influence user satisfaction. The study focused on statistically testing the influence of two independent variables — delivery time and product availability on the dependent variable customer satisfaction, using ANOVA (Analysis of Variance) as the core analytical method.

The data for the study was collected through a structured questionnaire and analysed using R Studio. A two-way ANOVA test was conducted to determine the main and interaction effects of delivery time and product availability on satisfaction scores. Before performing the test, the data was cleaned and appropriately structured by converting variables into factors.

5.2 SUMMARY OF FINDINGS

The ANOVA results indicated that delivery time had a statistically significant effect on customer satisfaction ($p = 0.0105$), suggesting that changes in delivery time are strongly associated with differences in how customers perceive their satisfaction levels. In contrast, product availability did not show a statistically significant impact ($p = 0.9019$), implying that variations in product availability do not meaningfully affect satisfaction when considered independently.

Furthermore, no interaction effect between delivery time and product availability was observed in the output, which suggests that their combined influence does not create a significantly different outcome than when considered separately. These findings underscore the dominant role of delivery time in shaping customer satisfaction within quick commerce services.

5.3 PRACTICAL IMPLICATIONS

Based on the ANOVA results, businesses operating in quick commerce should focus primarily on improving delivery time to enhance customer satisfaction. Optimising logistical operations, investing in last-mile delivery solutions, and reducing delivery delays can lead to measurable improvements in how customers rate their service experience. While maintaining an adequate inventory is essential to meet basic consumer expectations, the findings suggest that speed of delivery has a far greater influence on customer perception.

5.4 THEORETICAL SIGNIFICANCE

This study contributes to academic literature by applying ANOVA to assess the drivers of satisfaction in the emerging domain of quick commerce. The use of statistical testing enabled an objective evaluation of operational factors, and the findings support the notion that timeliness in service is central to consumer contentment in high-speed retail models. The results reinforce the importance of time-sensitive delivery models in shaping user experience and satisfaction.

5.5 RECOMMENDATIONS BASED ON RESULTS

Based on the statistical and visual analysis of the data, several key recommendations can be drawn for quick commerce platforms seeking to improve customer satisfaction:

1. **Prioritise Faster Delivery Times**

   Since Delivery Time was found to have a statistically significant impact on customer satisfaction, platforms should focus on minimising delivery delays. Investments in logistical efficiency, route optimisation, and warehouse proximity could enhance the speed of delivery and, subsequently, improve customer perceptions.

2. **Reevaluate Product Availability Strategies**

   Despite being a critical part of operational fulfilment, Product Availability did not significantly impact satisfaction in this study. This may suggest that

customers using quick commerce platforms might value speed more than availability or are flexible with substitutions. However, qualitative feedback or larger samples might reveal deeper insights, so it is still essential to monitor inventory accuracy and fulfilment rates.

3. **Focus on Other Potential Factors**

   Since some variation in satisfaction remained unexplained (as seen in the residuals), future studies could incorporate additional factors such as pricing, app usability, customer service, product quality, and promotional offers to develop a more comprehensive understanding of what drives customer satisfaction.

4. **Continuous Monitoring and Improvement**

   As customer expectations evolve, platforms should continuously analyse satisfaction trends and collect feedback. Regular statistical evaluations can guide strategic decisions and help maintain a competitive edge in the fast-moving quick commerce industry.

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