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Exploring Urban Mobility in NCR: A Study on Ride-Hailing App Satisfaction

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Abstract

The traditional public transportation system in the Philippines, dominated by jeepneys, tricycles, buses, and taxis, has undergone a significant transformation with the emergence of ride-hailing services facilitated by smartphone applications. This study investigates the development of ride-hailing services, particularly focusing on Grab, its rise to prominence, and its subsequent merger with Uber. It highlights how these services have reshaped the transportation landscape, influencing the demand for conventional transport modes and giving rise to alternative services such as motorcycle taxis. While ride-hailing services offer convenience and innovation, they also present challenges, including safety concerns like harassment and overcharging. Research indicates that factors such as safety, fare transparency, convenience, and service quality are crucial in shaping consumer perceptions and usage of ride-hailing platforms. This study aims to bridge the knowledge gap by examining the factors that have driven the adoption and growth of ride-hailing services in the Philippines. It explores the essential characteristics and functionalities of these platforms and their impact on passenger comfort, convenience, and satisfaction. By analyzing perspectives from both passengers and drivers, the research seeks to provide insights into the benefits, challenges, and potential areas for improvement within the ride-hailing ecosystem. Through a detailed analysis of customer satisfaction and complaint trends, this study aims to identify key variables and obstacles faced by ride-hailing services. The ultimate goal is to enhance service quality across these platforms. By contributing to a deeper understanding of the evolving transportation landscape in the Philippines, this research offers valuable information for stakeholders in the industry.

Keywords
Ride-hailing, Transportation, Customer Satisfaction, Service Quality, and Safety Concerns

1. Introduction
Ride-hailing apps' (RHAs) growing popularity has significantly changed the transportation scene in the Philippines. RHAs' simplicity, affordability, and digital accessibility have made them a favorite method of transport in metropolitan areas since GrabCar's inception in 2013, especially in the National Capital Region (NCR). Real-time booking, fare transparency, and flexible transportation choices offered by these services cause a slow drop in the usage of conventional Public Utility Vehicles (PUVs) including tricycles, taxis, and jeepneys. Tasked with overseeing these

modifications under Executive Order No. 202, the Land Transportation Franchising and Regulatory Board (LTFRB) needs to preserve safety and operational criteria.

The growing usage of RHAs, nevertheless, is not without problems. User safety and service quality have been called into question by reports of harassment, overcharging, wrong drop-off sites, and driver misbehavior (Nayeem, 2018; Wong & Szeto, 2018). The change has also affected the income of conventional transport drivers, hence contributing to the increasing discussion on the ride-hailing platforms' long-term viability.

Though well-liked, these services have little study on user satisfaction and commuter views in the Philippine setting. This study intends to fill that gap by examining the main elements affecting passenger satisfaction; such as safety, affordability, convenience, comfort, and service dependability, and how they affect the whole experience with RHAs. The results will offer analysis that might enhance the ride-hailing ecosystem for passengers as well as service providers.

1.1 Objectives

The study analyzes commuter satisfaction within Metro Manila's ride-hailing services, focusing on key aspects such as passenger security, fare payment systems, app accessibility, and the overall user experience. By evaluating these factors, the research will identify strengths and weaknesses in the ride-hailing industry and suggest areas for improvement. A primary goal is to enhance the quality of ride-hailing services, improve customer loyalty, and address challenges like safety concerns, fare transparency, and ease of service access. The findings will offer actionable recommendations for improving service quality, customer satisfaction, and ensuring sustainability in the sector. These proposals will focus on making the ride-hailing industry in Metro Manila more efficient, user-friendly, and environmentally friendly. The researchers hope that key stakeholders, ride-hailing companies, government agencies, and policymakers will implement these recommendations to create a more reliable, inclusive, and sustainable transportation system. Specifically, the study conducted by Engineering students of the University of Santo Tomas seeks to enhance the user experience of ride-sharing applications by achieving the following objectives: evaluating the level of customer satisfaction regarding safety measures put in place by representative ride-sharing apps among people in NCR; analyzing the role of pricing transparency and service reliability in influencing commuter satisfaction and loyalty; identifying the convenience factors that significantly impact overall satisfaction among ride-hailing application users across NCR; investigating how ease of booking, wait times, and vehicle availability affect customer satisfaction; exploring the connection between service attraction attributes, such as driver treatment and vehicle hygiene, and customer satisfaction; assessing the impact of network design characteristics, including driver availability and coverage, on user satisfaction; and evaluating overall customer satisfaction regarding safety measures, fare transparency, convenience factors, and service characteristics.

2. Literature Review

Passengers' Satisfaction with Service Quality of App-Based Ride-Hailing Services In Developing Countries
In recent years, app-based ride-hailing services (ABRHS) have gained substantial popularity worldwide, transforming the transportation landscape and offering a convenient mode of travel. The sustainability and growth of these services largely depend on customer satisfaction with their service quality, making it crucial to assess the factors influencing this satisfaction. Previous studies have highlighted the importance of understanding customer perspectives, as satisfaction impacts future intentions to use these services. However, there remains a need for further research on how specific service quality attributes such as reliability, professionalism, network design, and service attraction affect commuter satisfaction and intentions, particularly in developing regions where ABRHS adoption is still evolving.

The present study addresses this gap by examining the determinants of customer satisfaction and behavioral intentions toward ABRHS in Lahore, Pakistan, using survey data from 865 respondents. Employing exploratory factor analysis (EFA) and Structural Equation Modeling (SEM), the research constructs a comprehensive model of travelers' satisfaction with ABRHS service quality. The findings reveal that overall satisfaction mediates the relationship between various service quality attributes namely, service and system attributes, service attraction attributes, network design, and service reliability and professionalism and users' intentions to continue using these services.

This study contributes to the growing body of knowledge by confirming that overall satisfaction with ABRHS plays a mediating role, strengthening the direct impact of specific service quality factors on user retention intentions (Iqbal et al., 2022). These findings align with previous research in transportation service quality (Hensher et al., 2020),

reinforcing the need for continuous quality improvement to enhance customer satisfaction and promote the sustained use of app-based ride-hailing services. As such, enhancing the reliability, design, and attractiveness of ABRHS can further improve user satisfaction and support the long-term success of these services in emerging markets.

3. Methods

This study employs a quantitative research approach to analyze customer satisfaction with app- based ride-hailing services in the National Capital Region (NCR). A structured survey was developed to collect data from respondents who are active users of ride-hailing applications such as Grab, Angkas, and Joyride. The study utilizes a simple random sampling technique to ensure that every potential participant has an equal chance of being selected, thereby improving the reliability and generalizability of the findings. The sample size was determined using Slovin's formula, ensuring statistical validity in representing the target population. The survey consists of three main sections: demographic information, travel habits, and service quality assessment based on key factors influencing consumer satisfaction. A five-point Likert scale was used to measure perceptions of service and system attributes, service attraction attributes, network design attributes, and service reliability and professionalism attributes. To analyze the data, correlation analysis and path coefficients were applied to identify relationships between independent variables and overall customer satisfaction. Statistical computations, including reliability testing through Cronbach's Alpha, were conducted using the R Project for statistical computing. Ethical considerations were also observed, ensuring participant anonymity and informed consent to encourage honest responses. By employing a structured methodology, this research aims to provide valuable insights for policymakers, transportation planners, and ride-hailing service providers to improve service quality and customer satisfaction.

4. Data Collection

The researchers used a self-developed questionnaire to collect data, which their advisors initially verified and authorized. Google Forms was used to disseminate the survey; it was shared online via Facebook, Instagram, and QR codes as well as in person throughout several Metro Manila sites. The study uses correlation analysis to assess customer satisfaction with ride-hailing services, focusing on reliability, service quality, and safety. Hypothesis testing and R Project processing will be used to identify key drivers, aiming to improve services and foster customer loyalty.

5. Results and Discussion

5.1 Numerical Results

The survey collected responses from 429 participants, with their demographic characteristics summarized in Table 1. Age-wise, a significant majority (77.2%) of respondents fall within the 18-23 age group, while 7% are under 18, and 15.9% are aged 23 or older, indicating a strong representation of young adults in the sample.

Regarding gender distribution, the responses are relatively balanced: 50.3% of participants identify as male, 43.8% as female, and 5.8% opted not to disclose their gender. This reflects equitable participation from both genders.

The survey also examined the geographic distribution of respondents, as summarized in Table 2. Manila and Quezon City emerged as the most prominent locations, with 20.42% and 18.33% of participants residing in these respective cities. Following these, Makati and Marikina accounted for 7.89% and 6.96%, respectively, indicating a notable presence across various areas within Metro Manila. The diversity of respondents' locations is further highlighted by the varying percentages from other cities, including Mandaluyong (6.26%), Caloocan (6.03%), and Las Piñas (6.03%). This distribution underscores the broad geographic representation of participants, enhancing the study's relevance to the experiences of ride-hailing application users throughout the NCR (Table 1).

Table 1. Demographics

Indicator	Level	Count	Pct
Age	Below 18	30	7
	18-23	331	77.2
	23 and above	68	15.9
Sex	Male	216	50.3
	Female	188	43.8
	Prefer not to say	25	5.8
Income / Allowance	5,000 - 10,000	210	52.4
	10,001 - 15,000	124	30.9
	15,001 - 20,000	42	10.5
	20,001 and above	25	6.2

Table 2. Respondents' Location

City	Count	Pct
1. Manila	88	20.42%
2. Quezon City	79	18.33%
3. Makati	34	7.89%
4. Marikina	30	6.96%
5. Mandaluyong	27	6.26%
6. Caloocan	26	6.03%
7. Las Piñas	26	6.03%
8. Pasig	25	5.80%
9. Taguig	18	4.18%
10. Malabon	14	3.25%
11. Muntinlupa	13	3.02%
12. Navotas	13	3.02%
13. Pasay	11	2.55%
14. San Juan	11	2.55%
15. Parañaque	11	2.55%
16. Pateros	3	0.70%
17. Valenzuela	2	0.46%

5.2 Graphical Results

The analysis examines the relationships between various constructs and their influence on customer satisfaction and the intention to continue using ride-hailing services. The results reveal that Service has a weak and statistically insignificant effect on Satisfaction, with a correlation coefficient of 0.409 and a p-value of 0.300 (Table 3). This suggests that variations in service quality do not significantly affect customer satisfaction. Similarly, Attraction demonstrates a weak and non-significant relationship with satisfaction (correlation coefficient = 0.184, p-value = 0.223), indicating a slight positive association that lacks robustness. Network Design also shows a weak and statistically insignificant effect on satisfaction, with a correlation coefficient of 0.163 and a p-value of 0.509, suggesting minimal influence. Among all predictors, Professionalism exhibits the weakest positive effect (correlation coefficient = 0.133, p-value = 0.555), indicating limited relevance to satisfaction levels within this model (Figure 1).

In contrast, Satisfaction serves as a strong and significant predictor of Intention to Continue, with a robust correlation coefficient of 1.069 and a highly significant p-value of 0.000. This finding emphasizes the critical role of satisfaction in promoting customer retention and ongoing engagement. Overall, while the antecedent factors Service, Attraction, Network Design, and Professionalism show limited direct effects on Satisfaction, the strong correlation between

Satisfaction and Intention to Continue highlights the importance of prioritizing customer satisfaction to ensure long-term commitment from users.

Table 3. Path Coefficients from the Model

Path	Est	SD	P Value	95% Confidence		
				Lower	Upper	Remarks
Performance -> Service	0.409	0.395	0.300	0.448	0.448	Weak
Performance -> Attraction	0.184	0.151	0.223	0.194	0.194	Weak
Performance -> Network	0.163	0.248	0.509	0.201	0.201	Weak
Performance -> Professionalism	0.133	0.226	0.555	0.134	0.134	Weak
Service -> Satisfaction	1.069	0.107	0.000	0.923	0.923	Strong
Attraction -> Satisfaction	0.409	0.395	0.300	0.448	0.448	Weak

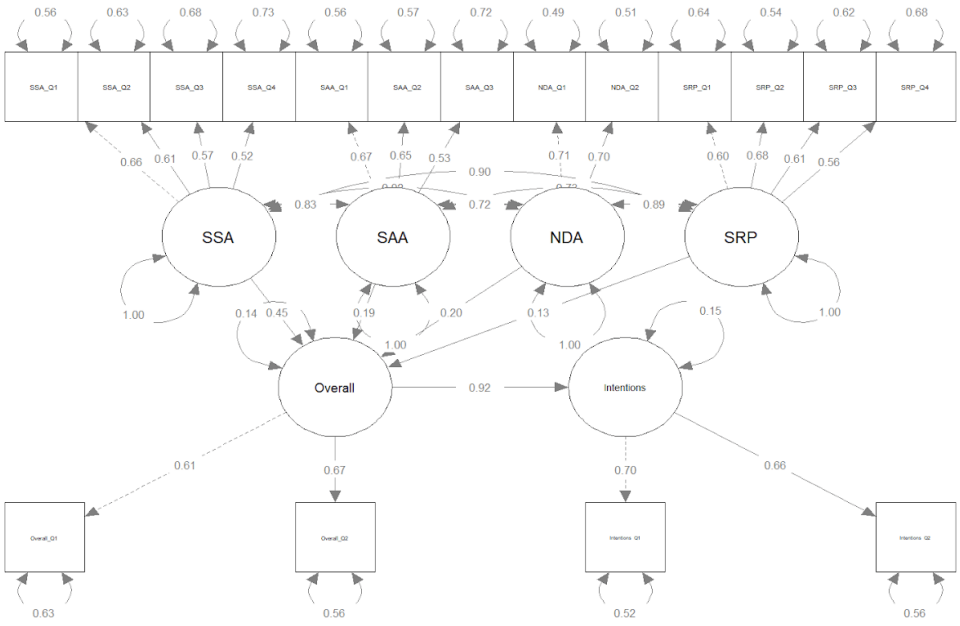

Figure 1. Visual Representation of Path Coefficients

5.3 Proposed Improvements

While this study provides valuable insights into the factors influencing customer satisfaction, it is important to recognize its limitations. The focus on young adults in Metro Manila restricts the generalizability of the findings. To achieve a more comprehensive understanding, future research should consider a broader demographic and geographic scope. Additionally, the reliance on self-reported data introduces potential bias; thus, implementing ongoing user feedback mechanisms and real-time analytics could yield valuable insights into evolving preferences.

Ride-hailing service providers should approach the recommended enhancements with caution, keeping the study's limitations in mind. As they implement suggested improvements, it is crucial to continuously collect and analyze data to adapt to changing user expectations and preferences. By doing so, providers can ensure that their services remain relevant and responsive to the needs of their customers, ultimately fostering greater satisfaction and loyalty.

5.4 Validation

To confirm the reliability and relevance of the survey questionnaires before data analysis, the Cronbach's alpha for the Likert scale items was calculated. This assessment aimed to evaluate the internal consistency of the Likert items, ensuring that the responses accurately represented the intended constructs of the questions. The reliability of each section is detailed in the table below. The specific Cronbach's alpha values for each section can be found in Table 4.

The reliability of the survey questionnaire is supported by the Cronbach's alpha values for each characteristic, which range from 0.57 to 0.7. These values are deemed acceptable according to the criteria established by Ahdika (2017). It is important to note that the scoring for Cronbach's alpha was adjusted due to the limited number of items in certain subcategories, as a smaller item count can lead to lower alpha values (Dennick & Tavakol, 2011).

Table 4. Cronbach's Alpha

Characteristic	Item	Factors	Cronbach's Alpha	Reliability
Service and System Attributes	SSA1	Complaint-handling system satisfaction	0.68	Survey questions are reliable
	SSA2	User-friendliness of application		
	SSA3	Travel time reduction		
	SSA4	Information and updates satisfaction		
Service Attraction Attributes	SAA1	Security when using ride-hailing services	0.64	Survey questions are reliable
	SAA2	Cleanliness and hygiene		
	SAA3	Pricing consistency		

Network Design Attributes	NDA1	Accuracy of pick-up locations	0.66	Survey questions are reliable
	NDA2	Convenience of pickup and drop-off locations		
Service Reliability and Professionalism	SRP1	Positive driver rating consistency	0.7	Survey questions are reliable
	SRP2	Pricing and regulations transparency		
	SRP3	Availability and pick-up times trustworthiness		
	SRP4	Vehicle options satisfaction		
Overall Service Satisfaction	OS1	Positive driver rating consistency	0.57	Survey questions are reliable
	OS2	Overall satisfaction when using service		
Intention to Continue	IC1	Intention to use in the future	0.6	Survey questions are reliable
	IC2	Recommendation to other users		

In Table 5, we present the model fit indices for our SEM, using cutoff values as suggested by Kock (2015): The CFI is 0.943, which is above the threshold of ≥ 0.90 and thus indicates a very good fit of the model to the data. This result means that the CFI compared our model to a baseline model, and the proposed model seemed to fit adequately as far as the relationships among latent constructs are concerned.

Similarly, the TLI stands at 0.928, also above the threshold of ≥ 0.90. This further justifies the fact that the model fits well, hence reinforcing the reliability of the estimated relationships within the SEM framework. The TLI takes into account model complexity and penalizes overly complex models; thus, it helps promote parsimony while assessing fit.

The RMSEA is estimated at 0.053, which falls below the acceptable limit of ≤ 0.05. This would imply that there is only a trivial average discrepancy between the observed and predicted covariance matrices, suggesting a good fit for the model. RMSEA measures how well our model approximates the actual data per degree of freedom and provides a clear indication of overall model accuracy.

Also, the Standardized Root Mean Square Residual is 0.041, which falls well below the threshold of ≤ 0.05. This small value of SRMR shows that the average magnitude of differences between observed and predicted is low,

reinforcing that there is a good fit in our model to the data. The SRMR shows how well our model captures the variance of the empirically observed covariance matrix and itself has a rather intuitive interpretation.

In all, these fit indices demonstrate the general fit of our SEM model to be strong and reliable. Although CFI and TLI provide reasonable thresholds to show the strength of the relationships between constructs, the values for both RMSEA and SRMR indicate a very small difference between observed and predicted values. These findings substantiate that our SEM model best fits the analysis of data and effectively represents the underlying constructs in this study.

Table 5. Model Quality Indices

Model Fit Indices	Values	Reference	Remark
Comparative Fit Index	0.943	≥ 0.90	Passed
Tucker-Lewis Index	0.928	≥ 0.90	Passed
Root Mean Square Error of Approximation	0.053	≤ 0.05	Considered
Standardized Root Mean Square Residual	0.041	≤ 0.05	Passed

6. Conclusion

This study examined the factors influencing passenger satisfaction and user intentions in ride-hailing services within the National Capital Region (NCR). By analyzing survey responses from 429 participants, the research highlighted key demographic insights, showing that the majority of users were young adults aged 18-23, with Manila and Quezon City emerging as the most active areas for ride-hailing services. The study also found that users generally expressed high satisfaction levels, citing ease of use, service variety, and availability as significant factors. The strong tendency to recommend these services suggests a positive perception and potential for organic growth in the industry. Key factors such as service reliability, professionalism, and network design were identified as crucial elements influencing customer satisfaction. Statistical analysis confirmed the strong relationships between these service attributes and user perceptions, reinforcing the importance of maintaining high-quality service standards.

The findings also suggested that while users were satisfied, overall satisfaction and intention to continue did not significantly impact their long-term engagement, indicating areas for further investigation. The study's robust model, validated through composite reliability and factor analysis, provides a valuable framework for understanding ride-hailing service dynamics. For ride-hailing service providers, the study offers practical recommendations to enhance customer satisfaction. Companies should focus on improving service reliability, driver professionalism, and overall user experience while continuously gathering user feedback to adapt to evolving expectations. Future research should expand the demographic and geographic scope beyond Metro Manila to gain a more comprehensive understanding of user behavior. Additionally, integrating real-time analytics and ongoing feedback mechanisms could help companies refine their services and maintain customer loyalty in an increasingly competitive market.

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