"Impact of Real-Time Tracking Systems on Customer Satisfaction in E- Commerce Deliveries among Chennai Customers"

Catherine S[1], (Guided by) Pearline Jebamalar Blessy J[2]

[1]student, III B.COM (Accounting & Finance) Women's Christian College, Chennai (Affiliated to University of Madras), India
[2]Assistant Professor, Department of Commerce (Accounting & Finance), Women's Christian College, Chennai (Affiliated to University of Madras), India

Abstract-- **Real-time tracking has become critical in e-commerce deliveries, thanks to rapid digital growth and increased expectations among Chennai's online customers.**

Customers can use GPS, RFID, and mobile tracking apps to track their orders from dispatch to delivery, increasing transparency and control. This study looks into how these technologies affect customer satisfaction, trust, and service quality in Chennai. It looks at how delivery openness boosts confidence, GPS and RFID improve tracking accuracy, and timely updates reduce uncertainty.

Concerns around data privacy, system security, and accountability are also addressed, as is the importance of sustainable delivery techniques. Includes the eco-friendly packaging.

Keywords-- **Real-time tracking, GPS, RFID, customer satisfaction, transparency, trust, Chennai, privacy, e-commerce, eco- friendly and sustainable packaging.**

I. INTRODUCTION

As online buying grows, real-time tracking via GPS, RFID, and applications provides timely information that boost confidence and eliminate ambiguity. Customers in Chennai feel more in control and, transparent tracking, which improves service quality and accountability. Sustainable packaging and environmentally friendly delivery methods add to customer happiness.

II. OBJECTIVES OF STUDY

- To examine the influence of real- time tracking transparency on customer trust in Chennai.
- To analyse the role of modern technologies such as GPS, IoT and RFID in enabling effective real- time tracking for e-commerce deliveries.
- To determine how timely tracking updates influence Chennai customers' perceptions of delivery service quality.
- To assess the privacy and accountability in deliveries by enhancing data security.
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- To evaluate combined environmental benefits towards sustainable packaging.

III. RESEARCH GAP

- Limited studies focused specification on Chennai customers.
- Lack of combined Analysis of GPS, RFID, IoT, and Data security.
- Few studies link tracking transparency with trust and accountability.
- Environment benefits of Sustainable Packaging are less examined.

IV. SCOPE AND LIMITATIONS OF STUDY

This study investigates the effects of real- time monitoring technology on Chennai- based internet shopper's happiness and delivery experience. Transparency, accuracy, timely updates, and issues with accountability and data security are its main concerns. Additionally, the study looks at how sustainable and eco-friendly packaging raises customer happiness.

V. METHODOLOGY

- A Quantitative Survey Method was used to collect numerical data related to Real-time tracking and customer satisfaction.
- The study was focused on Chennai E- commerce Customer, who are the primary users of online delivery and tracking system.
- Data was gathered using a Structured questionnaire that included questions on Demographics, Tracking awareness, Service quality, Privacy, and Sustainability.
- Responses were studied using descriptive statistics, including percentages and charts, to identify customer perception and tracking related trends.

VI. REVIEW OF LITERATURE

1. Edhie Budi Setiawan (2023) studied how customer trust is impacted by online tracking and timeliness; nevertheless, previous studies seldom take into account the unique delivery requirements of Chennai's e-commerce clients. There is still much to learn about the effects of real-time GPS and IoT tracking, as well as data security, privacy, and sustainability issues. Therefore, a targeted study is needed to comprehend how real-time tracking affects consumer happiness in Chennai.

2. Mayank Dwivedi, Gourav Dey (2025) studied Chennai's online deliveries studied real-time tracking in supply chains but did not examine customer satisfaction, privacy concerns, or sustainability links in Chennai's e-commerce context. This study fills those gaps by assessing how real-time tracking affects customer satisfaction in Chennai."

3. Bowie Hu (2025) In Chennai, studies emphasize cost and logistics rather than client happiness. IoT, RFID, and GPS technology are discussed without regard for the needs of the customers. Concerns about privacy are disregarded. There is a lack of connection between sustainability and enjoyment. This study examines how real-time tracking boosts customer happiness in Chennai.

4. Regina Emiliana (2025) studies at delivery transparency among students, but not among Chennai's larger e-commerce clientele. The study ignores concerns about responsibility, privacy, data security, sustainability, and the impact of GPS and RFID on happiness. By evaluating the effect of real-time tracking on consumer satisfaction in Chennai's e- commerce delivery, this study closes these gaps.

5. Vijay Mallika Reddy **(2024)** In Chennai, studies have focused on real-time data efficiency rather than client pleasure. They disregard GPS/RFID's impact on user privacy,security, trust, sustainability, and usability. This study bridges the gap by investigating how real-time tracking influences customer happiness.

Short Survey Summary

| Survey Item	Result
Total Respondents	162
Main Location	Chennai
Age group majority	18-25(72.7%)
Awareness of Tracking	84.9% aware
Most Trusted Platform	Amazon (99%)

VII. DATA ANALYSIS AND INTERPRETATION

Age: The study mainly reflects the views of younger consumers, with 72.7% aged 18– 25, while the 25–40 (13.9%), 40–60 (11.5%), and 60+ groups form smaller portion.
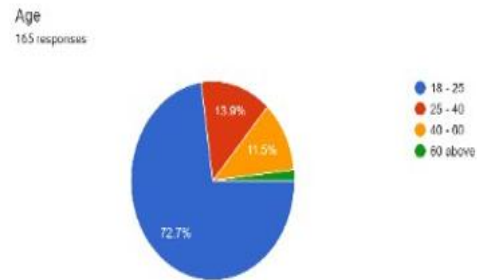
Gender: Both male and female respondents participated, ensuring balanced perspective
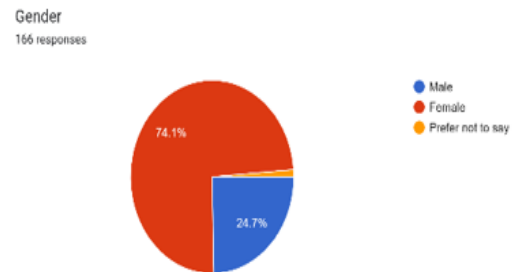
Occupation: The study primarily represents the perspectives of young, educated Chennai users, with students accounting for 68.1% of respondents, followed by employees (21.1%), company owners (8.4%), and a few others.
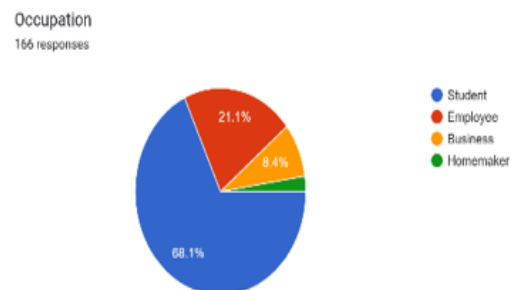
VIII. AWARENESS AND USE OF TRACKING SYSTEM

One average, how many online deliveries do you receive in a month?

Most Chennai respondents receive deliveries not frequently (45.8%) or monthly (33.1%), with fewer receiving them weekly (14.5%) or daily (6.6%), demonstrating a wide range of tracking system usage.


On average, how many online deliveries do you receive in a month?
166 responses
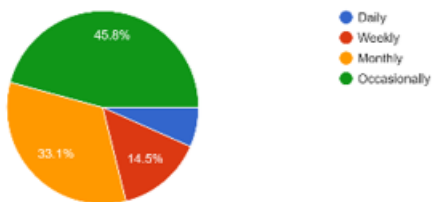
Are you aware of real-time tracking systems used in e-commerce deliveries?

84.9% of Chennai respondents said they were aware of real-time tracking systems in e-commerce deliveries, while only 15.1% said they weren't.
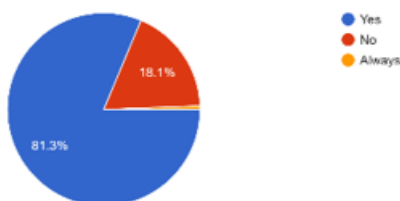

Are you aware of real-time tracking systems used in e-commerce deliveries?
166 responses
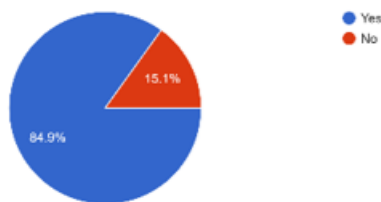
When you can track your order at all times, do you feel more secure?

81.3% of Chennai respondents said they feel more comfortable when they can always track their order, while 18.1% disagreed.


When you can track your order at all times, do you feel more secure?
166 responses

Which e-commerce platform provide the reliable tracking services?

Amazon had the greatest rating for dependable tracking among Chennai respondents (99%), followed by Flipkart (81%), Meesho (71%), and other platforms (31%)
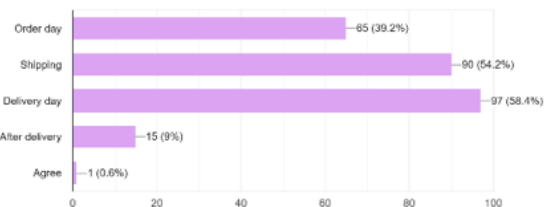

Which e-commerce platform provides the most reliable tracking services?
166 responses
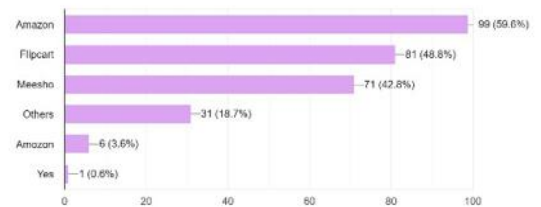
When do you usually check your tracking status?

Few Chennai respondents check their tracking status on the order day (65%) or after delivery (15%), with the majority checking on the delivery day (97%) and shipment day (90%).


When do you usually check your tracking status?
166 responses

Have you ever experienced a delay even through "Out for Delivery was displayed on the tracking?

Most Chennai respondents have experienced a delay even when 'out for delivery' was shown, with 74.1% saying yes and 25.3% saying no.

Have you ever experienced a delay even though "Out for Delivery" was displayed on the tracking?
166 responses
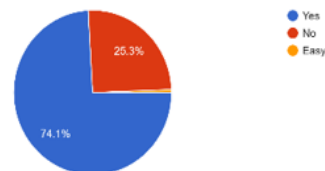
The role of GPS/ IoT/RFID in Enabling Accurate Real-Time tracking? [strongly agree, Agree, Neutral, strongly disagree, Disagree]

The chart shows that Chennai respondents believe GPS and IoT improve delivery accuracy and provide reliable, user-friendly updates, with the highest trust seen in GPS- based tracking.
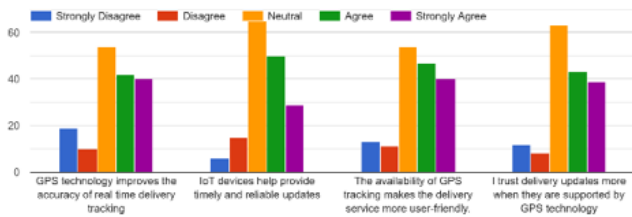
Time Updates influence in Chennai customer's perception of service quality?

The chart shows that Chennai respondents feel more confident and informed when tracking updates are timely and frequent, while delayed updates reduce their satisfaction.
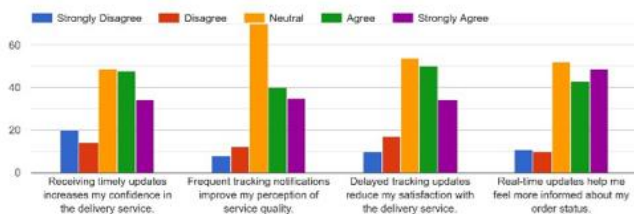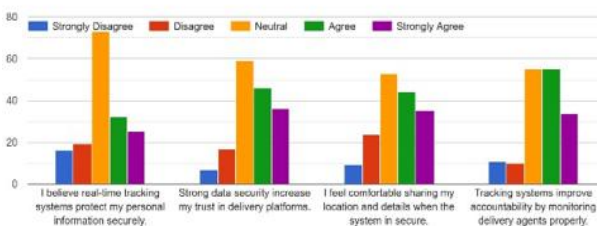

Privacy and Accountability in deliveries through enhance data security?

Chennai respondents respect secure monitoring, believing that good data security enhances confidence and responsibility; nevertheless, their attitudes on personal data privacy differ.
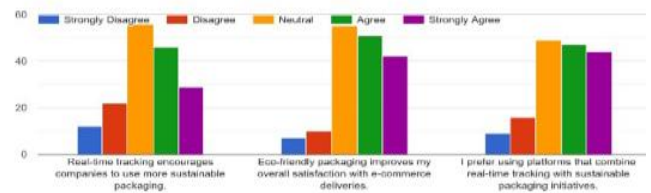

Evaluate environment benefits through sustainable packaging practices

Chennai respondents respect eco-friendly packaging and prefer solutions that provide both sustainable practices and real-time tracking, while their perspectives on tracking driving sustainability varied.

Correlation analysis

Sample size – 162

Relationship between Real-time tracking Factors and Chennai customer Satisfaction.

Variables	Correlation	Relationship
Timely tracking updates	0.72	Strongly positive
GPS/IoT/ RFID	0.65	Moderate Positive
Data Security &Accountabi lity customer trust	0.61	Strongly positive
Eco-Friendly Packaging	0.77	Strongly Positive

The correlation result exposition a positive relationship between real-time tracking factors and Chennai customer satisfaction, enhanced that ameliorate tracking systems and sustainable practices increase customer trust and satisfaction among Chennai e- commerce customers.

Regression Analysis

Independent Variable	Beta Value	Result (t-value, p-value
Timely Tracking updates	0.42	Significant (t- 4.86, p< 0.05)
GPS/IoT/RFID Accuracy	0.31	Significant (t-3.92, p< 0.05)
Data Security & Accountability	0.27	Significant (t-3.45, p< 0.05)
Eco-Friendly Packaging	0.22	Significant (t-2.98, p< 0.05)

The regression analysis shows that all the studied elements have a significant strike on customer satisfaction. Timely tracking updates have the authoritative, emphasizing the value of offering customers with real- time delivery Facts. Accurate GPS/IoT/RFID tracking makes certain reliability, while data security and accountability build trust. Eco friendly packaging also positivity affects satisfaction, through its collision is comparatively minor, focusing on these factors can enhance the overall customer experience effectively

IX. SUMMARY

The study which included 162 Chennai respondents, the majority are students and women. According to tracking data, Amazon is the most trustworthy platform, followed by Flipkart and Meesho.

Real- time technologies such as GPS, IoT, and RFID aid in providing accurate updates, enhancing customer's sense of control and service quality. Users in Chennai value good data security since it improves privacy and accountability in deliveries. Customer satisfaction in Chennai is further enhanced by sustainable packaging and eco-friendly methods.

X. CONCLUSION

Based on the research results of this study, real-time tracking improves customer trust, contentment, and service quality in Chennai. It achieves all goals by investigating transparency, new technology such as GPS/IoT, timely updates, and privacy concerns. The study also addresses weaknesses in data security and sustainable packaging. Overall, accurate tracking and secure, sustainable processes increase client trust in e-commerce deliveries.

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