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Comparative Study on Last-Mile Delivery Performance of E-Commerce Logistics Partners in Coimbatore

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Abstract: ***The rapid growth of e-commerce has increased the importance of efficient last-mile delivery in the logistics industry. Last-mile delivery refers to the final stage of the supply chain where goods are transported from a distribution center to the customer's doorstep. This study focuses on a comparative analysis of the last-mile delivery performance of major e-commerce logistics partners operating in Coimbatore. The research evaluates delivery performance based on key factors such as delivery speed, customer satisfaction, and delivery accuracy. Primary data were collected from 100 respondents through questionnaires and analyzed using percentage analysis and ANOVA. The findings reveal differences in service quality among logistics partners. The study highlights the need for improved route optimization, real-time tracking, and better coordination to enhance delivery efficiency and customer satisfaction.***

Keywords: Last-Mile Delivery, E-Commerce Logistics, Delivery Performance, Customer Satisfaction, Delivery Speed, Delivery Accuracy, Logistics Partners, Supply Chain Management, Courier Services, E-Commerce Operations.

I. INTERODUCTION

The rapid growth of e-commerce has significantly increased the demand for efficient logistics and delivery services. One of the most critical stages in the supply chain is last-mile delivery, which refers to the final step of transporting goods from a distribution center or local hub to the customer's doorstep. This stage plays a vital role in determining customer satisfaction, service quality, and overall business success. In recent years, customers have started expecting faster deliveries, real-time tracking, and reliable service from e-commerce companies. As a result, logistics partners must continuously improve their delivery performance to meet these expectations. This study focuses on the comparative performance of major e-commerce logistics partners in Coimbatore. By analyzing factors such as delivery speed, delivery accuracy, and customer satisfaction, the study aims to evaluate the effectiveness of different logistics providers and identify areas for improvement.

II. REVIEW OF LITERATURE

Alejandro Escudero-Santana (2022) has Conducted a study on "performance of E-Commerce Distribution through Last-Mile Logistics with Multiple Possibilities of Deliveries Based on Time and Location". They highlighted how home delivery remains a customer Favorite, yet Incidents of failed deliveries due to customer unavailability reduce service quality and inflate costs.

Abdullahi Sani Shuaibu. (2025) had Conducted a study "A Review of Last-Mile Delivery performance: Strategies, Technologies, Drone Integration, and Future Trends". The Paper elaborates on AI-based decision tools, IoT-enabled tracking, and hybrid delivery systems. Integration of AI and IoT refines analytics, route dynamics, and vehicle use, though challenges like regulatory issues and scalability persist.

III. OBJECTIVE OF STUDY

1) To evaluate and compare the delivery speed of major e-commerce logistics partners such as Amazon, Delhivery, Ekart, Xpress Bees, and DTDC operating in Coimbatore.
2) To assess customer satisfaction levels with respect to last-mile delivery services provided by these logistics' partners.
3) To analyses the delivery accuracy and reliability of each logistics partner in terms of timely and error-free deliveries.

IV. RESEARCH METHODOLOGY

The study adopts a descriptive and exploratory research design. The descriptive aspect Aims to describe the current practices, trends, and challenges in implementing innovative and eco-Friendly logistics techniques.

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V. DATA ANALYSIS & RESEARCH

What type of product do you order most?

	Sum of squares	df	Mean square	F	Sig
Between group	1.285	1	1.285	1.045	.309
Within group	119.341	97	1.230		
Total	120.626	98			

Interpretation: The above table presents the descriptive statistics and ANOVA results for how often respondents shop online based on gender. Out of 99 respondents, 70 are male and 29 are female. The mean value for males is 2.10 and for females is 2.10, indicating that both male and female respondents have almost the same frequency of online shopping.
The ANOVA test result shows a significance value (Sig.) of 0.987, which is greater than the standard level of 0.05. This indicates that there is no significant difference between male and female respondents in terms of how often they shop online.
Therefore, it can be interpreted that gender does not significantly influence the frequency of online shopping among the respondents.

Inference
From the above table, it is inferred that the mean frequency of online shopping among male respondents (2.10) and female respondents (2.10) is almost the same. The ANOVA test shows a significance value of 0.987, which is greater than the standard significance level of 0.05.
Therefore, the null hypothesis is accepted, indicating that there is no significant difference between male and female respondents in terms of how often they shop online. This implies that gender does not influence the frequency of online shopping among the respondents.

Descriptives

How often do you shop

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
male	46	2.2391	1.15825	.17077	1.8952	2.5831	1.00	4.00
female	53	2.7736	.84675	.11631	2.5402	3.0070	1.00	4.00
Total	99	2.5253	1.03355	.10388	2.3191	2.7314	1.00	4.00

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	7.034	1	7.034	6.987	.010
Within Groups	97.653	97	1.007		
Total	104.687	98			

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Interpretation: The above table presents the descriptive statistics and ANOVA results for the type of product most frequently ordered online based on gender. Out of the total 99 respondents, 70 are male and 29 are female. The mean value for males is 2.5571, while for females it is 2.7931, indicating a slight difference in the type of products ordered by male and female respondents.
However, the ANOVA test shows a significance value (Sig.) of 0.254, which is greater than the standard significance level of 0.05. This indicates that there is no statistically significant difference between male and female respondents regarding the type of products they order most online.
Therefore, it can be interpreted that gender does not significantly influence the type of products ordered most frequently through online shopping among the respondents.

Inference
This table presents descriptive statistics and one-way ANOVA results comparing means between male (N=79, mean=2.571) and female (N=93, mean=2.381) groups on an unstated continuous variable. The ANOVA F-statistic is 1.697 with a p-value of 0.194, indicating no statistically significant difference between group means at α=0.05.
Key Statistics Male group: Mean 2.571 (SD=0.988), 95% CI [2.350, 2.792]. Female group: Mean 2.381 (SD=0.968), 95% CI [2.182, 2.580]. Overall: Mean 2.481 (SD=0.980). Effect size (η^2=0.010) suggests very small practical difference. Interpretation The non-significant ANOVA (p=0.194) means you fail to reject the null hypothesis of equal population means between males and females. A follow-up two-sample t-test confirms this (t=1.271, p=0.206). CIs overlap substantially, supporting no meaningful group difference; variability within groups dominates (SS within=84.33 vs. SS between=0.842).

VI. FINDINGS

1) The age range range of the respondents are 20-30 years.
2) Male makes up the majority of the responders.
3) The vast majority of those survived are married.
4) The majority of the respondents are employed.
5) The majority of the respondents are purchasing from online shopping.
6) The majority of the respondents are using Flipkart.
7) The majority of the respondents are using Ekart partners.
8) The majority of the respondents are from semi-urban area.
9) The majority of the respondents' orders fashion items.
10) The majority of the respondents receives order in sometime.

VII. SUGGESTION

1) Adopt advanced route optimization systems to reduce delivery time and fuel consumption. Technologies like AI and GPS tracking help logistics partners choose the shortest and fastest routes.
2) Improve real-time tracking and customer notifications so customers can monitor delivery status and expected arrival times, which increases transparency and satisfaction.
3) Increase the number of local distribution hubs or micro-warehouses within Coimbatore to reduce delivery distance and improve same-day delivery performance.
4) Strengthen workforce training for delivery personnel to ensure better customer interaction, accurate delivery updates, and reduced delivery errors.

VIII. CONCLUSION

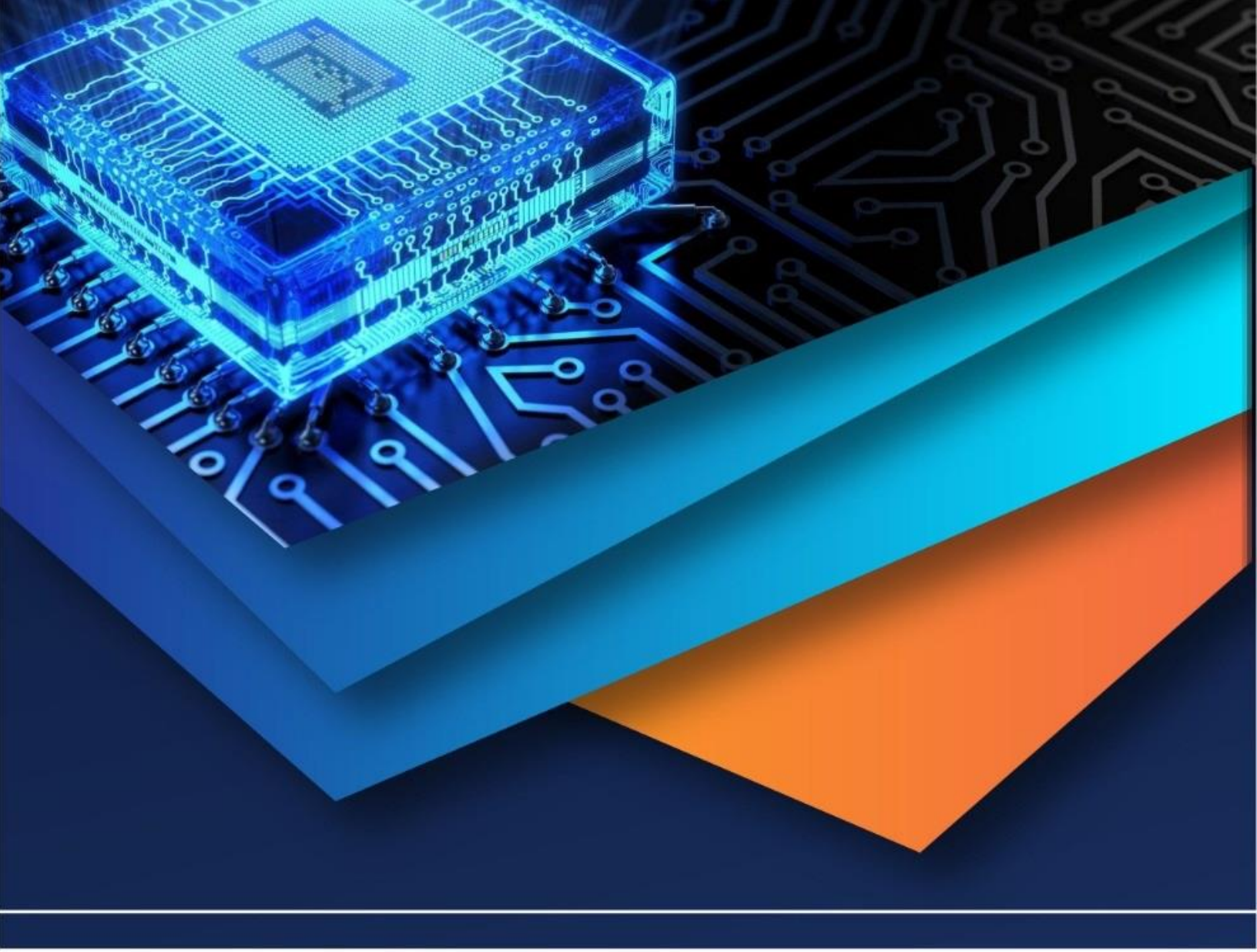
The study titled "Comparative Study on Last-Mile Delivery Performance of E-Commerce Logistics Partners in Coimbatore" emphasizes the importance of last-mile delivery in the success of e-commerce operations. It shows that delivery speed, reliability, order tracking, customer communication, and return handling significantly influence customer satisfaction. The comparative analysis reveals that logistics partners using advanced technology, efficient routing systems, and strong local delivery networks perform more effectively. However, challenges such as traffic congestion, incorrect addresses, and delayed deliveries still affect performance. The growing e-commerce market in Coimbatore increases the need for faster and more reliable delivery services. Improving technology, coordination, and infrastructure will help logistics partners enhance service quality and customer satisfaction.

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