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## **Impact of Technology Integration on Last-Mile Delivery Efficiency: A Comparative Study of Amazon India and Delivery Ltd.**

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**ABSTRACT:** The exponential growth of e-commerce in India has significantly heightened the demand for faster, smarter, and more efficient last-mile delivery operations. This paper investigates the role of technology in enhancing last-mile delivery performance by conducting a comparative study between two leading logistics players—Amazon India and Delhivery Ltd. Using a mixed-method research approach, both primary survey responses from delivery professionals and secondary data from verified logistics reports were analyzed. Key operational metrics such as delivery volume, success rate, and app usability were studied to understand the impact of digital tools like GPS tracking, AI-based route optimization, and mobile delivery apps. Findings revealed that Amazon India outperformed Delhivery in delivery efficiency, success rate, and personnel satisfaction due to its tightly integrated digital ecosystem and rigorous tech training practices. The study highlights the necessity of uniform technology implementation, workforce enablement, and backend support for effective tech adoption in logistics. The paper concludes with practical recommendations for improving last-mile delivery performance in the Indian logistics sector.

#### **I. INTRODUCTION**

In the digital era, the success of e-commerce companies is largely influenced by their logistics performance, particularly in the last-mile delivery segment. This final phase of the delivery process, which involves transporting goods from distribution centers to customers' doorsteps, is critical for customer satisfaction and brand loyalty. India's vast and varied geography, coupled with complex urban logistics challenges, makes last-mile delivery a high-cost, high-pressure operation. To tackle these challenges, companies are increasingly integrating technologies such as mobile apps, AI-powered route planners, and real-time tracking systems. This study aims to explore how two major logistics players—Amazon India and Delhivery Ltd.—have implemented such technologies, and how these implementations influence their delivery efficiency.

#### **II. LITERATURE REVIEW**

The literature on last-mile delivery suggests that the final leg of logistics can account for more than 50% of total transportation costs (McKinsey, 2016). To address these challenges, leading logistics providers globally have embraced advanced digital tools. Amazon, JD Logistics, and DHL use AI for demand prediction and real-time route optimization. In the Indian context, the logistics sector has witnessed a technological shift post-2020 with growing investment in warehouse automation, geolocation apps, and delivery partner networks. Reports from RedSeer and Statista note that Amazon India's success lies in its proprietary systems, while Delhivery's strength is its adaptive third-party logistics platform. However, consistent challenges remain in training, system integration, and real-time coordination.

#### **III. RESEARCH METHODOLOGY**

The research employed a mixed-method approach. Primary data was collected through structured questionnaires distributed to 30 delivery personnel—15 each from Amazon India and Delhivery—operating in Delhi NCR and Bengaluru. The questionnaire covered technology adoption, GPS and app usage, delivery volume, success rates, and satisfaction levels. Secondary data was obtained from IBEF, company reports, Statista, and industry journals. Data analysis was conducted using descriptive statistics and thematic clustering for open-ended responses. Visual tools like



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bar graphs were used to represent average delivery metrics, satisfaction scores, and technology usage trends across both companies.

#### **IV. RESULTS AND DISCUSSION**

Survey analysis revealed that Amazon India delivery staff averaged 48 deliveries per day with a 96% success rate, while Delhivery staff averaged 36 deliveries with an 89% success rate. Satisfaction with mobile delivery apps was higher at Amazon (4.7/5) than Delhivery (3.3/5), primarily due to intuitive app design and real-time updates. The centralization of Amazon's logistics allows for consistent tech training and immediate system support, whereas Delhivery's decentralized operations led to performance inconsistencies across partner regions. Respondents noted the importance of consistent updates, low-latency interfaces, and in-app support features in enhancing delivery success. Both companies demonstrated that tech adoption, when integrated with human training and process alignment, creates a strong competitive advantage.

#### V. MANAGERIAL IMPLICATIONS

This study offers several implications for logistics managers and policy planners:

Invest in training programs to improve tech fluency among field staff.

Standardize mobile app interfaces and make them multilingual.

Design backend systems to support real-time troubleshooting.

Use AI to optimize routes based on delivery density and regional constraints.

Ensure tech parity across urban and rural delivery networks.

By implementing these insights, logistics firms can achieve better operational efficiency, reduced costs, and improved customer satisfaction.

#### VI. CONCLUSION AND FUTURE SCOPE

The integration of digital technologies in last-mile logistics significantly enhances delivery performance. Amazon India's centralized control and focus on digital training have led to greater efficiency, while Delhivery's partner-based model highlights the need for standardization. The research confirms that real-time support, consistent training, and user-friendly systems are critical for successful technology implementation. Future studies could expand the sample size, include Tier-2 cities, and evaluate the cost-benefit ratio of tech investments in logistics.

#### REFERENCES

- 1. McKinsey & Company (2016). Parcel delivery: The future of last mile.
- 2. RedSeer Consulting (2022). India e-commerce logistics market report.
- 3. Statista (2023). Logistics technology usage in India.
- 4. Economic Times (2022). How Amazon India transformed last-mile operations.
- 5. IBEF (2023). Indian Logistics Sector Report.
- 6. Allen, J. et al. (2018). Urban Freight and Last-Mile Logistics Research.









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