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Innovations in Last-Mile Delivery Solutions in Urban Courier Logistics: A Case Study of Franch Express Courier Pvt. Ltd.

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Abstract: ***Last-mile delivery has become one of the most critical components in modern logistics due to the rapid expansion of e-commerce and increasing customer expectations for faster delivery services. Urban courier logistics faces multiple operational challenges such as traffic congestion, delivery delays, rising transportation costs, environmental concerns, and inefficient resource utilization. To overcome these challenges, logistics companies are increasingly adopting innovative technologies and delivery models to improve efficiency and service quality.This study focuses on innovations in last-mile delivery solutions implemented in urban courier logistics with special reference to FF Franch Express Courier Pvt. Ltd. The research examines how technological advancements such as route optimization systems, real-time parcel tracking, Electronic Proof of Delivery (EPOD), and digital communication platforms contribute to operational efficiency and customer satisfaction. The study also highlights the role of sustainable delivery practices and smart logistics solutions in minimizing delivery time and operational costs.The findings emphasize that innovation-driven logistics strategies significantly enhance delivery performance, improve transparency, and strengthen customer trust. The study concludes that effective adoption of last-mile delivery innovations is essential for courier companies to remain competitive in today's dynamic logistics environment.***
Keywords: Last-Mile Delivery, Urban Logistics, Courier Services, Delivery Innovation, Route Optimization, E-Commerce Logistics, Customer Satisfaction, Smart Logistics, Sustainable Delivery, Supply Chain Efficiency.

I. INTRODUCTION

The global logistics industry has undergone a major transformation with the rapid growth of digital commerce and changing consumer purchasing behavior. Online shopping platforms have increased the demand for quick, reliable, and flexible delivery services, making logistics operations more complex than ever before. Among various stages of logistics operations, last-mile delivery refers to the final movement of goods from a distribution hub or warehouse to the customer's doorstep. This stage plays a vital role in determining overall service quality and customer satisfaction. To address these challenges, courier organizations are adopting innovative last-mile delivery solutions supported by digital technologies and automation. Innovations such as GPS-based route optimization, mobile delivery applications, Electronic Proof of Delivery (EPOD), automated tracking systems, and data-driven logistics planning help reduce delivery time and improve accuracy. Additionally, environmentally sustainable practices including electric delivery vehicles and optimized transportation planning are gaining importance in urban logistics management. FF Franch Express Courier Pvt. Ltd. operates in a highly competitive courier service environment where efficiency, reliability, and customer experience are key performance indicators. The company has implemented several innovative delivery practices aimed at improving operational productivity and enhancing service responsiveness in urban locations. Understanding the effectiveness of these innovations becomes essential for evaluating logistics performance and identifying future improvement opportunities. Therefore, this study aims to analyze the role of innovations in last-mile delivery solutions and their impact on delivery efficiency, technology adoption, and customer satisfaction within urban courier logistics operations. The research contributes to understanding how innovation-driven logistics strategies support sustainable growth and competitiveness in the courier industry.

II. OBJECTIVES

1) To analyze current last-mile delivery practices.
2) To assess challenges faced in urban last-mile logistics.

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3) To evaluate the effectiveness of innovations (like route optimization, EPODs).
4) To assess customer satisfaction with last-mile delivery services.
5) To understand the role of technology adoption among delivery staff and hubs.
6) To suggest improvements for enhancing last-mile delivery efficiency and sustainability.

III. LIMITATIONS

1) The study is limited to urban regions, primarily focusing on Franch Express operations in Coimbatore and select Tier-I cities; hence, the results may not fully represent rural or intercity logistics environments.
2) The sample size of 108 respondents, while adequate for descriptive analysis, may not capture all variations in customer behavior and operational challenges across wider networks.
3) Data was collected using a structured Google Form; hence, the responses depend on participants' self-reported accuracy and may contain bias.

IV. RESEARCH METHODOLOGY

The study adopts a descriptive research design to examine the innovations implemented in last-mile delivery operations at FF Franch Express Courier Pvt. Ltd. The area of study is limited to the organization's urban courier logistics operations. Both primary and secondary data were used for analysis, where primary data were collected through structured questionnaires administered to respondents, and secondary data were gathered from journals, websites, and relevant literature sources. The total sample size consisted of 108 respondents, including delivery executives, hub managers, and customers, selected using a stratified random sampling technique to ensure balanced representation of different stakeholder groups. The study was conducted over a period of six months. Collected data were analyzed using descriptive and inferential statistical tools such as percentage analysis, cross-tabulation, and chi-square test to evaluate relationships between delivery innovations, operational efficiency, and customer satisfaction.

V. REVIEW OF LITERATURE

Deloitte India (2021), reported that electric vehicle adoption in delivery fleets could reduce operational costs by up to 30% in congested Indian cities. The study highlighted environmental benefits and lower fuel expenditures. It also suggested phased fleet electrification for scalable implementation. These findings demonstrate the cost and sustainability advantages of green logistics.
KPMG (2021), outlined trends in logistics automation, forecasting that AI and machine learning would reshape urban delivery networks. Predictive analytics, automated sorting, and dynamic routing were identified as tools for efficiency improvement. The report emphasized that integrating automation reduces human errors and optimizes resource utilization. The study provides strategic guidance for technology adoption in courier firms.

Table showing the weighted average of delivery challenges

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
challengesface1	108	1	19	3.3	4.629
Valid N (listwise)	108				

INTERPRETATION:
The weighted average analysis of challenges in last-mile delivery operations shows a **mean value of 3.30** and a **standard deviation of 4.629**, based on 108 valid responses.
The mean score indicates a **moderate level of challenges** commonly faced by delivery personnel during their daily operations. The relatively high standard deviation suggests that the **intensity of challenges varies considerably** among respondents, reflecting different operational environments.
This implies that some hubs or routes experience more difficulties due to factors like **traffic congestion, customer unavailability, or address inaccuracies**, while others function more smoothly.The results highlight the importance of **localized planning and dynamic routing strategies** to minimize these inconsistencies.
Overall, the weighted analysis confirms that **delivery challenges are frequent but manageable**, provided that operational efficiency measures are consistently implemented.

VI. FINDINGS

1) High Customer Satisfaction:

76% of customers rated their overall satisfaction as “satisfied” or “highly satisfied,” indicating efficient delivery performance and reliable customer service.

2) Key Operational Challenges:

Traffic congestion, customer unavailability, and incorrect addresses emerged as the top three challenges affecting last-mile efficiency.

3) Effective Use of Technology:

Electronic Proof of Delivery (EPOD) and route optimization tools are actively used by delivery staff and managers, enhancing tracking accuracy and reducing delivery errors.

4) Technology-Driven Accuracy:

A majority of respondents strongly agreed that technological tools significantly improve accuracy and minimize human errors in delivery operations.

VII. SUGGESTIONS

1) Improve Customer Communication:

Introduce SMS or WhatsApp alerts for delivery scheduling to reduce customer unavailability and improve coordination.

2) Invest in Data Integration Platforms:

Develop a centralized logistics dashboard integrating EPOD, GPS, and performance analytics for better managerial decision-making.

3) Encourage Innovation Culture:

Set up internal innovation drives or suggestion programs to collect improvement ideas from field staff and customers.

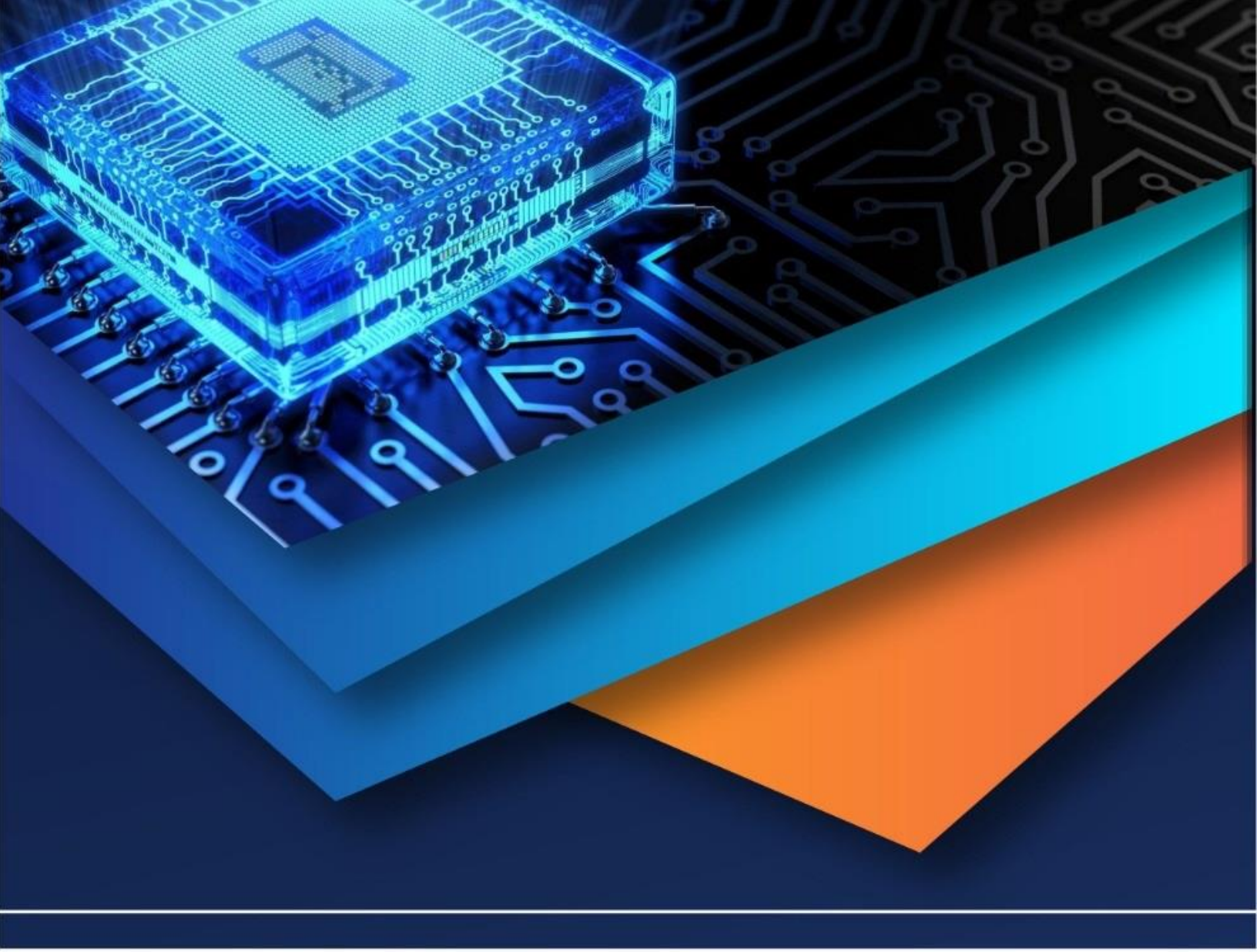
VIII. CONCLUSION

The research concludes that continuous innovation and a balance between digital transformation and human adaptability are vital for long-term success. The growing interest in green logistics and electric vehicle adoption aligns with national sustainability goals and positions Franch Express as a forward-thinking organization. Moving forward, the integration of AI-driven route planning, data analytics, and sustainable delivery models will be essential in maintaining competitive advantage and contributing to the broader goal of building an efficient, eco-conscious logistics ecosystem in India.

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