

Assessing Service Quality, Perceived Risk, and Value: Predicting Continued Usage of Modern Jeepneys among Commuters in the National Capital Region

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Abstract

The Philippine government introduced the Public Utility Vehicle Modernization Program (PUVMP) to improve the public transportation system through the deployment of modern jeepneys that provide safer, more efficient, and environmentally sustainable services. Despite these improvements, the adoption and continued usage of modern jeepneys among commuters remain inconsistent, particularly in highly urbanized areas such as the National Capital Region (NCR). This study examined the influence of service quality, perceived risk, perceived value, and geographical location on commuters' intention to continue using modern jeepneys. A quantitative research design was employed, and data were collected through a structured questionnaire administered to regular commuters in NCR. Service quality was measured using an adapted Service Quality framework consisting of tangibility, reliability, assurance, empathy, and responsiveness. Structural Equation Modeling (SEM) was used to analyze the relationships among variables. The results revealed that perceived value plays a central role in shaping commuters' perceptions of service quality. Furthermore, service quality dimensions significantly influence commuters' continued usage intention. Reliability emerged as the strongest predictor of usage intention, followed by empathy, assurance, tangibility, and responsiveness. The findings emphasize that improving reliability, service professionalism, and overall value for money is essential for increasing commuter satisfaction and encouraging the long-term adoption of modern jeepneys.

Keywords

Modern Jeepneys, Service Quality, Continued Usage, Commuter Experience

1. Introduction

Public transportation plays a vital role in supporting daily mobility, economic activities, and accessibility in urban areas. In the Philippines, jeepneys have long been recognized as one of the most widely used modes of transportation (Cruz, 2023). However, traditional jeepneys have faced challenges related to environmental impact, passenger safety, and vehicle conditions. To address these issues, the government implemented the Public Utility Vehicle Modernization Program (PUVMP), which aims to replace traditional jeepneys with modernized units that are safer, more comfortable,

and environmentally friendly. Modern jeepneys are designed to improve passenger experience through enhanced vehicle features such as air-conditioning, improved seating capacity, automated fare systems, and better safety standards. Despite these improvements, commuter acceptance and continued usage of modern jeepneys remain uncertain (Zulueta et al., 2024). According to Emaas et al. (2025), Some commuters still prefer traditional jeepneys due to familiarity, cost considerations, and accessibility of routes. Understanding the factors that influence commuters' continued usage of modern jeepneys is therefore important for evaluating the effectiveness of the modernization program. This study examines how service quality, perceived risk, perceived value, and accessibility influence commuters' intention to continue using modern jeepneys in the National Capital Region. The findings of this study may provide valuable insights for policymakers and transport operators in improving public transportation services.

1.1 Objectives

The main objective of this study is to analyze the factors influencing commuters' continued usage of modern jeepneys in the National Capital Region. Specifically, the study aims to:

- Evaluate the level of service quality provided by modern jeepneys based on commuter perceptions.
- Determine the effect of perceived risk on commuters' intention to continue using modern jeepneys.
- Analyze how perceived value influences commuters' continued usage behavior.
- Examine the role of accessibility in commuter decision-making.
- Develop a structural model that explains the relationships among service quality, perceived risk, perceived value, accessibility, and continued usage intention.

2. Review of Related Literature

2.1. Introduction to the Modern Jeepney and Research Problem

Public transportation systems are essential for providing efficient mobility in densely populated urban areas. In many developing countries, public transport serves as the primary means of travel for millions of commuters. In the Philippines, jeepneys have historically been a major component of the transportation system due to their affordability and accessibility (Zulueta et al., 2024). However, traditional jeepneys have been criticized for contributing to traffic congestion, air pollution, and safety issues (Çelebi & İmre, 2020). In response to these concerns, the Philippine government introduced the Public Utility Vehicle Modernization Program to upgrade the country's public transportation system. The program aims to replace older jeepneys with modernized vehicles that meet higher environmental and safety standards.

Despite the potential benefits of modernization, several challenges remain. Commuters may perceive uncertainties regarding service reliability, cost, or accessibility. Therefore, examining the factors that influence commuter acceptance and continued usage of modern jeepneys is necessary to understand the effectiveness of transportation modernization initiatives.

2.2 Attributes of Service Quality

To evaluate service quality in the context of modern jeepney transportation, this study adopts selected dimensions of the Service Quality model, which measures service performance through five key dimensions: tangibles, reliability, responsiveness, assurance, and empathy (Parasuraman et al. 1988). These dimensions are widely used in transportation and service research to assess how users perceive the quality of services provided. In public transportation, service quality significantly influences commuter satisfaction and their intention to continue using a specific transport system. For this study, specific attributes under each dimension were selected based on their relevance to commuter experience in modern jeepneys. The following attributes represent important factors that shape commuter perceptions of service quality and influence their transportation choices.

1. Tangible
 - Vehicle cleanliness and physical condition of the modern jeepney
 - Comfort and seating arrangement inside the vehicle
2. Empathy
 - Driver courtesy and patience toward passengers
 - Consideration of passenger needs during travel
3. Assurance
 - Driver competence and adherence to traffic safety rules
 - Passenger perception of safety while using modern jeepneys

4. Responsiveness
 - Efficiency of passenger boarding and travel service
 - Availability of assistance when needed
5. Reliability
 - Consistent availability of modern jeepneys on routes
 - Accuracy and dependability of the transportation service

2.3 Perceived Value, Perceived Risk, and Geographical Location

Commuter decision-making in public transportation is influenced by several psychological and situational factors. Among these factors are perceived value, perceived risk, and geographical location, which affect commuters' intention to continue using modern jeepneys.

1. Perceived Value refers to the overall evaluation of the benefits received from using a service compared to the costs associated with it. In modern jeepneys, perceived value may include improved comfort, safety features, and a better commuting experience compared to traditional jeepneys (Friman et al., 2020). When commuters perceive higher value in the service, they are more likely to continue using it.
2. Perceived Risk refers to the uncertainty or concerns that commuters may experience when using a transportation service (Nguyen-Phuoc et al., 2021). These concerns may involve safety issues, service reliability, or financial costs. Higher perceived risk may reduce commuters' willingness to adopt or continue using modern jeepneys.
3. Geographical Location (Accessibility) refers to the ease with which commuters can access modern jeepney routes and services. Transportation systems that are conveniently located and easily accessible are more likely to be used by commuters (Chau et al., 2024). Accessibility therefore plays an important role in influencing commuter behavior and transportation choices.

2.4 Theoretical Framework

The Figure 1 integrates constructs from service quality and perceived risk literature. Specifically, the framework includes perceived value, geographical location, perceived risk, and Service Quality dimensions—namely tangibility, responsiveness, reliability, assurance, and empathy—as the primary variables influencing commuters' behavioral intention to continue using modern jeepneys. Modernizing the jeepney in the Philippines aims to improve urban transportation and encourage commuters to continue using modernized jeepneys. Three key factors influence this decision: Perceived Risk, Perceived Value, and Geographical Location. Perceived risk relates to commuters' concerns about safety, vehicle maintenance, driver professionalism, health precautions, and secure payment systems. When these issues are properly addressed, commuters develop greater trust in the system and are more willing to use it regularly. Visible safety measures, well-maintained vehicles, and reliable payment technologies help reduce uncertainty and increase confidence in modern jeepneys.

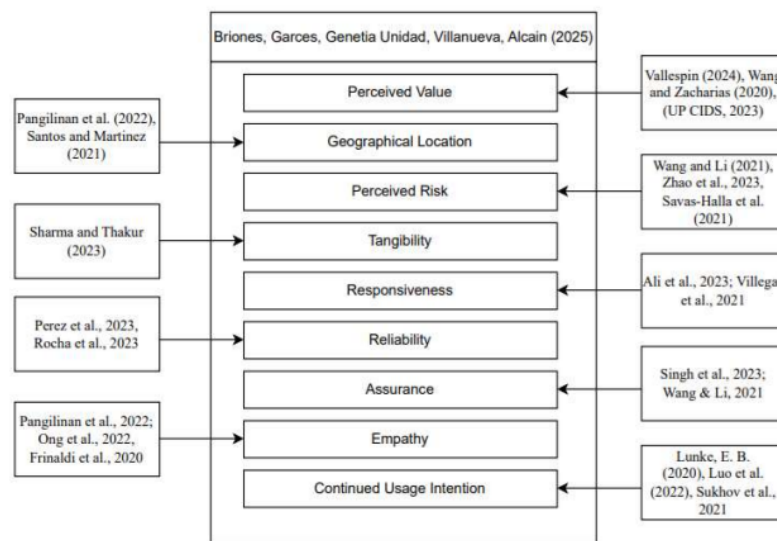


Figure 1. Theoretical Framework

Perceived value focuses on how commuters weigh the benefits and costs of using modern jeepneys. Functional improvements such as air conditioning, comfortable seating, GPS, and security cameras enhance the riding experience, while a more comfortable environment can reduce commuting stress. However, higher fares may discourage some riders, especially those with lower incomes. Social and cultural factors also matter, since traditional jeepneys hold cultural significance for many Filipinos. Additionally, geographical location plays a role in commuter decisions, as accessible routes, well-placed terminals, and efficient transport connections improve convenience and satisfaction. When service quality dimensions such as reliability, responsiveness, assurance, empathy, and good physical facilities are maintained, commuter satisfaction increases and encourages continued use of modern jeepneys.

2.5. Research Paradigm

This study applies the SERVQUAL model together with Perceived Value (Figure 2), Perceived Risk, and Geographical Location to examine commuter satisfaction and their intention to use modern jeepneys in NCR. Perceived value is influenced by the five Service Quality dimensions: tangibility, responsiveness, reliability, assurance, and empathy. Tangibility refers to physical features such as air conditioning, cleanliness, and comfortable seating that improve commuter comfort, while responsiveness involves efficient boarding, alighting, and crowd management to reduce inconvenience. Reliability focuses on consistent service delivery, including adherence to schedules and the use of electronic fare systems like RFID. Assurance strengthens commuter trust through safety features such as GPS, CCTV, and professional drivers, and empathy reflects the courteous and respectful behavior of drivers and conductors that enhances the commuting experience. Meanwhile, Perceived Risk and Geographical Location serve as moderating factors that influence how commuters interpret service quality. Perceived risk includes concerns about safety, fare transparency, and service delays, which can affect trust and willingness to ride, while geographical location impacts accessibility and reliability due to differences in infrastructure, traffic conditions, and road networks across NCR. Understanding these factors is important for improving route planning, ensuring consistent service delivery, and increasing commuter satisfaction with modern jeepney operations.

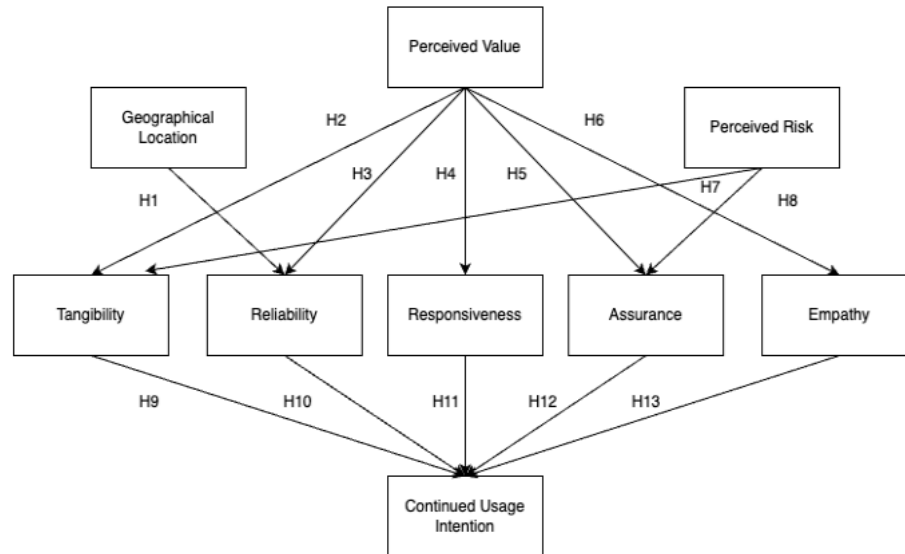


Figure 2. Research Paradigm

3. Methodology

3.1 Research Design

This study utilizes a quantitative correlational research design employing Structural Equation Modeling (SEM) to examine the relationships among service quality dimensions, perceived value, perceived risk, geographical location, and commuter outcomes in modern jeepneys. It specifically investigates how the five SERVQUAL dimensions—tangibles, reliability, assurance, empathy, and responsiveness—along with perceived value, perceived risk, and geographical location influence commuter satisfaction and their intention to continue using modern jeepneys. SEM is deemed appropriate as it allows for the analysis of complex relationships, including both direct and indirect effects, among multiple perception-based variables. Data were collected from 407 valid respondents through Google Forms and paper-based questionnaires, with participants required to be at least 18 years old, have used modern jeepneys at least twice within the previous three months, and provide informed consent. By integrating service quality and contextual factors, the study aims to generate empirical evidence on commuter behavior. The findings are expected to offer insights for transport operators and policymakers in improving public transportation services in the National Capital Region (NCR).

3.2 Structural Equation Modeling

According to Hair et al. (2019), SEM serves as a comprehensive statistical approach that combines aspects of multiple regression and factor analysis to analyze relationships among multiple variables. It allows for the estimation of interrelated dependence relationships simultaneously, making it particularly useful for testing and refining theoretical models. Unlike techniques like multiple regression, which typically examine the relationship between a single dependent variable and multiple independent variables, SEM can simultaneously analyze a whole system of relationships between multiple independent and dependent variables. This allows for the testing of complex theoretical models with interconnected paths. (Hoyle, R. H., 1995)

4. Results and Discussion

4.1. Final SEM Model

The final Structural Equation Model (SEM) is simpler, more statistically reliable, and more logically consistent than the original model after removing Geographical Location and Perceived Risk, which showed weak and non-significant relationships. The refined model focuses on the SERVQUAL dimensions as predictors of Perceived Value (PV) (Figure 3), which emerges as the central factor influencing commuter evaluation of modern jeepney services. Results show that PV strongly affects the five service quality dimensions, with significant path coefficients for Reliability ($\beta = 0.572$), Responsiveness ($\beta = 0.547$), Empathy ($\beta = 0.513$), and Assurance ($\beta = 0.511$), indicating that improving

commuters' sense of "value for money" is a key strategy for enhancing overall service quality, especially considering the higher fares of modern jeepneys.

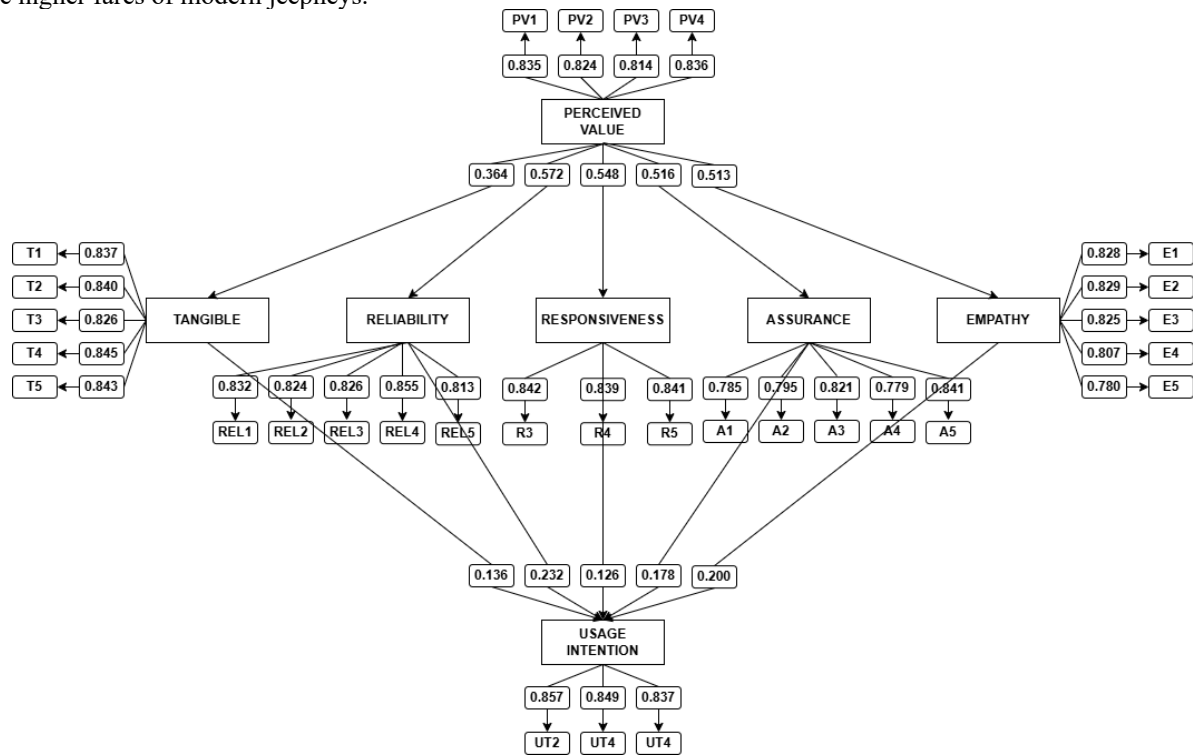


Figure 3. Final Sem Model

PV also plays an important mediating role in commuter behavior, as continued usage is strongly influenced by the value commuters perceive from the service, supported by the high factor loading of the "Value for Money" (PV4) indicator (0.836). These findings align with previous research showing that perceived value acts as a central mediator of commuter attitudes and behaviors in public transportation systems. By focusing on significant constructs and removing weak paths, the final SEM model demonstrates stronger structural relationships, better model fit, and clearer interpretation of how service quality influences perceived value, which ultimately drives commuter satisfaction and their intention to continue using modern jeepneys.

Using Structural Equation Modelling (SEM) to analyze the data, the analysis results demonstrated that the various service quality dimensions of modern-type jeepneys had a positive impact on commuters' propensity to continue using modern-type jeepneys. Furthermore, it was shown that Perceived Value had a very important indirect effect on service quality perceptions, which ultimately leads to the commuters' intention to continue using modern-type jeepneys.

4.2. Model Fit Indices

The model fit indices were used to assess how well the structural model represents the observed data (Table 1). The saturated model showed a Standardized Root Mean Square Residual (SRMR) of 0.043, indicating a good fit as it is below the recommended threshold of 0.08. The estimated model produced an SRMR of 0.115, which is slightly higher than the preferred value but still considered acceptable in some PLS-SEM applications, where values below 0.12 are often observed. The discrepancy measures (d_{ULS} and d_G) were lower in the saturated model compared to the estimated model, suggesting that the saturated model represents the observed data more closely.

Table 1. Model Fit Indices

Parameters	Saturated Model	Estimated Model	Threshold	Suggested By
Standardized Root Mean Squared Residual (SRMR)	0.043	0.115	0.08	(Hair et al., 2021)
d_ ULS	0.868	6.099		
d_ G	0.345	0.474		
Chi-Square	835.019	1030.797		
Normal Fit Index (NFI)	0.879	0.850		

Additionally, the chi-square value increased from 835.019 in the saturated model to 1030.797 in the estimated model; however, this index is known to be sensitive to sample size and does not necessarily indicate poor model fit. The Normed Fit Index (NFI) values of 0.879 for the saturated model and 0.850 for the estimated model both fall within the acceptable range for PLS-SEM. Overall, while the saturated model demonstrates a better fit, the estimated model still shows an acceptable level of fit and supports the adequacy of the revised measurement and structural model.

4.3. Convergent Validity and Composite Reliability

In the final run, all constructs improved significantly, with all Cronbach's alpha values exceeding 0.70 (Table 2), confirming good internal consistency. Likewise, the composite reliability values improved to all constructs exceeding 0.70. The AVE values also increased, with all constructs exceeding the minimum requirement of 0.50. These values indicate that the final model has acceptable reliability and convergent validity, and resolves the weaknesses observed in the initial run.

Table 2. Convergent Validity and Composite Reliability

	Cronbach's Alpha (A)	rho_A	Composite Reliability (CR)	Average Variance Extracted (AVE)
Assurance	0.864	0.870	0.902	0.647
Empathy	0.873	0.877	0.907	0.662
Perceived Value	0.846	0.847	0.897	0.685
Reliability	0.887	0.889	0.917	0.689
Responsiveness	0.793	0.793	0.879	0.707
Tangibility	0.894	0.897	0.922	0.702
Usage Intention	0.804	0.804	0.885	0.719

5. Conclusion and Recommendation

5.1. Conclusion

Utilizing the SERVQUAL framework, this research study investigated key service quality dimensions and their impact on commuter perceptions and experiences of modern jeepneys. In order to assess these relationships, the Structural Equation Modelling (SEM) approach was used to assess the measurement model, test the structural relationships among constructs, and test proposed hypotheses. A total of 407 valid respondents were included in the study via Google Forms or paper questionnaires. Respondents were 18 years of age or older; had used modern jeepneys a minimum of twice in the previous three months, and provided informed consent.

Using Structural Equation Modelling (SEM) to analyze the data, the analysis results demonstrated that the various service quality dimensions of modern-type jeepneys had a positive impact on commuters' propensity to continue using modern-type jeepneys. Furthermore, it was shown that Perceived Value had a very important indirect effect on service quality perceptions, which ultimately leads to the commuters' intention to continue using modern-type jeepneys.

The determined results also denote that Perceived Value is a positive predictor of all of the SERVQUAL dimensions regarding modern-type jeepneys. Among the different relationships, Perceived Value was shown to have the highest strength of relationship with the Reliability service quality dimension ($\beta = 0.572$, $p < 0.000$), subsequently, the Responsiveness ($\beta = 0.548$, $p < 0.000$), Empathy ($\beta = 0.513$, $p < 0.000$), and Assurance ($\beta = 0.516$, $p < 0.000$) service quality dimensions followed. The lowest strength of relationship observed was between Perceived Value and Tangibility service quality dimension ($\beta = 0.363$, $p < 0.000$), but it was still statistically significant. These results indicate that when the commuters view modern-type jeepney services as valuable based on costs, level of comfort, and efficiency, they are more likely to have a positive evaluation of the service quality being offered.

According to the analysis results of factors that predict the intention to use modern jeepneys, reliability had the greatest positive impact as measured by Beta values ($\beta = 0.232$, $p < 0.000$). This implies that reliable services (e.g., regularly scheduled and functioning fare systems) are the strongest influencers for commuting riders. Empathy was identified as the second greatest predictor of the intention to continue to use modern jeepneys ($\beta = 0.200$, $p < 0.000$), followed by assurance ($\beta = 0.178$, $p < 0.000$) and tangibility ($\beta = 0.136$, $p < 0.000$). Responsiveness was determined to have the least predictive power but was still statistically significant ($\beta = 0.126$, $p = 0.018$). These results suggest that, although physical characteristics (e.g., cleanliness and seating availability) are significant determinants of rider behavior, interpersonal service characteristics (e.g., professionalism of drivers and assurance of safe transportation) are also highly influential in rider behavior regarding the intention to continue using modern jeepneys.

The results indicate that Geographical Location and Perceived Risk were not statistically significant, with p-values exceeding 0.05. In particular, Geographical Location to Reliability ($\beta = -0.042$, $p = 0.534$), Perceived Risk to Assurance ($\beta = -0.058$, $p = 0.306$), and Perceived Risk to Tangibility ($\beta = -0.011$, $p = 0.867$) demonstrated weak and non-significant associations. As a result of these findings, the variables in question were eliminated from the final model to enhance the overall validity and clarity of the SEM framework.

In conclusion, the study's results confirm that commuters' intentions to continue using modern jeepneys are significantly influenced by service quality dimensions, with Reliability being the most significant predictor. This study demonstrates that by providing dependable service, employing professional drivers, instituting safety measures, and maintaining vehicles in good condition, commuter satisfaction can be improved; thus fostering long-term adoption of modern jeepney services.

5.2. Practical Implications

The results and discussions from this research appear to give stakeholders who are involved in operating and improving the Modern Jeepney service valuable information. The result of this study is to identify key service quality dimensions that affect Commuters' Intentions to continue using Modern Jeepneys; thus assisting Operators, Drivers, and Transport Authorities in identifying areas for improvement and developing strategies to enhance Commuter satisfaction and ultimately to encourage continued usage of Modern Jeepney Services. The Practical Implications of this research are discussed in further detail below.

1. For Modern Jeepney Operators and Transport Authorities

The findings show that all SERVQUAL dimensions do not have the same impact on commuters' plans to utilize modern jeepneys. The dimensions listed such as reliability, empathy, assurance, responsiveness, and tangibles will each affect commuter perception and behavior differently. Therefore, operators and stakeholders should concentrate on improving those SERVQUAL dimensions that have the highest impact on service quality to enhance commuter experience and satisfaction.

- **Prioritize Service Reliability and Operational Consistency:** Reliability emerged as one of the strongest predictors of commuters' intention to continue using modern jeepneys. This highlights the importance of providing consistent and dependable transport services. Operators should ensure that vehicles follow predictable routes and schedules, maintain proper fare systems, and minimize unexpected service disruptions. Reliability is consistently identified in the literature as a primary determinant of a commuter's trust in an operator and their level of satisfaction with the service (Soza-Parra et al., 2019).
- **Improve Driver Professionalism and Empathetic Customer Service:** Empathy was also found to significantly influence commuter perceptions and usage intention. Drivers and transport staff should be trained to provide courteous, respectful, and helpful service to passengers. This includes assisting commuters when necessary, responding politely to inquiries, and maintaining a respectful attitude during interactions. (Mikuličić et al., 2024)
- **Strengthen Safety Assurance and Passenger Confidence:** Assurance also plays an important role in shaping commuter perceptions. Passengers are more likely to continue using modern jeepneys when they feel safe and confident during their commute. Operators can improve assurance by ensuring that drivers are properly trained, licensed, and knowledgeable about road safety practices. Regular vehicle maintenance, adherence to safety regulations, and clear communication with passengers can also strengthen commuters' sense of security while using the service (Zulueta et al., 2024).
- **Maintain Clean and Comfortable Vehicles:** The tangibility dimension highlights the importance of physical aspects such as vehicle cleanliness, seating comfort, and overall condition of the jeepney (Zulueta et al., 2024). Operators should regularly maintain the interior and exterior of vehicles to ensure they remain clean, comfortable, and visually appealing. A well-maintained vehicle environment contributes to a more pleasant commuting experience and positively influences commuter perceptions of service quality.
- **Improve Responsiveness to Passenger Needs:** Responsiveness refers to the willingness and ability of drivers or operators to assist passengers promptly. Improving responsiveness may involve addressing passenger concerns efficiently, providing clear route or stop information, and ensuring smooth boarding and alighting processes (Santos & Ramirez, 2021). When commuters feel that their needs are addressed quickly and efficiently, they are more likely to perceive the service positively.

2. For Commuters

While transport operators aim to improve service quality and encourage commuter loyalty, passengers also benefit directly from improvements in modern jeepney services.

- **Improved Comfort and Travel Experience:** Tangible improvements within the service may positively affect the experience of commutes; for instance, when there are cleaner vehicles, better seats, and well-kept interiors, the overall passenger experience becomes better (Hakiminejad et al., 2025). Creating a more comfortable and enjoyable travel environment improves the overall experience of all passengers.
- **Safer and More Reliable Transportation:** Operators are focusing on reliability and safety assurance so that we can all rely more heavily on public transportation. Consistent routes, properly maintained vehicles, and trained drivers help ensure your commute is as safe and predictable as possible (Zulueta et al., 2024).
- **Better Interactions with Drivers and Staff:** Improvements in empathy and responsiveness lead to better communication and interaction between drivers and passengers. Respectful and helpful service creates a more positive commuting environment where passengers feel valued and comfortable during their journey (Kurnanda et al., 2022).
- **Increased Satisfaction with Public Transport:** Commuters will create favourable impressions of a modern jeepney system when it regularly offers dependable, safe, and pleasant transportation. As a result, customers may become happier with their usage of modern jeepneys as an environmentally-friendly mode of mass transport and continue using them going forward (Zulueta et al., 2024).

This research gave practical implications for modern jeepney operators, transport stakeholders, and policymakers with respect to improving the public transportation service quality. Using reliability, empathy, assurance, responsiveness, and tangibility as dimensions that could impact commuters' intention to continue using modern jeepneys demonstrates the need for reliable, safe, and customer-friendly transport service delivery. Therefore, operators should focus on the following to enhance commuter satisfaction: ensuring vehicles are kept in good working order, operating vehicles on reliable schedules, and conducting themselves professionally and courteously towards other drivers/passengers. Improving upon these components of service delivery will help improve the overall commuter experience and encourage ongoing use of modern jeepneys while contributing to the overall goal of a more efficient and reliable public transportation system.

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