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Enhancing KPI on last mile delivery

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Abstract: In the evolving logistics landscape, last-mile delivery stands as a critical determinant of customer satisfaction and operational efficiency. This study, conducted at SafExpress Logistics Pvt. Ltd., aims to enhance key performance indicators (KPIs) related to last-mile delivery by identifying operational bottlenecks and proposing practical improvement strategies. Using a combination of surveys, interviews, observational studies, and secondary data analysis, the project evaluates existing performance metrics such as on-time delivery rate, first-attempt success, and customer satisfaction. The research highlights major challenges, including traffic congestion, address errors, and customer unavailability. Key recommendations include AI-based route optimization, real-time tracking, delivery window scheduling, employee training, and incentive programs. The study concludes that strategic technology adoption and customer-centric practices can significantly improve delivery performance, reduce costs, and strengthen SafExpress's competitive position in the logistics sector.

I.INTRODUCTION

In today's highly competitive logistics landscape, the efficiency and effectiveness of last-mile delivery have become critical factors for success. Last-mile delivery — the final step of the logistics chain from a transportation hub to the end customer — represents a vital part of the customer experience. It is often the most expensive and time-consuming component of shipping goods .

This project, "Enhancing KPI on Last-Mile Delivery," focuses on identifying bottlenecks, evaluating performance metrics, and proposing practical strategies to optimize key performance indicators (KPIs) associated with last-mile delivery operations, particularly in a fast-moving logistics environment like SafExpress.

Objective of the Study :

The main objectives of this project are:

- To understand current last-mile delivery performance.
- To analyze existing KPIs related to delivery time, success rate, customer
- To identify key challenges affecting last-mile performance.
- To recommend actionable solutions for enhancing these KPIs.

Understanding Last-Mile Delivery:

Last-mile delivery is the movement of goods from a distribution center to the final delivery destination. Although this step sounds simple, it involves multiple challenges such as unpredictable traffic, customer availability, complex urban logistics, and rising customer expectations for speed and visibility.

Common last-mile delivery KPIs include:

- On-Time Delivery Rate
- First Attempt Delivery Success Rate
- Customer Satisfaction Score
- Average Delivery Time
- Cost per Delivery
- Safety Incident Rate

Importance of KPIs in Last-Mile Delivery:

Key Performance Indicators (KPIs) help logistics companies measure and manage operational efficiency. In last-mile delivery, KPIs highlight the strengths and weaknesses of the supply chain and act as a guide for continuous improvement. KPIs ensure that companies:

- Identify delays and inefficiencies early.
- Monitor customer satisfaction.

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- Evaluate the safety and compliance of delivery staff.
- Optimize delivery routes and schedules.
- Control costs and enhance profitability.

For SafExpress, enhancing these KPIs would lead to better service reliability, reduced operational costs, and stronger market positioning.

Challenges in Last-Mile Delivery:

Several factors impact the performance of last-mile delivery:

- Traffic Congestion: Urban areas face unpredictable traffic, causing delays.
- Address Errors: Incorrect or incomplete addresses delay deliveries.
- Customer Availability: Failed deliveries occur when customers are not present.
- Technological Limitations: Poor tracking and route planning tools hamper .
- High Delivery Costs: The “last mile” often accounts for 53% of total shipping
- Environmental Challenges: Weather conditions and road infrastructure impact.

Methodology of the Study:

The study was conducted using the following methods:

- Surveys: Delivery personnel, dispatchers, and customers were surveyed to gather insights into challenges and satisfaction levels.
- Data Analysis: Existing performance reports were analyzed to track delivery times, failure rates, and customer complaints.
- Interviews: Discussions with logistics managers provided qualitative data on operational hurdles and improvement suggestions.
- Benchmarking: Industry standards and best practices were reviewed to identify improvement opportunities.

II.RESEARCH METHODOLOGY

The research methodology outlines the processes and tools used to collect and analyze information for the project “Enhancing KPI on Last-Mile Delivery.” A combination of primary data and secondary data sources was utilized to ensure a comprehensive understanding of the topic.

Research Design:

The project follows a descriptive and analytical research design, aiming to describe the current last-mile delivery performance at SafExpress, analyze existing challenges, and recommend strategies for KPI improvement.

Data Collection Methods:

Primary Data:

- Surveys:

Structured questionnaires (using Google Forms) were distributed to delivery staff, logistics managers, and customers to gather firsthand insights on last-mile delivery performance, customer satisfaction, and challenges.

- Interviews:

Semi-structured interviews were conducted with senior managers at SafExpress to understand operational bottlenecks and suggestions for improvement.

III.OBSERVATION

Observations of delivery operations (e.g., dispatch process, route planning) provided real-world insights into existing practices and gaps.

Secondary Data :

- SafExpress internal reports and KPI dashboards
- Industry reports from McKinsey, Capgemini, Deloitte, and others
- Academic books and research articles on logistics and supply chain management
- Publicly available statistics from Statista
- Online research (e.g., SafExpress website, whitepapers)

Secondary data helped to:

- Benchmark SafExpress KPIs against industry standards
- Understand global best practices for last-mile delivery

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- Identify future trends and technologies in logistics

Tools Used for Analysis :

- Pie Charts and Bar Graphs: Created using Microsoft Excel to visualize data related to delays, customer complaints, and KPI gaps.
- SWOT Analysis: Conducted to assess SafExpress's internal strengths and external opportunities in last-mile delivery.
- Comparative Analysis: Current SafExpress KPI performance was compared with industry averages

Strategies for Enhancing Last-Mile KPIs:

1. Dynamic Route Optimization:
Implement AI-powered tools that update routes in real time based on traffic conditions.

2. Customer Communication Enhancement:
Use automated SMS, app notifications, and real-time tracking links to inform customers about estimated delivery times.

3. Delivery Window Scheduling:
Allow customers to choose preferred delivery time windows to minimize failed attempts.

4. Staff Training:
Conduct regular training programs on safe driving, customer service, and efficient delivery practices.

5. Technology Upgradation:
Introduce smart delivery apps that allow for proof of delivery (POD), GPS tracking, and customer feedback in real-time.

6. Incentive Programs:
Reward delivery staff based on on-time performance and customer feedback scores to motivate better performance.

7. Safety Monitoring:
Introduce vehicle telematics and dashcams to monitor safe driving behaviors and reduce incident rates.

Suggestions for Improvement:

1. Use AI-Based Route Planning:
Install dynamic routing tools that adapt delivery routes based on real-time traffic and weather conditions.

2. Customer Self-Scheduling:
Allow customers to pick delivery slots, reducing failed delivery attempts.

3. Mobile App Enhancements:
Upgrade the customer app to provide real-time driver location and dynamic ETA (Estimated Time of Arrival).

4. Digital Proof of Delivery (ePOD):
Capture customer signature, photo, or OTP verification digitally to minimize disputes.

5. Training Programs:
Mandatory quarterly training for all drivers on safety, customer service, and efficiency tools.

6. Performance-Based Incentives:
Introduce rewards for best-performing drivers based on delivery KPIs and customer feedback.

7. Deployment of Electric Vehicles (EVs):
For eco-friendly deliveries and cost reduction in urban areas.

8. Expand Micro-Hubs:
Set up mini distribution centers closer to customer locations to reduce last-mile distance and time.

IV.CONCLUSION

Last-mile delivery is a complex but critical element of logistics operations. Enhancing KPIs in last-mile delivery not only improves operational efficiency but also strengthens customer trust and loyalty. SafExpress, with its vast delivery network and market presence, has an incredible opportunity to lead the logistics industry by adopting best practices, new technologies, and customer-centric strategies.Through this project, clear gaps were identified, practical solutions were proposed, and a roadmap for KPI improvement was laid out. Continuous monitoring, feedback, and innovation will be key to sustaining these improvements in the dynamic logistics landscape of the future. Through primary data collection (surveys and interviews) and secondary research (industry reports, books, and company documents), this study found that SafExpress performs well but faces challenges mainly in traffic congestion management, customer unavailability, and address-related errors. The existing on-time delivery rate of 82% and customer satisfaction score of 3.7/5 suggest the need for focused improvements. Adopting AI-based dynamic routing, offering flexible customer delivery windows, using micro-fulfillment hubs, and strengthening training and safety standards are vital recommendations for enhancing KPIs. Technology adoption (such as ePOD, real-time tracking apps, and automated dispatching) can revolutionize last-mile delivery efficiency and accuracy. Furthermore, incentivizing drivers based on performance and developing customer-

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centric delivery models will not only boost operational KPIs but also build stronger customer loyalty, which is critical in today's fast-paced e-commerce and logistics environment.

By implementing these recommendations, SafExpress can expect:

- Higher on-time delivery percentages (target 95%)
- Improved first-attempt success rates (target 90%)
- Enhanced customer satisfaction scores (target 4.5/5)
- Lower last-mile delivery costs
- Stronger market leadership and brand trust.

Thus, focusing on continuous KPI improvement in last-mile delivery is not just a competitive strategy — it is essential for sustainable growth and future success. In conclusion, companies that invest in smart technologies, employee training, customer engagement, and data-driven operations will lead the next generation of logistics services. SafExpress, with its established network and reputation, has a strong foundation to set new benchmarks in last-mile delivery excellence.

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