Evaluating the Viability of Motorcycle Taxis as Public Transportation in Metro Manila: A Focus on Service Quality and Safety Features

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Abstract: This study aims to assess the use of a motorcycle taxi service as a public transportation option in Metro Manila, Philippines. Through an extensive review of literature, data collection via surveys, and analysis using statistical methods, the study evaluates the service quality and safety attributes that contribute to passenger satisfaction. The results highlight the importance of various service and safety factors, offering insights into potential improvements for motorcycle taxis and their broader adoption as legal and reliable modes of transport.

Keywords: Motorcycle Taxi, Motorcycle Safety, Service Quality

1. INTRODUCTION

Public transportation in the Philippines faces significant challenges, notably due to severe traffic congestion. As a common consequence, alternative transportation options such as Transportation Network Companies (TNCs) have gained popularity. An app-based ridesharing company using motorcycles has emerged as a prominent player in this space. Despite its popularity, legal and regulatory issues persist, particularly the prohibition of motorcycles as public utility vehicles (PUVs). This study examines the viability of motorcycle taxis within this regulatory context.

2. OBJECTIVES OF THE STUDY

This research aims to identify specific qualities that motorcycle taxi services can improve to become a more attractive option for public transportation. To achieve this, the study will focus on the following areas:

- Understanding the characteristics of motorcycle taxi users, including demographics, travel patterns, and motivations for using such services.

- Identifying the service quality and safety attributes preferred by passengers of motorcycle taxi services.

3. SIGNIFICANCE OF THE STUDY

This study seeks to explore ways to enhance the service quality and safety of motorcycle taxis, while also identifying strategies to support their recognition as a legitimate mode of public transport. By analyzing passenger characteristics and perceptions, the research will provide insights that can guide the development of effective implementation plans for motorcycle taxis in the Philippines.

4. SCOPE AND LIMITATIONS

This study focused only on one Transport Network Vehicle Services (TNVS) motorcycle taxi provider that offers pre-arranged, point-to-point transport services using an app-based interface. The study covers Metro Manila as a general area mainly because of the significant total number of motorcycle taxis operating compared to other cities.

5. REVIEW OF RELATED LITERATURE

Traffic jams in Metro Manila are extremely severe, ranking among the worst internationally. This has resulted in the rise of motorcycles as a common mode of transportation in developing countries. Despite previous research examining the advantages (convenience, affordability) and disadvantages (safety concerns) of motorcycle taxis, there is limited knowledge about how these factors specifically affect Motorcycle taxi riders. Here are the relevant research for this study.

Regidor, Ladaga, Latonero, and Avendaño (2017) examined the operational characteristics and challenges of motorcycle taxi operations in both rural and urban settings in the Philippines. Key issues identified included the lack of regulation for motorcycle taxis, leading to informal operations, safety concerns due to unregulated modifications and operations, and the high dependency on motorcycle taxis in areas with deficient public transport services.

Latonero, Kamid, and Regidor (2019) further explored the usage patterns, regulatory challenges, and safety concerns related to motorcycle taxis in Metro Manila, highlighting the challenges in regulating informal operations, and incidents of safety concerns involving motorcycle taxis.

Wu and Loo (2016) investigated safety practices, crash rates, and regulatory frameworks for motorcycle taxi drivers and non-occupational motorcyclists in developing countries. Their study emphasized the need for robust regulatory frameworks to address the high crash rates and improve safety practices among motorcycle taxi drivers.

Assegaff and Pranoto (2020) focused on analyzing the impact of pricing strategies on customer loyalty and the role of service quality in the ride-hailing industry. They discussed how pricing strategies influence customer loyalty, the role of service quality in customer retention, and the market dynamics that affect customer choices in ride-hailing services.

Finally, Santiago, Villarete, and Fillone (2023) explored the regulatory, economic, and safety challenges of motorcycle taxis in the Philippines, particularly the impact of ride-hailing apps on traditional motorcycle taxi operations. Their study identified the need for balancing formal

regulations, such as safety and licensing, with the challenges of regulating informal operations. They also weighed the economic benefits of motorcycle taxis, such as employment and mobility, against the associated safety concerns, offering policy recommendations for integrating motorcycle taxis into a safer and more formal transportation system.

The research presented in the literature highlights the complex dynamics surrounding motorcycle taxis in developing countries, particularly in the Philippines. Several studies have underscored the operational challenges, regulatory gaps, and safety risks associated with these services (Regidor et al., 2017; Latonero et al., 2019; Wu & Loo, 2016). The heavy reliance on motorcycle taxis, particularly in areas where public transportation is deficient, poses both benefits and risks, with convenience and affordability being offset by significant safety concerns.

Additionally, the rise of ride-hailing services has introduced new dimensions to the motorcycle taxi industry. Assegaff and Pranoto (2020) highlighted the importance of service quality and pricing strategies in maintaining customer loyalty, which also applies to motorcycle taxi operations. Furthermore, Santiago et al. (2023) provided valuable insights into how formal regulations, market dynamics, and safety issues intertwine, emphasizing the need for policies that can effectively integrate motorcycle taxis into formal transportation systems.

This study was conceptualized in response to the growing need for a more comprehensive understanding of the factors affecting motorcycle taxi riders, both in terms of service quality and safety. By building on existing research and addressing the gaps identified, particularly regarding the perspectives of the riders themselves, this study aims to contribute to the development of evidence-based policies that can improve the safety, regulation, and overall quality of motorcycle taxi services in the Philippines.

6. METHODOLOGY

6.1 Data Collection

The survey was designed to gather comprehensive data on the experiences of motorcycle taxi users in Metro Manila. It targeted motorcycle taxi passengers and was divided into three key sections: Passenger Characteristics, Service Quality Attributes, and Safety Attributes. The Passenger Characteristics section collected demographic information and details about travel behavior. The Service Quality Attributes section, based on the SERVQUAL model (Parasuraman et al., 1985), assessed passengers' perceptions of service reliability, assurance, tangibility, empathy, and responsiveness. The Safety Attributes section, adapted from the Department of Transportation's General Guidelines for the Pilot Implementation of Motorcycle Taxis (2019), focused on safety precautions, traffic rule adherence, and use of safety equipment.

To identify the online sample, the survey was distributed via Google Forms. The link was shared in various Angkas Facebook groups, which provided access to a large and diverse pool of motorcycle taxi passengers. This online method was selected due to the difficulty of distributing printed copies and the need to increase the sample size quickly and efficiently. By tapping into these social media communities, the survey was able to reach a broad audience of active motorcycle taxi users.

6.2 Questionnaire Design

The questionnaire is structured into three sections: 1) Passenger characteristics 2) Service quality attribute ratings and 3) Safety attribute ratings.

The first section gathers demographic information about Angkas passengers, including age, gender, occupation, and monthly income. It also addresses trip purpose, license ownership, car accessibility, and the weekly frequency of using Angkas.

Figure 1 shows the passenger characteristics questionnaire design.

Age	[ ] <18	[ ] 18 - 35		Other modes used	[ ] Private Car	[ ] Taxi
	[ ] 35 -55	[ ] 55+			[ ] Grab	[ ] MRT/LRT
Sex	[ ] Male	[ ] Female			[ ] PUJ, PUV, Bus	[ ] Other: _____
Trip Purpose	[ ] Leisure	[ ] Business	[ ] Education	Occupation	[ ] Student	[ ] Retired
	[ ] Resident	[ ] Other			[ ] Employee (Full time)	[ ] Umemployed
City of Residence	_____				[ ] Employee (Part time)	[ ] Self-employed
Do you own a Philippines Driver's License?			[ ] Yes [ ] No	Income Range (Monthly)		[ ] Other: _____
Do you have access to a car here?			[ ] Yes [ ] No	[ ] Under Php 15,000		[ ] Php 15,000 - 25,000
Frequency of using Motorcycle Taxis	[ ] 1-3 times	[ ] 4 - 6 times		[ ] Php 25,001 - 40,000		[ ] Php 40,001 - 60,000
weekly:	[ ] 7-10 times	[ ] >10 times		[ ] Greater than Php 60,000		

Figure 1. Passenger characteristics questionnaire

The second section focuses on service quality attribute ratings and consists of fifteen (15) questions categorized according to Parasuraman's five dimensions: reliability, assurance, tangibility, empathy, and responsiveness. Respondents rate these attributes on a scale from one (1), indicating the least importance/satisfaction, to five (5), indicating the highest importance/satisfaction.

Table 2. Service Quality Attributes

SERVQUAL Dimension	Service Quality Attribute
Reliability	1. There is no downtime when using Angkas App.
	3. The driver does not cancel bookings.
	8. The driver delivers you to your destination quickly.
Assurance	10. The driver assists you when mounting the motorcycle.
	12. The driver is polite and friendly.
	13. The passenger is comfortable.
Tangibility	7. The driver offers a facemask and hair net.
	11. The driver appears neat and clean.
	14. The seats are clean.
Empathy	4. Discounts and promo codes are given frequently.
	5. Fares are reasonable and do not surge much.
	9. The driver charges you exactly as indicated in the app.
Responsiveness	2. The waiting time for the booking to be accepted is minimal.
	6. The driver picks you up on time.
	15. Service availability and changes are communicated in advance.

Table 3. Safety Attributes of Angkas

Safety Attributes
1. Safety precautions are readily known to passengers.
2. The driver follows traffic signs and signals.
3. The driver is skillful in maneuvering traffic.
4. The driver checks the passenger's comfort during the ride.
5. The driver and passenger wear the issued Angkas helmet.
6. The driver observes the speed limit.
7. The driver has undergone proper training and seminar.
8. The driver has the right to deny a heavy passenger.
9. There is a safety handle for the passenger to hold.
10. The driver drops you off at secured areas.
11. There is a back support for the passenger.
12. The driver has not been drinking alcohol.
13. The driver keeps overtaking other vehicles.
14. The motorcycle has functional headlights at night.

The third section, which pertains to safety attribute ratings, comprises fourteen (14) questions. These questions are based on and modified from the General Guidelines for the Pilot Implementation of Motorcycle Taxis under Section 2B Safety Requirements released by the Department of Transportation (DOTr) in May 2019. Similar to the service quality section, these safety attributes are rated on a scale from one (1), indicating the least importance/satisfaction, to five (5), indicating the highest importance/satisfaction. Table 2 presents the different safety attributes evaluated in this study.

In addition to the safety attribute questions derived from the General Guidelines, a supplementary question was included to determine whether the respondent had been involved in a road crash while riding Angkas. The response options for this question were based on the degrees of crash severity outlined in the chart of Levels of Crash Severity by Mao et al. (1997). Table 3 displays the modified degrees of crash severity used in the questionnaire.

Table 4. Degree of Road Crash

Levels of Crash Severity
1 - Property/Motorcycle damage-only (no person injured)
2 - Minimal (person has minor bruises/scratches but no medical attention required)
3 - Minor (person injured required medical care but not required hospitalization)
4 - Major (person injured and admitted to hospital)
5 - Fatal (person killed by injuries sustained in the crashed within 30 days)

The data collected through surveys was analyzed using descriptive statistics and gap analysis to evaluate the importance and satisfaction levels of various service quality and safety attributes. The mean, median, and gap values were used to highlight areas for improvement. The findings were derived from these analyses, allowing for interpretations regarding the overall passenger satisfaction with motorcycle taxis, leading to recommendations and inferences on how to enhance the service and safety standards.

7. RESULTS AND DISCUSSION

A total of 258 surveys were collected. After data cleaning, 5 responses were excluded due to invalidity. This resulted in a final sample size of 253 usable responses for analysis.

7.1 Descriptive Analysis

7.1.1 Passenger Characteristics

Figures 2 to 12 show the percentages of the different categories for each of the characteristics.

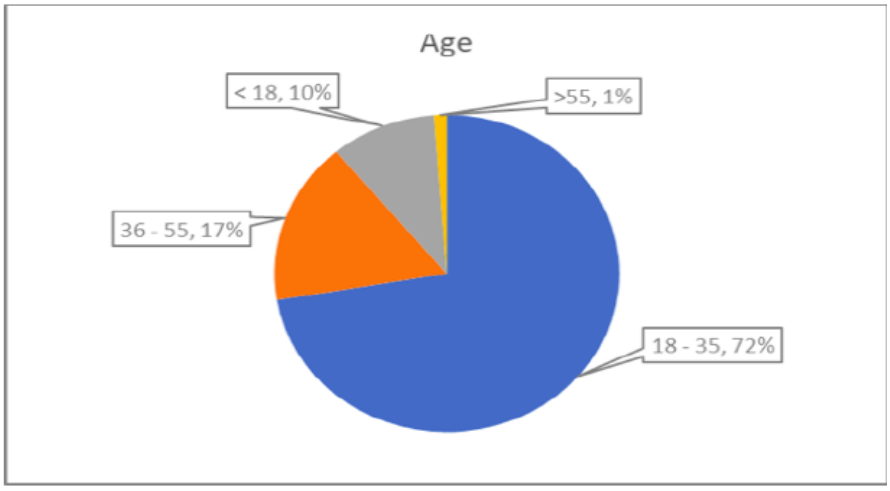

Figure 2. Age Profile

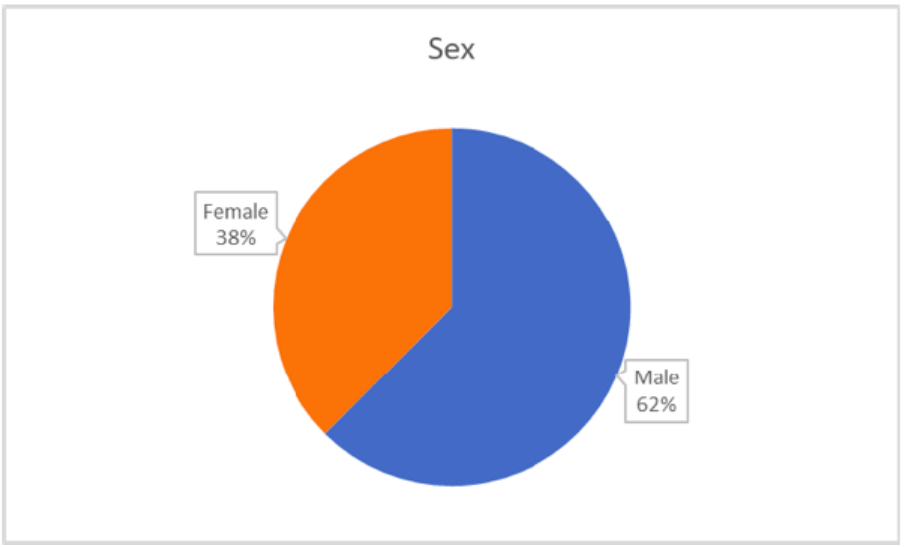

Figure 3. Sex/Gender Profile

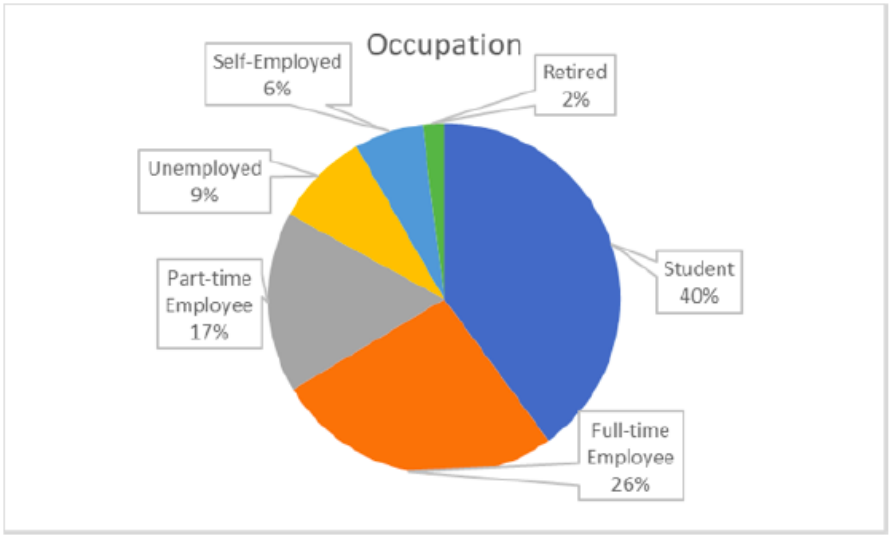

Figure 4. Occupation Profile

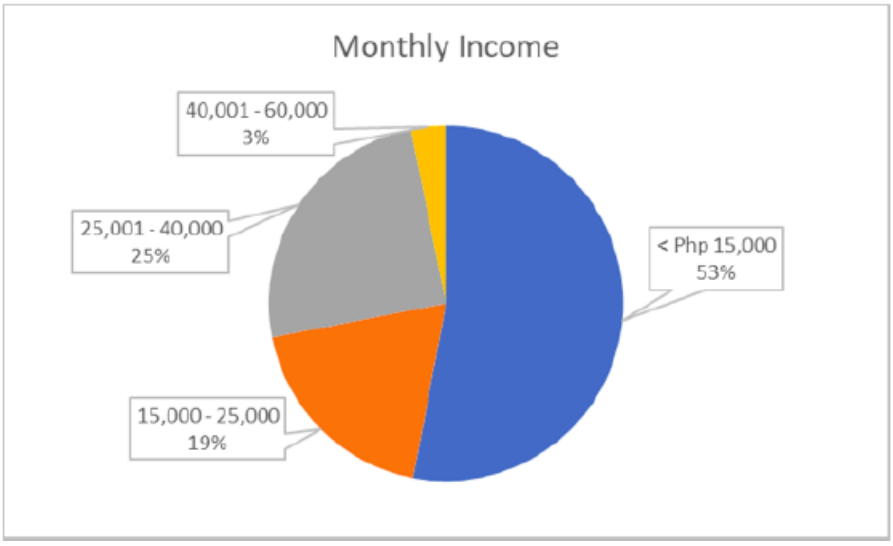

Figure 5. Monthly Income

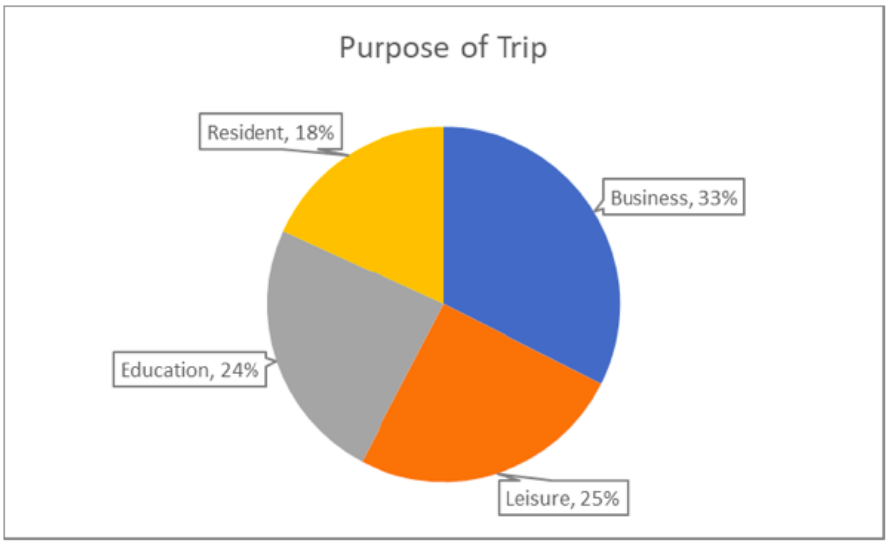

Figure 6. Trip Purpose

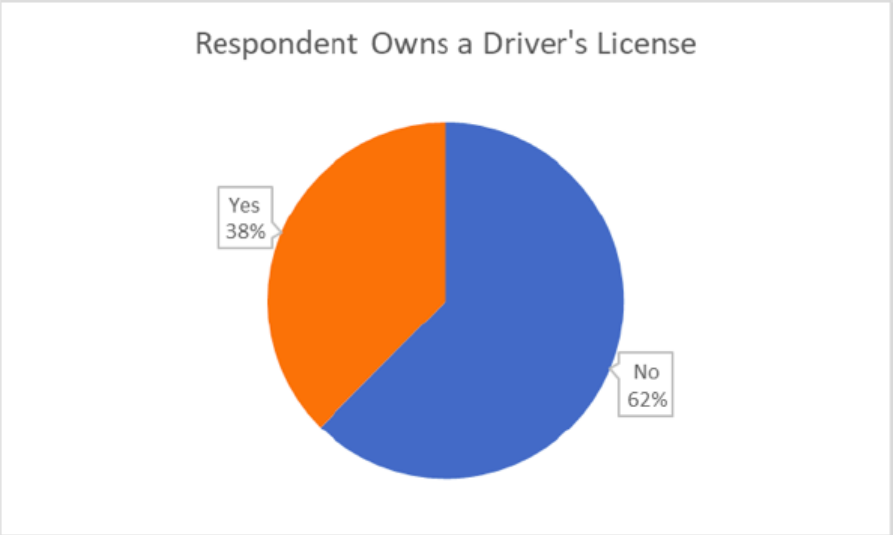

Figure 7. Driver's License Ownership

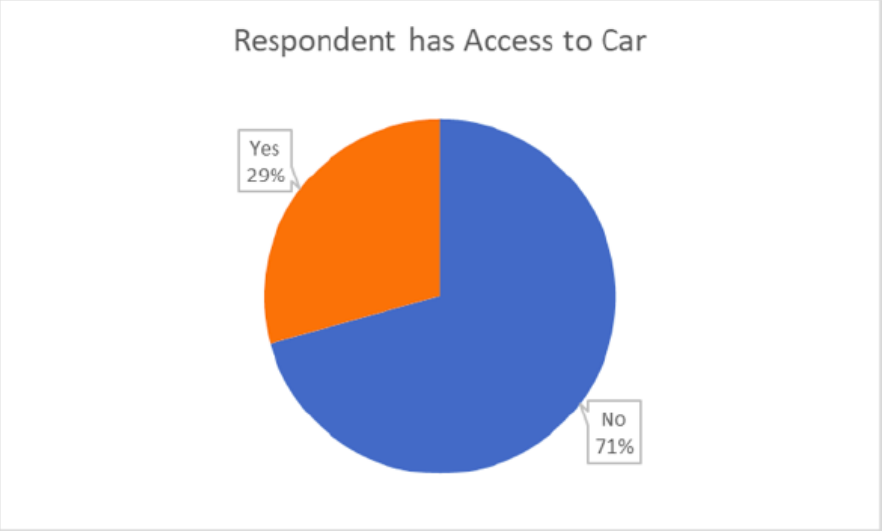

Figure 8. Access to car use

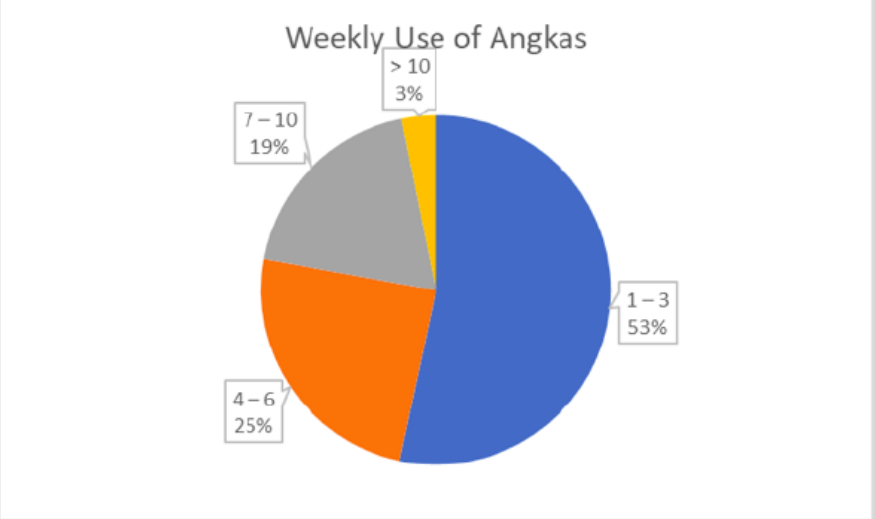

Figure 9. Frequency of use (weekly)

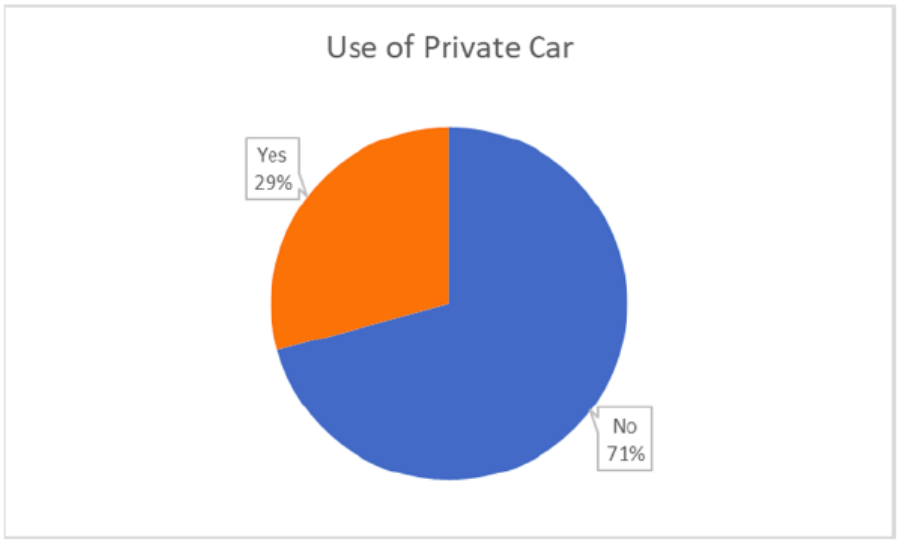

Figure 10. Car use

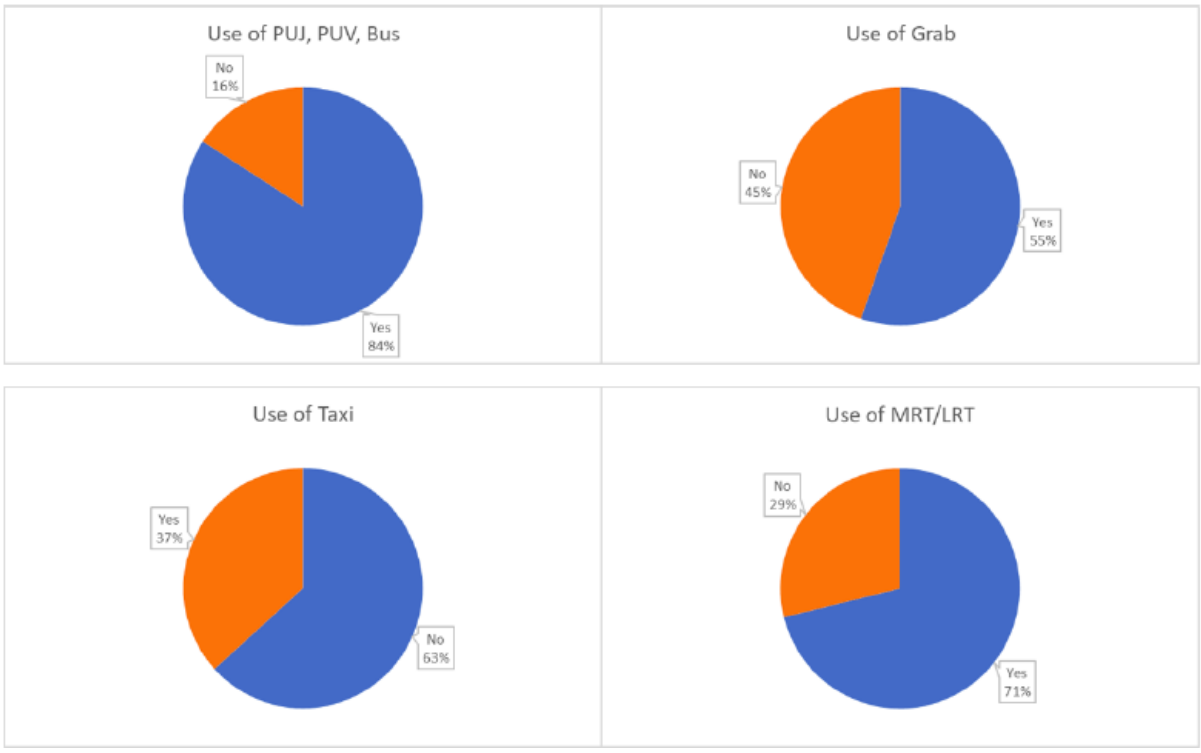

Figure 11. Other transport modes used

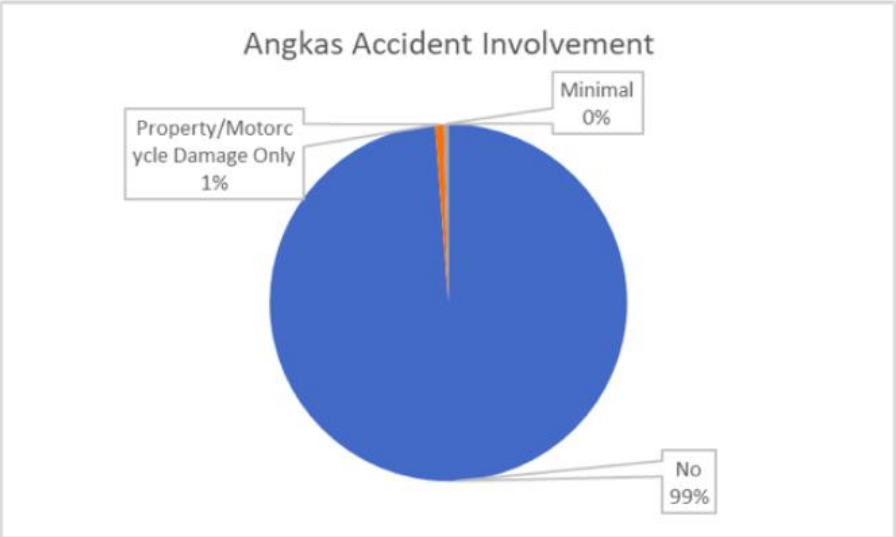

Figure 12. Road Crash Involvement

Based on the data gathered, Angkas passengers primarily consist of young adults to middle-aged individuals, specifically those aged 18 to 55, comprising 89% of the sample population. A significant majority of passengers are male, accounting for 62%, while females constitute 38%. This gender disparity suggests that men may be more comfortable riding motorcycles than women. Nyachio (2015) highlights that passenger seating style is a gendered issue, where societal norms expect women to sit 'properly' on motorcycles due to modesty considerations.

The predominant purpose for using Angkas is business-related, representing 33% of users. Other purposes include education, leisure, and residential needs. Additionally, 62% of passengers do not possess a driver's license and 70% lack access to a private vehicle. It is noteworthy that more than half of the sample population utilizes other forms of public transportation, such as taxis, MRT/LRT, and buses.

Occupationally, 40% of Angkas users are students, 26% are full-time employees, and 17% are part-time employees, indicating a diverse range of employment statuses among users. Furthermore, the survey revealed that out of 253 Angkas passengers, two individuals experienced motorcycle damage-only crashes, and one person was involved in a minor crash characterized by minor bruises or scratches that did not require medical attention.

7.1.2 Service Quality Attributes

The mean and median values of each attribute are summarized in Table 5. Given that the median values are consistently either 4 or 5, the mean values are emphasized for analysis. The mean ratings indicate a generally high level of importance and satisfaction for each attribute, with averages of 4.08 and 4.03, respectively. Notably, there are ten attributes where the importance rating exceeds the satisfaction rating, suggesting potential areas for service quality improvement. Additional analytical methods may also be utilized to provide further insights.

Table 5. Descriptive Analysis of Service Quality Attributes of Angkas

No.	Service Quality Attributes	Importance		Satisfaction	
		Mean	Median	Mean	Median
1	There is no down time when using Angkas app.	4.00	4	3.98	4
2	The waiting time for the booking to be accepted is minimal.	4.08	4	4.11	4
3	The driver does not cancel bookings.	4.36	5	4.11	4
4	Discounts and promo codes are given frequently.	3.71	4	3.55	4
5	Fares are reasonable and do not surge much.	4.49	5	4.06	4
6	The driver picks you up on time.	4.39	5	4.00	4
7	The driver offers a facemask and hair net.	4.09	4	4.06	4
8	The driver delivers you to your destination quickly.	4.15	4	4.10	4
9	The driver charges you exactly as indicated in the app.	4.53	5	4.28	5
10	The driver assists you when mounting the motorcycle.	3.65	3	4.04	4
11	The driver appears neat and clean.	3.85	4	4.07	4
12	The driver is polite and friendly.	3.85	4	4.30	5
13	The passenger is comfortable.	4.04	4	3.79	4
14	The seats are clean.	3.97	4	4.11	4
15	Service availability and changes are communicated in advance.	4.09	4	3.92	4

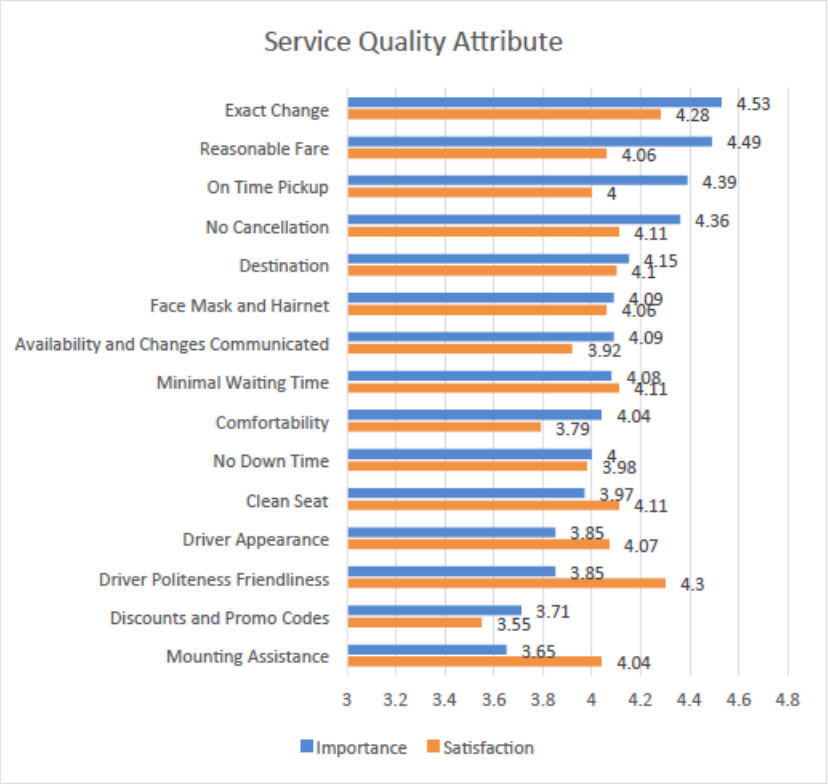

Figure 14. Statistical Mean of Service Quality

To further illustrate the difference between the importance and satisfaction of the service quality attributes, an extension of Parasuraman et al.'s (1988) gap analysis is utilized. The gap analysis values for importance and satisfaction for each attribute are displayed in Figure 15. Negative gap values indicate that passengers are satisfied with the service quality attributes of Angkas. These attributes include the driver's appearance and manners, clean seats, and minimal waiting time. The attribute with the highest gap is the reasonable fare. Overall, the other gap values are not significantly different from each other, suggesting that respondents are generally satisfied with the service, as indicated by the high ratings.

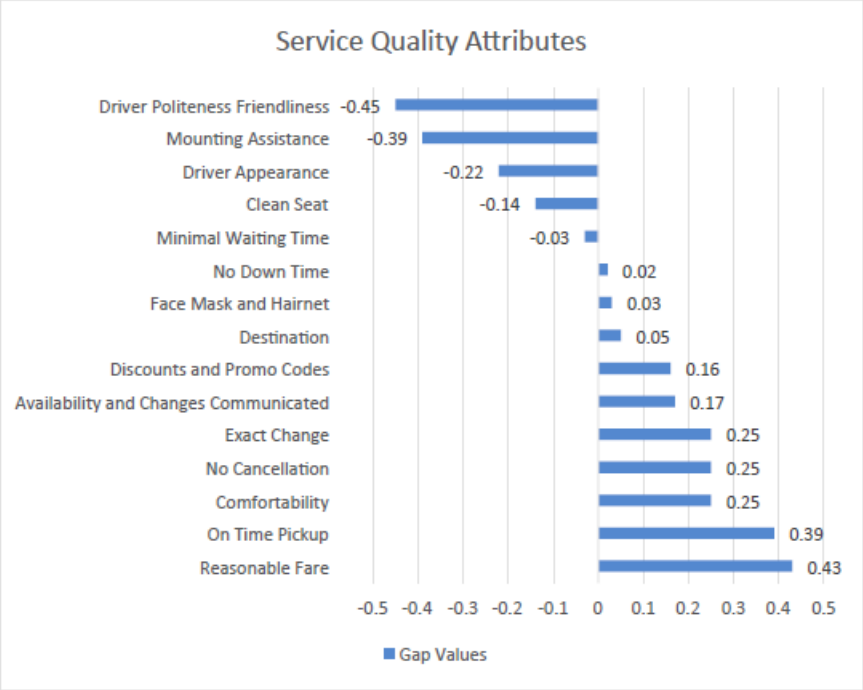

Figure 15. Gap Values of Service Quality

7.1.3 Safety Attributes

Table 6 presents the mean and median values for the importance and satisfaction of each safety attribute. The analysis primarily considers the mean values due to the consistency of the median values. The mean importance ratings range from 3.29 to 4.64, while the mean satisfaction ratings range from 3.64 to 4.53. The average mean value for importance is 4.15, and for satisfaction, it is 4.09. Additionally, the proximity of the importance and satisfaction ratings suggests that passengers are generally satisfied with the safety attributes of Angkas.

Table 6. Descriptive Analysis of Safety Attributes

No.	Safety Attributes	Importance		Satisfaction	
		Mean	Median	Mean	Median
1	Safety precautions are readily known to passengers.	4.40	5	4.22	4
2	The driver follows traffic signs and signals.	4.26	4	4.06	4
3	The driver is skillful in maneuvering traffic.	4.33	4	4.05	4
4	The driver checks the passenger's comfort during the ride.	3.74	4	4.15	4
5	The driver and passenger wear the issued Angkas helmet.	4.57	5	4.23	4
6	The driver observes the speed limit.	4.29	4	3.91	4
7	The driver has undergone proper training and seminars.	4.34	4	4.06	4
8	The driver has the right to deny a heavy passenger.	3.53	3	3.82	3
9	There is a safety handle for the passengers to hold.	4.11	4	3.96	4
10	The driver drops you off at secured areas.	4.64	5	4.43	5
11	There is a back support for the passenger.	3.57	4	3.96	4
12	The driver has not been drinking alcohol.	4.60	5	4.53	5

No.	Safety Attributes	Importance		Satisfaction	
		Mean	Median	Mean	Median
13	The driver keeps overtaking other vehicles.	3.93	4	3.84	4
14	The motorcycle has functional headlights at night.	4.49	5	4.45	5

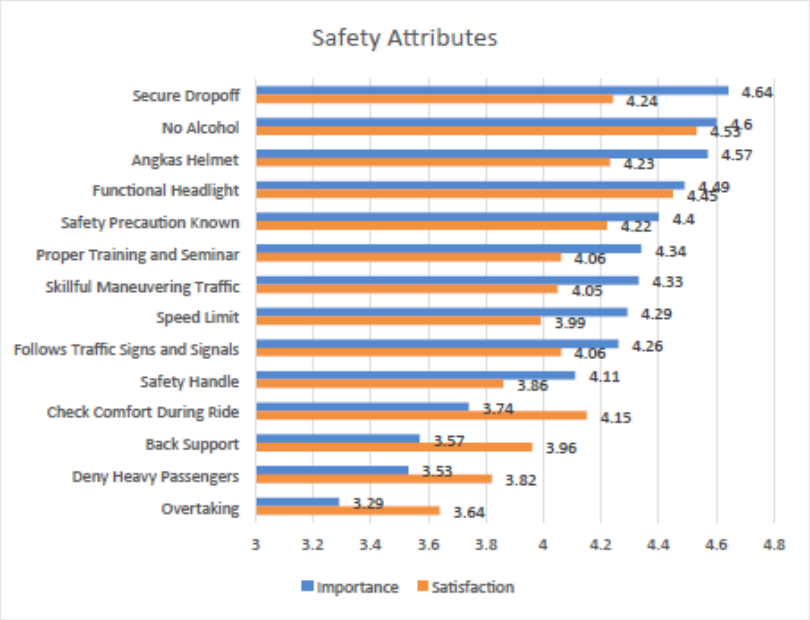

Figure 16. Statistical Mean of Safety Attributes

Figure 16 displays the gap values for each safety attribute. The attribute with the highest gap is "secured drop-off," with a value of 0.41, indicating it has the lowest satisfaction level among the attributes. Despite this, the overall gap values are relatively low, suggesting that passengers are generally satisfied with the safety attributes of Angkas.

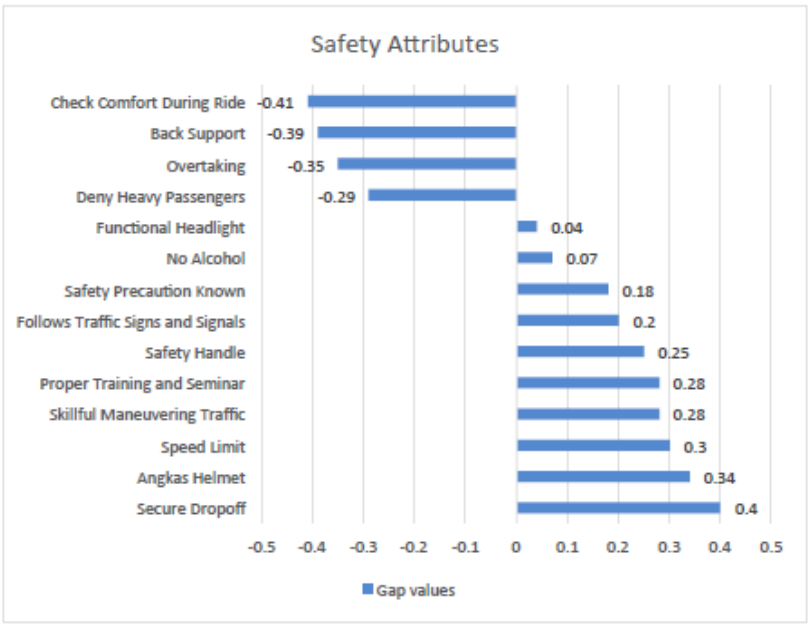

Figure17. Gap Values of Safety Attributes

8. Insights from Previous Research on Motorcycle Taxi Operations in the Philippines and Other Asian Countries

Previous studies have extensively examined the operational characteristics and challenges of motorcycle taxi operations in the Philippines, focusing particularly on regulatory and safety issues. Recent studies by Regidor et al. (2017) and Latonero et al. (2019) offer critical insights into these aspects, which is crucial for understanding the current landscape and future improvements for motorcycle taxis.

These insights are crucial for understanding the current state of motorcycle taxis and for developing future improvements. Similarly, research in Vietnam by Tuan & Mateo-Babiano, (2013) points to the need for improved regulations and service models to enhance the image and quality of motorcycle taxis. Thailand, in contrast, offers a valuable example. By implementing regulations in 2005, Thailand addressed issues like driver registration and fare rates, leading to positive changes in driver behavior and service quality (Oshima & Fukuda, 2007). Examining these contrasting experiences across the Philippines, Thailand, and Vietnam underscores the importance of well-designed regulations for integrating motorcycle taxis safely and effectively into the urban transport system.

8.1 Key Findings from Previous Research

Regidor, et al. (2017) explored the operational characteristics and challenges of motorcycle taxi operations in both rural and urban settings in the Philippines. The key issues identified were:

- Motorcycle taxis often operate informally due to the absence of a comprehensive regulatory framework, leading to inconsistencies in service quality and safety standards.
- Many riders are risk-takers and employ risky maneuvers, including speeding, posing significant safety risks to both drivers and passengers.
- There is a dependency on motorcycle taxis in areas with deficient public transport services.

Latonero et al. (2019) focused on understanding the usage patterns, regulatory challenges, and safety concerns related to motorcycle taxis in Metro Manila. The major findings included:

- Regulatory challenges in the research show difficulties in regulating informal motorcycle taxi operations, complicating efforts to standardize and improve services.
- Safety concerns are evident due to high crash rates, highlighting the need for robust regulatory frameworks to ensure driver and passenger safety.
- Usage patterns indicate that motorcycle taxis play a significant role in urban transport by providing feeder services to main public transport systems, especially in areas with poor accessibility.

Tuan and Babiano (2013) explored the operational characteristics and socioeconomic impacts of motorcycle taxi services in Vietnam, focusing on their role in urban transport systems. The key issues identified were:

- Motorcycle taxis often operate informally due to insufficient regulatory frameworks, leading to inconsistencies in service quality and safety standards.
- The service is associated with poor safety conditions, including high-speed driving and frequent crashes, particularly in wet conditions.
- Motorcycle taxis serve as a primary source of income for unskilled and low-income populations in urban areas with inadequate public transport, offering both crucial employment and improved accessibility for residents.

Oshima and Fukuda (2007) examined the regulation of motorcycle taxi services in Bangkok, Thailand, and their implications for urban transport. The key issues identified were:

- Motorcycle taxis were operating without formal regulations, resulting in variable fares, safety issues, and a lack of accountability.
- Thailand introduced regulations in 2005, covering safety requirements, fare structures, licensing, and penalties for traffic violations, which improved the service quality and safety.
- Motorcycle taxis play a significant role in urban transport by providing feeder services to main public transport systems, particularly in areas with poor accessibility.

8.2 Relating Previous Research to Service Quality and Safety Attributes

The current research on motorcycle taxis in Metro Manila builds on and extends the findings from previous studies conducted in the Philippines and other developing countries. These earlier studies explored the operational characteristics, safety concerns, and regulatory challenges associated with motorcycle taxis. Our study aligns with many of these prior insights, particularly in highlighting the role of motorcycle taxis in urban transport systems, but also provides additional data that help validate or further refine existing knowledge.

8.2.1 Service Quality Attributes

Previous studies, such as those by Regidor et al. (2017) and Latonero et al. (2019), identified key operational challenges for motorcycle taxis, including the lack of formal regulation, inconsistency in service quality, and issues like frequent cancellations or delays. The current study corroborates these findings by confirming that passengers of motorcycle taxis in Metro Manila prioritize reliability, punctuality, and service consistency. Our study found that service quality attributes such as "minimal waiting time for booking acceptance" and "punctuality of pick-up" continue to be crucial factors for passengers, reflecting the same service concerns raised in earlier studies.

However, our research adds further depth by examining specific passenger satisfaction metrics, showing that while service reliability has improved, there is still room for development. For example, the gap analysis reveals that the satisfaction ratings for certain service attributes, such as "reasonable fares" and "secured drop-off locations," are lower than the importance ratings. This suggests that while motorcycle taxi services have evolved since the earlier studies, these areas still require targeted improvement.

Moreover, our findings align with international research, such as that conducted by Tuan and Mateo-Babiano (2013) in Vietnam, which emphasized the importance of service reliability and the impact of fare structures on customer satisfaction. By validating these service quality concerns in the context of Metro Manila, our study strengthens the argument for more

comprehensive regulatory frameworks that address service reliability and pricing models to ensure long-term sustainability and customer loyalty.

8.2.2 Safety Attributes

The safety concerns associated with motorcycle taxis have been well-documented in both local and international literature. Wu and Loo (2016) highlighted the safety risks for motorcycle taxi drivers in developing countries, including high crash rates and insufficient safety practices. Similarly, Latonero et al. (2019) and Santiago et al. (2023) identified significant safety challenges for motorcycle taxis in Metro Manila, particularly related to driver training, traffic law adherence, and passenger safety gear.

Our study supports these findings, confirming that safety remains a critical concern for motorcycle taxi passengers. The mean importance ratings for safety attributes such as "wearing issued helmets" and "observing traffic rules" are consistent with previous research. However, our research goes further by providing specific insights into passenger satisfaction with safety measures. For example, while passengers rated safety attributes like helmet use and secure drop-offs highly, they were less satisfied with the speed limit adherence and back support offered during rides.

This nuanced understanding of safety attributes builds on earlier studies by quantifying the gap between passenger expectations and actual experiences. It highlights areas where safety practices need to be more strictly enforced, such as ensuring adherence to traffic regulations and providing additional safety features like back support. These findings suggest that while motorcycle taxi services in Metro Manila have made strides in improving safety standards, further action is needed to address remaining gaps, especially in driver training and safety equipment provision.

The current study largely supports the conclusions of earlier studies regarding the operational challenges and safety risks of motorcycle taxis. However, it also provides more granular data that allow for a clearer understanding of passenger priorities and satisfaction levels. While there are no significant deviations from the findings of prior research, our study helps to further validate and refine these conclusions by offering updated insights into service quality and safety attributes specific to Metro Manila.

For example, earlier research emphasized the informal nature of motorcycle taxi operations and the regulatory challenges involved. Our findings reinforce the need for formal regulation but also show that service quality has improved in certain areas, such as booking reliability and cleanliness, compared to the more informal and unregulated operations described in previous studies. These improvements indicate that motorcycle taxi services, like Angkas, have made efforts to address earlier concerns, although significant challenges remain.

8.3 Summary of Descriptive Analysis

The descriptive analysis reveals that Angkas passengers are generally satisfied with both service quality and safety attributes, as indicated by high mean values for importance and satisfaction. However, the gap analysis identifies areas for improvement, particularly in fare structure and secured drop-off locations, where satisfaction ratings are lower than importance ratings.

9. CONCLUSION AND RECOMMENDATIONS

This study highlights the overall satisfaction of motorcycle taxi users with the current service, emphasizing the need for targeted improvements in specific areas. The findings suggest that with enhanced service quality and safety measures, motorcycle taxis can be a viable public transportation option, potentially influencing policy changes to legalize and integrate them into the broader public transport system. The research provides a foundational understanding that can guide improvements in service quality, safety, and the role of motorcycle taxis within an efficient public transport hierarchy.

Motorcycle taxis offer notable advantages within the public transportation system, particularly by addressing gaps in service coverage and contributing to the overall efficiency of the transport network. Specifically, motorcycle taxis can improve the levels of service (LOS) by serving as efficient first- and last-mile connections, complementing buses, trains, and other mass transport options. Their agility in navigating congested areas and reaching underserved locations enhances the accessibility of public transport for many commuters. Furthermore, motorcycle taxis offer flexibility in areas where traditional public transport is limited, particularly in narrow or highly congested roads, where they provide a more viable alternative to larger vehicles.

From a public transport policy framework perspective, motorcycle taxis can contribute to establishing a more efficient hierarchy of transportation modes. By acting as feeders to the primary transport system, they can enhance the seamless integration of various modes, ensuring that different transport options are used optimally based on road type and traffic demand. This will help reduce congestion on major roads and support the development of a multi-layered public transport system.

In terms of the road hierarchy, motorcycle taxis are well-suited to operating on secondary and tertiary roads, providing better alternatives for shorter distances. Their ability to navigate through narrow and less accessible routes enhances the efficiency of the transport network by reducing the reliance on primary roads, especially in highly urbanized areas like Metro Manila.

To further improve the viability and safety of motorcycle taxis in Metro Manila, the following recommendations are proposed:

- Develop and implement a comprehensive regulatory framework that standardizes service quality and safety standards for motorcycle taxis. This framework should address informal operations and ensure compliance with safety regulations, such as vehicle maintenance and driver certification. Additionally, it should recognize the role of motorcycle taxis within the broader public transport system and optimize their contributions to the transport hierarchy.

- Enforce stringent safety standards, including the mandatory use of safety gear, adherence to traffic rules, and regular training for drivers. Safety inspections should be conducted regularly to maintain high safety standards. Moreover, road infrastructure improvements, such as dedicated motorcycle lanes, should be considered to reduce safety risks.

- Focus on enhancing service quality by improving fare structures, ensuring punctuality, and providing additional safety features such as handles and back support for

passengers. Offering incentives for drivers who consistently meet safety and service standards could also be beneficial in encouraging adherence to regulations.

- Extend the study to other cities and explore the long-term impacts of motorcycle taxis on urban transportation systems. Investigate the potential for integrating motorcycle taxis with other modes of public transport to create a seamless and efficient transportation network. This should also include assessing the role of motorcycle taxis in rural areas, where their impact on mobility and access to transportation may be more pronounced.

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