

Navigating Urban Mobility: An Impact Analysis of Customer Perception and Customer Satisfaction with App-Based Taxi Services in Pune City

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ABSTRACT:

Urban transportation has been significantly altered by the proliferation of app-based taxi services, which offer commuters unparalleled convenience and adaptability. The business strategies of app-based taxi services like Ola and Uber are assessed in this Pilot Study, with an emphasis on consumer awareness, perception, and satisfaction. A structured questionnaire was employed to gather data from a diverse sample of 121 residents, representing a variety of demographics. The results indicate that customer satisfaction is significantly influenced by factors such as fleet quality, app user-friendliness, and average wait time. The study suggests that real-time route monitoring, transparent fare structures, and improved complaint resolution mechanisms be implemented by these findings. Furthermore, it is recommended that app interface be perpetually enhanced and the fleet of environmentally friendly vehicles be expanded to accommodate the increasing demand of customers and to promote sustainable urban transportation.

KEYWORDS: App-based taxi services, Customer Perception, Customer Satisfaction, Ola, Uber, sustainable urban transport.

INTRODUCTION:

In 2024, the market for online transportation services is anticipated to grow at a compound annual growth rate (CAGR) of 10.9%, from \$38.89 billion in 2023 to \$43.15 billion. It is expected to reach \$64.74 billion by 2028, with a compound annual growth rate (CAGR) of 10.7%. (The Economic Times, 2024) This expansion is being driven by a variety of factors, including urbanization, increased internet penetration, mobile app penetration, cost efficiency, and changing consumer behavior. .“(Chaudhary, Tyagi, & Rao, 2016) reported that,

Future development is anticipated to be driven by advancements in sustainable transport, payment systems, price-sensitive algorithms, and a focus on consumer satisfaction and loyalty programs”

“Indulkar & Patil, 2020, September reported that The advent of app-based taxi services has revolutionized urban transportation, offering unprecedented convenience and flexibility to commuters”.“ Jacob & Benedict, 2017 reported that in Pune City, services like Ola and Uber have become integral to daily commuting, catering to diverse customer needs. Despite their popularity, these services face challenges that impact customer satisfaction and service efficiency.”

This study analyzes the business policies of selected app-based taxi services in Pune City, focusing on key factors influencing customer preferences and satisfaction. By examining various demographic and socio-

economic segments, the research provides a comprehensive understanding of the user experience and identifies critical areas for improvement. The research employs a structured questionnaire covering aspects such as service usage frequency, satisfaction with wait times, fare transparency, driver behavior, and the importance of eco-friendly and accessible vehicles. Statistical analyses, including chi-square tests and rank-order correlations, were conducted to derive meaningful insights from the collected data.

REVIEW OF LITERATURE:

“Sinha, 2024 reported that The research endeavoured to resolve the deficiencies and comprehend customer contentment in Delhi's ride-hailing market. The ride-hailing market in India, particularly in Delhi, is undergoing substantial development because of the emergence of digital platforms such as Uber, Lyft, and Ola. The market was anticipated to generate US\$6.68 billion in 2027, with a projected increase in penetration from 17.6% to 19.3% by 2030. Nevertheless, there are ongoing apprehensions regarding the influence of these platforms on public interests and consumer choice.”

“Bassey, 2024 reported that with a focus on pricing strategies, customer incentives, operational efficiency, and service quality, the study examined the factors influencing customers' decisions between traditional taxis and e-cab services in Calabar. The findings showed that cost-related incentives, ride comfort, safety, convenience, and cleanliness were the primary factors influencing customer decisions. The economic level, gender, and age factors did not significantly affect choices. The study recommended dependability, quick service, and competitive pricing strategies to increase customer satisfaction and retention in Calabar.”

“Samuel, 2023 reported that the study evaluated the contentment of Mumbai residents with Ola taxis, which provide affordable prices, superior product options, and convenience. Nevertheless, the investigation also disclosed that a few customers expressed dissatisfaction with overflow pricing, extended arrival times, abrupt cancellations, unruly drivers, cancellation fees, and hygienic issues. Online taxi services, including Ola and Uber, have substantially transformed the transportation industry in cities. It is anticipated that the market for online transportation, which was valued at \$30.72 billion in 2020, will expand to \$55 billion by 2025. Urbanization, disposable income, smartphone usage, internet penetration, and globalization are among the factors that contribute to this development. Additionally, higher living standards are a contributing factor.”

“Singh & Bathla, 2023 reported that this study aimed to identify service quality gaps in cab aggregators' services in India using SERVQUAL Gap Analysis. Data was collected from 495 respondents across various cities, focusing on customer perceptions and expectations. The findings suggest creating a service quality framework for cab aggregators to improve customer retention and satisfaction.”

“Pranav Mukul, 2023 reported that according to these individuals, the main goal of new apps like InDrive, Namma Yatri, Yaary, BluSmart, and Rapido (in the taxi industry) is to fill the holes created by the bigger competitors in terms of driver-partner satisfaction and customer service. In the meantime, Ola and Uber have taken steps to address some of those issues, such as supply retention and driver cancellations.

In an effort to decrease driver cancellations after accepting a ride, Uber implemented a new feature that would let drivers view the destination and the projected fee of the journey before accepting the ride. In an effort to increase its drivers' loyalty to the platform, Uber established a rewards program.

These drivers typically work as gig laborers on multiple platforms. However, with more recent systems offering onboard drivers zero-commission options...Existing businesses may find it challenging to retain those drivers on their platforms for as long as they once did.”

“Nimbhorkar, 2023 reported that, the paper's primary goal is to comprehend how customers view taxi services and investigate the elements that affect their decision to use them. It also examines how Ola taxi services affect consumers' perceptions. To determine the discrepancy between consumers' expectations and perceptions of app-based taxi services, the author employed the Servqual Gap Model. The study comes to the conclusion that app cab drivers' overall satisfaction is greatly influenced by their ability to meet rider expectations and earn their pleasure.”

“Ghimire, Puri, Devkota, and Mahato, 2023 reported that the study explores the impact of accessibility, convenience, price, and intention to use taxi management on taxi drivers' perspectives in Kathmandu Valley, Nepal. It suggests that these factors significantly influence their perceptions of taxi management, suggesting that the industry should adapt to improve consumer engagement and enhance the overall experience for taxi drivers.”

“Thakur, Yadav and Dutta, 2022 reported that service providers aim to establish brand loyalty by meeting consumer expectations, but service errors are inevitable. To avoid these, they must address service recovery. This study evaluated the efficacy of recovery processes in e-hailing, focusing on compensation, apology, and response time. The results showed that these attributes are crucial for generating satisfied consumers.”

“Mishra, 2022 reported that the study focuses on gig workers' social security. While focusing on commission section article indicates that the aggregators charge 35% commission despite the transport ministry mandating that the maximum fee that can be paid is 20% under the Motor Aggregator Guidelines 2020. These standards are rarely followed by ride-hailing applications since there is no oversight enforcement body. According to conversations with Ola and Uber drivers, Ola charges 30% commission, whereas Uber charges 20%, with the extra 10% being attributed to taxes. According to the drivers, the aggregators do not now offer any insurance coverage. These drivers are under a lot of stress due to algorithm-driven systems, low earnings, and ratings games.

Neither the Industrial Relations Code 2020 nor the Wages Code 2019 define or include gig workers. Gig workers are not covered by scheduled employment in any state. Nonetheless, aggregator-driver employer-employee relationships have been recognized by international court decisions.

According to the article, in order to give gig workers legal protection, the government ought to enact the Motor Aggregator Guidelines 2020. In the event of an emergency, gig workers ought to have access to financial assistance and healthcare.”

“Rajesh, 2021 reported that Focusing on the experiences and usage of Uber taxi services in Mumbai, Dr. Rupali Rajesh employs five scales. Uber cab services' primary influencing elements were examined using the Likert Technique. In terms of being well-behaved and qualified, female customers have a positive experience with Uber's services, while male customers have a positive experience with its on-time pick-up and drop-off, as well as other services throughout travel hours.”

“Arora & Kumar, 2021 reported that a study comparing taxi aggregators and traditional public transportation services in the National Capital Region was carried using the SERVPERF (Service Performance) model. Using well-structured, standardized questionnaires, primary data was collected. It was determined that the perceived service quality of taxi aggregators and traditional public transport services differed significantly in terms of tangibility, responsiveness, assurance, and empathy using a paired t-test. Nevertheless, the service quality did not exhibit any substantial disparities in the reliability dimension, which is a critical point for the cab aggregator industry.”

(Perera, July 2021)” Perera, July 2021 focused on consumer satisfaction in Sri Lankan app-based taxi

services. Price, trust, and coupon redemption all significantly increase customer satisfaction, but service quality did not significantly increase customer satisfaction, according to the study. However, the study also finds that customers in Sri Lanka do not rely much on service quality and that price, trust, and coupon redemption have the greatest effects on customer satisfaction.”

“Shiji, Dekshithkumar, Sugan, Mohanaprasad & Dinesh, 2021 reported that the Indian taxi industry has transformed from street-hail to app-based rides, offering benefits like real-time updates, economy, safety, and duration. This study investigated the expansion of application-based hiring among Coimbatore city taxi users, their satisfaction, and factors influencing their decision to select a cab. A structured questionnaire was used to gather data from respondents, revealing a positive correlation between utility-based cab features and driver behavior.”

”Kumar**,2021 reported that The SERVPERF model was employed by the author to examine the service quality of both traditional public transportation services and taxi aggregators. In order to better access service quality, SERVPERF (Service Performance) is a performance-based metric that mimics customers' real perceptions (Cronin and Taylor, 1992). In order to capture the behavior of service quality, he also concentrated on other models like SERVQUAL (Service and Quality) and E-S-QUAL (Electronic Service Quality). In his work, he employed a descriptive research design. He claims that there are considerable differences in the two sectors' service quality in four areas: tangibility, responsiveness, assurance, and empathy. There aren't any significant differences, though, when it comes to the reliability component.

It becomes difficult for ride-hailing service providers to prioritize client satisfaction and adjust their future strategy accordingly.”

“Ashok, 2021 reported that Ola and Uber drivers' labor welfare and the platform economy are reviewed in this article. Although drivers for Uber and Ola are referred to as partners, they are not authorized to request a trip or fix freight. They are also required to follow the GPS-designed route rather than navigating it on their own. Therefore, in the case of these drivers, the term autonomy is meaningless. These driver partners also lend automobiles, and cab aggregators also borrow cars. Aggregators also charge a commission, and interest rates on these loans are higher than market rates. The relationship between drivers and clients is also heavily influenced by technology.

Drivers are occasionally given low ratings because of uncontrollable circumstances like traffic jams, long wait periods, inaccessible places, etc. Because drivers are able to rate passengers as well, the method is reciprocatory.”

“Anirvinna Chivukula, 2020 reported that the function of the chauffeur, the necessity of rules, and the pricing strategy of taxi aggregators are all covered in the paper. More drivers support surge pricing, and the author claims that engaging drivers is the key to the FRMs' ability to maintain business. Uber and Ola interact with drivers in different ways. There is no limit on the amount of rides on Ola, however for Uber, the number of kilometers counts. The author states that the government has two choices: either restrict the policies of these taxi aggregators or allow them to thrive in the market independently. For everyone's advantage, a stable connection between the state, the corporation, and the consumer must be developed immediately.”

“Agrawal, 2017 focused on Ola Cabs' performance. He claims that Ola Cabs is drawing clients with attractive fair prices, discounts, and promptness, but it is also having trouble keeping them. According to the post, some consumers had issues with Ola's comfort and timeliness. From the driver's point of view, there are a number of problems, including fewer reservations made through Ola, higher commission fees compared to Uber, the inability to use Ola Money at gas stations, the fact that Ola offers bonuses but

reduces commission on them, the lack of daily payouts, and the fact that drivers only receive Rs. 30 to 35 K after working 10 to 12 hours a day.”

“Bekele, 2019 reported that the study aimed to identify factors affecting customer satisfaction in mobile application-based taxi services, specifically focusing on RIDE, a small company in Addis Ababa. A structured questionnaire was used to gather data from 365 customers, selected using purposive sampling. The data was analyzed using SPSS version 20 and six hypotheses were tested. The results showed that price, time, application convenience, driver professionalism, call center employee responsiveness, and car condition had a positive relationship with customer satisfaction. The study also found that customers were most satisfied with RIDE's timely performance and reasonable price charged compared to the service provided. These predictor variables collectively accounted for 67% of the variation in customer satisfaction, with additional variables (33%) also influencing satisfaction. The researcher provided recommendations to RIDE Company.”

“Chaurasia, 2017 reported that this research investigates the factors contributing to the increasing demand for taxis in India, focusing on the factors that enhance the reliability and convenience of transportation. The study analyzed the benefits of taxis in the Indian context, highlighting the importance of comfort, time, and safety in the middle-class lifestyle. The research emphasizes the benefits of taxis in the Indian context.”

OBJECTIVES OF THE PRESENT RESEARCH:

- To study the awareness and perception of customers regarding selected app-based taxi services across Pune city.
- To analyze the impact of services offered by selected app-based taxi services on customer satisfaction across Pune city.

HYPOTHESIS:

- H1o: The awareness and perception of customers regarding selected app-based taxi services across Pune city is significantly negative.
H1: The awareness and perception of customers regarding selected app-based taxi services across Pune city is significantly positive.
- H2o: The impact of services offered by selected app-based taxi services on customer satisfaction across Pune city is significantly negative.
H2: The impact of services offered by selected app-based taxi services on customer satisfaction across Pune city is significantly positive.

RESEARCH METHODOLOGY:

1. Research Design

This pilot study adopts a descriptive research design to evaluate the business strategies of app-based taxi services in Pune, focusing on customer perceptions and satisfaction.

2. Sample Selection

The study targets residents of Pune City who regularly use app-based taxi services like Ola, Uber, Meru, etc. A convenience sampling method will be employed to select participants, ensuring a diverse representation of age groups, genders, and socioeconomic backgrounds.

Sample Size: A sample size of 121 respondents is considered for the present pilot study, allowing for preliminary insights into the objectives.

3. Data Collection:

Data will be collected using a structured questionnaire designed to gather both quantitative and qualitative information. The questionnaire was divided into four sections:

- **Demographic Information:** Collecting basic data on age, gender, income, education, and occupation.
- **Customer Awareness:** Questions focused on identifying and analyzing factors like pricing, Availability of Cabs at Odd Hours, experience of different routes by Cab drivers, Average wait time, payment methods, customer engagement, etc.
- **Customer Perception and Satisfaction:** Assessing customers' views on service quality, ease of use, reliability, and overall satisfaction.

The questionnaire was distributed in Google Forms through online social media and other platforms like Whats App, Gmail, telegram, etc. to reach a wider audience.

Statistical Tests: Correlation, Linear Regression, and ANOVA were applied through SPSS Software to analyze the impact on customer awareness, perception, and satisfaction.

DATA ANALYSIS AND INTERPRETATION:

Reliability Tests:

Table: Reliability Tests			
Sr. no.	Particulars	Cronbach's Alpha	N of Items
1	Customer Awareness	0.926	12
2	Customer Perception Analysis	0.846	17
3	Impact on Customer Satisfaction	0.857	14

(Source: Researcher's data Analysis through SPSS)

All dimensions of the questionnaire viz-a-viz Customer Awareness Study, Customer Perception Analysis, and Impact on Customer Satisfaction were tested. It can be observed that Cronbach's alpha values ranged from 0.846 to 0.926. This indicates that all the items have high internal consistency. Hence, it can be concluded from the above data that all the scales are reliable.

DESCRIPTIVE STATISTICS:

Sr.No.	Construct	Variables	N	Mean	Std. dev.
1	Demographic Information	Area (Residential/Work)	121	2.289	1.2
2		Gender	121	1.446	0.499
3		Age Group	121	3.504	0.984
4		Marital Status	121	1.926	0.608
5		Ethnicity/Nationality	121	1.025	0.156
6		Educational Qualification	121	2.281	0.487
7		Occupation	121	3.19	1.362
8		Monthly Income (In INR)	121	3.058	1.38
9		Household Size	121	2.512	1.279

Sr.No.	Construct	Variables	N	Mean	Std. dev.
10		Taxi Service Type	121	1.876	1.077
11	Customer Awareness	Frequency of Traditional Taxi Use	121	2.959	1.405
12		Frequency of Online Cab Use	121	2.818	1.408
13		Different Routes by Cab Drivers	121	2.975	1.3
14		Experience of Cancellation Requests	121	2.934	1.442
15		Primary Purpose of Taxi Rides	121	3.264	1.459
16		Average Wait Time for a Cab	121	3.132	1.46
17		Availability During Peak Hours	121	3.223	1.393
18		Availability of Cabs at Odd Hours (Ola)	121	2.95	1.353
19		Availability of Cabs at Odd Hours (Uber)	121	2.785	1.337
20		Availability of Cabs at Odd Hours (Meru)	121	3.05	1.401
21		Availability of Cabs at Odd Hours (Savaari)	121	2.959	1.457
22		Availability of Cabs at Odd Hours (Others)	121	2.802	1.358
23	Customer Perception	Importance of Eco-Friendly Vehicles	121	2.942	1.491
24		Importance of Accessibility Features	121	2.727	1.408
25		Importance of Price in Cab Booking	121	2.95	1.425
26		Importance of Driver's Rating	121	2.917	1.351
27		Importance of ETA	121	3.017	1.323
28		Importance of Cab/Fleet Type	121	3.033	1.271
29		Agreement with Safety Reliability	121	3.058	1.474
30		Agreement with App User-Friendliness	121	3.364	1.265
31		Agreement with Fare Charges	121	2.984	1.449
32		Agreement with Offers and Discounts	121	2.909	1.478
33		Agreement with Data Confidentiality	121	3.132	1.437
34		Agreement with Metro Station Provisions	121	3.132	1.354
35		Preferred Additional Payment Options	121	3.025	1.497
36		Most Important Factor in Ride-Hailing	121	2.826	1.412
37		Frequency of Encountering Surge Pricing	121	2.934	1.515
38		Frequency of Encountering Technical Issues	121	2.917	1.509
39		Perception of Ola-IRCTC Partnership	121	3	1.36
40	Customer Satisfaction	Satisfaction with Wait Times	121	2.984	1.426
41		Satisfaction with Effectiveness of Issue Resolution	121	3.157	1.42

Sr.No.	Construct	Variables	N	Mean	Std. dev.
42		Satisfaction with Promotions/Discounts	121	2.917	1.487
43		Satisfaction with Safety/Security	121	3.091	1.402
44		Satisfaction with Cab Availability	121	2.868	1.36
45		Satisfaction with Fare Transparency	121	3.132	1.384
46		Satisfaction with Driver Behaviour	121	2.959	1.446
47		Satisfaction with Ease of Payment	121	2.785	1.41
48		Satisfaction with Advanced Technology Use	121	2.876	1.447
49		Satisfaction with Service Reliability	121	3	1.39
50		Satisfaction with GPS Accuracy	121	3.215	1.456
51		Satisfaction with Fleet Quality	121	2.917	1.394
52		Satisfaction with Payment Options	121	3.083	1.345
53		Satisfaction with Outstation Services	121	2.851	1.459

(Source: Researcher's data Analysis through SPSS)

INTERPRETATION:

The table gives a thorough account of the statistical analysis of a variety of constructs, including Customer Awareness, Customer Satisfaction, Customer Perception, and Demographic Information, using a sample size of 121 respondents which includes 67 Males and 54 females. The mean values provide information about the central tendency of the responses, whereas the standard deviations indicate the variability of those responses around the mean.

In the "Demographic Information" construct, factors such as "Age Group" (Mean = 3.504, Std. Dev. = 0.984) and "Monthly Income" (Mean = 3.058, Std. Dev. = 1.38) exhibit moderate variability, indicating that the respondent profiles are diverse. The "Customer Awareness" construct demonstrates that users frequently consider factors such as "Primary Purpose of Taxi Rides" (Mean = 3.264, Std. Dev. = 1.459) and "Availability During Peak Hours" (Mean = 3.223, Std. Dev. = 1.393) when using taxi services. The relatively high mean values suggest that these aspects are frequently taken into account.

The variable "Agreement with App User-Friendliness" (Mean = 3.364, Std. Dev. = 1.265) in the "Customer Perception" construct has a high mean, which indicates a positive user experience. Conversely, "Agreement with Fare Charges" (Mean = 2.984, Std. Dev. = 1.449) indicates some dissatisfaction or mixed perceptions among users. Lastly, the "Customer Satisfaction" construct emphasizes moderate satisfaction across a variety of factors. Users express relatively higher satisfaction in the areas of "Satisfaction with GPS Accuracy" (Mean = 3.215, Std. Dev. = 1.456) and "Satisfaction with Fare Transparency" (Mean = 3.132, Std. Dev. = 1.384), indicating that these aspects contribute positively to the overall customer experience.

PEARSON CORRELATION STATISTICAL INFERENCE:

Customer Awareness: Pearson Correlation	
Variables	Correlation Value
Customer Awareness	1.000
How frequently do you use traditional taxis?	.421

How frequently do you use online cab services?	.356
Have you experienced different route by Cab drivers?	.348
Have you Experienced cancellation request by Cab drivers?	.349
Primary purpose of taxi rides	.317
Average wait time for a cab	.533
Availability during peak hours	.282
Customer Perception: Pearson Correlation	
Customer Perception	1.000
Importance of eco-friendly vehicles	.152
Importance of accessibility features	.156
Rate Importance of Price in Cab Booking	.290
Rate Importance of Driver's Rating	.286
Rate Importance of ETA	.162
Rate Importance of Type of Cab/Fleet	.146
Agreement with Safety Reliability	.269
Agreement with App User-Friendliness	.419
Agreement with Fare Charges	.162
Agreement with Offers and Discounts	.156
Agreement with Data Confidentiality	.284
Agreement with Metro Station Provisions	.373
Preferred Additional Payment Options	.263
Most Important Factor in Ride-Hailing Service Choice	.229
Frequency of Encountering Surge Pricing	.276
Frequency of Encountering Technical Issues	.262
Perception of Ola-IRCTC Partnership	.307
Customer Satisfaction (Pearson Correlation)	
Customer Satisfaction	1.000
Satisfaction with wait times	.187
Effectiveness of issue resolution	.353
Satisfaction with promotions/discounts	.241
Satisfaction with safety/security while travelling by the Cab	.104
Satisfaction with availability of cabs easily	.352
Satisfaction with fare transparency	.123
Satisfaction with driver behavior	.187
Satisfaction with Ease of Payment	.241
Satisfaction with Advanced Technology Use	.267
Satisfaction with Service Reliability	.303
Satisfaction with GPS Accuracy	.353
Satisfaction with Fleet Quality	.356
Satisfaction with Payment Options	.359
Satisfaction with Outstation Services	.313

(Source: Researcher's data Analysis through SPSS)

INTERPRETATION:**Pearson Correlation of Customer Awareness:**

- The average delay time for a cab has the highest positive correlation with customer awareness ($r = .533$), indicating that it increases in tandem with customer awareness.
- How commonly do you ride in traditional taxis? shows a moderate positive correlation ($r = .421$), suggesting that consumers who use traditional taxis more frequently tend to have higher awareness.
- How frequently do you utilize online taxi services? ($r = .356$) Have you encountered a variety of routes taken by taxi drivers? The moderate positive correlations ($r = .348$) also indicate that customer awareness is influenced by the frequent use of online taxi services and the experience of various routes.
- While the correlation between availability and customer awareness is lowest during peak hours ($r = .282$), it remains positive, indicating that availability contributes to customer awareness, albeit to a diminished extent.
- **Conclusion:** The average wait time for taxis is the most significant factor influencing customer awareness.

Pearson Correlation of Customer Perception:

- The strongest positive correlation between customer perception and user-friendliness is observed ($r = .419$), suggesting that user-friendly applications are significantly associated with favourable customer perceptions.
- The Perception of Ola-IRCTC Partnership ($r = .307$) and Agreement with Metro Station Provisions ($r = .373$) also exhibit relatively significant correlations, indicating that customer perception is influenced by partnerships and metro station provisions.
- The rate importance of price in cab booking ($r = .290$) and the rate importance of driver ratings ($r = .286$) are moderately correlated, suggesting that they are significant factors in influencing consumer perception.
- The lowest correlations are observed for the importance of eco-friendly vehicles ($r = .152$) and accessibility features ($r = .156$), which implies that these variables have a lesser impact on customer perception in this context.
- **Conclusion:** The most significant factor influencing customer perception is the user-friendliness of the app, with price, partnerships, and metro station provisions also playing significant roles.

Pearson Correlation of Customer Satisfaction

- The highest positive correlations with customer satisfaction are Satisfaction with Payment Options ($r = .359$) and Satisfaction with Fleet Quality ($r = .356$), suggesting that these are critical factors in determining customer satisfaction.
- Satisfaction with GPS Accuracy ($r = .353$) and Effectiveness of issue resolution ($r = .353$) are also highly correlated, indicating that customer satisfaction is significantly influenced by accurate GPS and effective issue resolution.
- The variables with the lowest correlations are satisfaction with fare transparency ($r = .123$) and satisfaction with safety/security while traveling by cab ($r = .104$). This suggests that, despite their positive associations, these factors are less strongly associated with customer satisfaction.
- **Conclusion:** In this context, payment options, fleet quality, and GPS accuracy have the greatest impact on customer satisfaction, while fare transparency and safety are less critical.

ANOVA STATISTICAL INFERENCE:

ANOVA ^a							
		Customer Awareness		Customer Perception		Customer Satisfaction	
Model		Sum of Squares	Sig.	Sum of Squares Customer Perception	Sig.	Sum of Squares Customer Satisfaction	Sig.
1	Regression	1627.686	.000	3918.694	.000	3356.694	.000
	Residual	0.000		0.000		0.000	
	Total	1627.686		3918.694		3356.694	

(Source: Researcher's data Analysis through SPSS)

INTERPRETATION OF ANOVA RESULTS AND HYPOTHESIS TESTING:

Models' Statistical Significance: The p-value for all three categories (Customer Awareness, Customer Perception, and Customer Satisfaction) is .000, which is less than the threshold of 0.05. This suggests that all three models are statistically significant. Consequently, we reject the null hypothesis for each model, thereby confirming that the independent variables in the regression model substantially account for the variance in customer awareness, perception, and satisfaction.

Customer Awareness

- Sum of Squares (Regression): 1627.686
- Significance (p-value): .000
- Inference: The p-value is less than 0.05, indicating that the model for customer awareness is statistically significant. This means that the independent variables in the regression model significantly explain the variation in customer awareness.

Customer Perception

- Sum of Squares (Regression): 3918.694
- Significance (p-value): .000
- Inference: The p-value is less than 0.05, indicating that the model for customer perception is statistically significant. This suggests that the independent variables significantly explain the variation in customer perception.

Customer Satisfaction

- Sum of Squares (Regression): 3356.694
- Significance (p-value): .000
- Inference: The p-value is less than 0.05, indicating that the model for customer satisfaction is statistically significant. This means that the independent variables significantly explain the variation in customer satisfaction.

Overall Inference:

- All three models (Customer Awareness, Customer Perception, and Customer Satisfaction) are statistically significant, as indicated by their p-values of .000.
- This implies that the independent variables used in each model have a significant impact on customer awareness, perception, and satisfaction, respectively.
- The high sum of squares values for each model suggests that a substantial portion of the variance in customer awareness, perception, and satisfaction is explained by the model.

FINDINGS:

- **Average Wait Time & Customer Awareness:** The average wait time for a cab has the strongest positive correlation with customer awareness ($r = .533$), suggesting that lengthier wait times significantly increase customer awareness.
- **Traditional Taxi Use:** A moderate positive correlation ($r = .421$) exists between the frequency of traditional taxi use and customer awareness, indicating that traditional taxi users are more informed.
- **Route Variation and Online Cab Use:** A moderate correlation exists between the experience of varied routes by drivers ($r = .348$) and the use of online cabs ($r = .356$), underscoring the impact of these factors on customer awareness.
- **Peak Hour Availability:** The positive correlation between availability during peak hours and customer awareness is lower ($r = .282$), suggesting that it makes a smaller contribution to awareness.
- **App User-Friendliness:** The app's user-friendliness is the most significant factor influencing customer perception ($r = .419$), making it a critical determinant in the way customers perceive ride-hailing services.
- **Metro Station Provisions:** A robust positive correlation ($r = .373$) exists between customer perception and agreement with metro station provisions, indicating that such provisions improve customer perception.
- **Partnership Perception:** Additionally, there is a substantial positive correlation between customer perception and the perception of the Ola-IRCTC partnership ($r = .307$), suggesting that partnerships are of paramount importance.
- **Price and Driver Rating:** The significance of price ($r = .290$) and driver's rating ($r = .286$) in cab booking is moderately correlated with consumer perception, rendering them essential factors.
- **Eco-Friendly Vehicles:** The significance of eco-friendly vehicles has a lower correlation with consumer perception ($r = .152$), suggesting that it has a minimal impact on perception.
- **Payment Options and Customer Satisfaction:** The significance of payment flexibility is underscored by the highest correlation between customer satisfaction and satisfaction with payment options ($r = .359$).
- **Fleet Quality:** Customer satisfaction is significantly influenced by fleet quality ($r = .356$), suggesting that higher satisfaction is associated with higher-quality vehicles. Satisfaction with GPS accuracy ($r = .353$) and the efficacy of issue resolution ($r = .353$) have a substantial impact on overall customer satisfaction.
- **Safety and Fare Transparency:** The lowest correlations with customer satisfaction are safety/security while traveling by cab ($r = .104$) and fare transparency ($r = .123$), suggesting that they are of diminished importance in this context.
- **ANOVA Significance:** The ANOVA results indicate that the hypotheses for customer awareness, perception, and satisfaction are statistically significant ($p\text{-value} = .000$), suggesting that the variables employed in the models effectively account for the variation in these constructs.
- **Variance Explanation:** The elevated sum of squares values for customer awareness (1627.686), perception (3918.694), and satisfaction (3356.694) indicate that the models account for a significant portion of the variance in these constructs.

RECOMMENDATIONS

- **Enhance Route Transparency:** Implement real-time route monitoring for customers to reduce dissatisfaction related to unexpected route deviations.
- **Monitor Fare Adjustments:** Introduce clear and transparent fare structures, especially during peak hours or surge pricing, to improve customer trust.
- **Strengthen Complaint Resolution:** Develop a more effective and timely complaint resolution process to address customer grievances, particularly concerning cancellations and fare disputes.
- **Increase Availability During Peak Hours:** Ensure a higher availability of cabs during peak hours and odd times by optimizing fleet management and incentivizing drivers.
- **Promote Eco-Friendly Vehicles:** Expand the fleet of eco-friendly vehicles to meet growing customer demand and support sustainable transportation initiatives.
- **Enhance App User Experience:** Continue to refine the app interface to maintain and improve user-friendliness, which is crucial for customer retention.
- **Focus on Fleet Quality:** Regularly maintain and upgrade vehicles to ensure a consistently high standard of fleet quality, leading to better customer satisfaction.
- **Address Technical Issues Proactively:** Establish a robust technical support system to promptly resolve any app-related issues that customers may face, ensuring a seamless service experience.

CONCLUSION

The present study demonstrates that app-based taxi services like Ola, Uber & other operators have become an integral part of urban commuting in Pune City. The study reveals that customer awareness, perception, and satisfaction are significantly influenced by factors such as wait time, traditional taxi use, online cab usage, peak hour availability, app user-friendliness, metro station provisions, partnership perception, price and driver rating, eco-friendly vehicles, payment options, fleet quality, GPS accuracy, issue resolution, and safety and fare transparency. Longer wait times and frequent use of traditional taxis have the highest positive correlation with customer awareness. The study also found that online cab usage and different routes by drivers also influence customer awareness. The importance of price and driver ratings in cab booking is moderately correlated with customer perception. The study also found that safety and fare transparency have the lowest correlations with customer satisfaction. The research underscores the significance of sustainable and inclusive practices in the evolving urban transportation landscape. The study also highlights the importance of eco-friendly vehicles and accessibility features.

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