

EDSA Busway Program: Implication for Traffic Decongestion and Urban Transport and Governance

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ABSTRACT

This study assessed the effectiveness of the MMDA's Exclusive Bus Lane Program in addressing traffic congestion in Metro Manila by examining its accuracy, responsiveness, and accessibility, as well as identifying differences in commuter perceptions and exploring operational and governance challenges. A sequential mixed methods approach was employed, involving a survey of 439 commuters selected through convenience sampling and interviews with key informants from the Department of Transportation (DOTr), Metropolitan Manila Development Authority (MMDA), and Land Transportation Franchising and Regulatory Board (LTFRB) using purposive sampling. Quantitative data were analyzed using weighted mean and one-way ANOVA, while qualitative data

underwent thematic analysis and triangulation. Findings indicated that commuters generally perceived the EDSA Busway Program as effective in improving traffic flow, commuter mobility, and public transport operations. However, persistent challenges—including overcrowding, insufficient bus deployment, inadequate last-mile connectivity, limited accessibility, and governance issues such as scheduling inconsistencies and lane violations—continue to affect service quality. The study concludes that although the program is an effective congestion management initiative, sustained improvements in infrastructure, capacity management, inclusivity, and inter-agency coordination are essential to ensure its long-term effectiveness and sustainability.

Keywords: *Smart Governance in Public Transportation, Busway Program, Citizen Participation*

INTRODUCTION

Sustainable and friendly transport system are prevalent in most developing countries around the globe. Users with access to public transportation are able to determine the efficiency of Bus Rapid Transit (BRT) thru satisfaction and dissatisfaction. Evidences presented through study conducted, signifying reliability, empathy and pricing have vital effect towards the customer's satisfaction with BRT services. Provided that pricing is the most significant factor in customer's satisfaction, BRT authorities may consider offering discounted ticket prices, especially in users residing within the Bandar Sunway, Indonesia. This will definitely encourage more residents to use BRT service instead of private vehicles (Zainuddin & Mani, 2021) This study emphasizes the importance of customer's satisfaction and dissatisfaction to keep track on factors affecting the user's transportation experiences.

In the Philippines, Metro Manila is the largest urban agglomeration and economic center that accounts for the highest Gross Domestic Product (37%) despite occupying less than 1% of the country's total land area. It is composed of 16 cities and 1 municipality with a total population of 13.5 million (PSA, 2020) that is higher during daytime, resulting to severe traffic congestion. It was found to have the highest congestion level among 278 natural cities with a population greater than 5 million (Asian Development Bank, 2019) and continues to experience low

public transport quality and decreasing ridership. The Covid-19 pandemic caused shocks to mobility and economic activity in Metro Manila. During the early months of the pandemic, the government implemented strict lockdowns and completely halted public transportation save for a few services for healthcare workers. The lockdowns caused significant mobility reductions in common destinations especially transit stations (Hasselwander et al., 2021). It was during this period when the Philippine government took advantage of “windows of opportunity” (Sunio and Mateo-Babiano, 2022, Sunio et al., 2022) to expand and accelerate public transport reforms. During the lockdown period, the government restructured Metro Manila's bus routes into 31 new bus routes. One significant portion was a loop service that ran along a newly assigned exclusive busway along Epifanio Delos Santos Avenue (EDSA), Metro Manila’ busiest thoroughfare and now operated by two newly-consolidated bus consortia. This was called “Route E” or EDSA Carousel.

In response to the health and mobility challenges brought about by the Covid-19 pandemic, the Philippine government seized the chance to accelerate busway public transport reforms by transforming a section of Epifanio delos Santos Avenue (EDSA), Metro Manila's busiest thoroughfare, into an exclusive city bus lane. This development warrants closer examination, as historically, initiatives addressing EDSA have encountered difficulties due to the overlapping jurisdictions of various authorities and the diverse interests benefiting from the existing setup. Through conducting semi-structured interviews with key stakeholders and conducting a policy capacity analysis, the authors discovered that the pandemic created opportunities for these key institutions to garner political legitimacy and authority, which encouraged stakeholders to collaborate. However, this novel approach necessitated these institutions to undertake tasks beyond their usual scope, and while they managed to implement measures to ensure the short-term success of the EDSA Busway, substantial efforts are required to sustain the progress made.

How these massive reforms were conceptualized and implemented in record time needs a closer look since historically, solutions to the chaotic buses along EDSA have been proposed and implemented to no avail. Authority on various components of the EDSA Busway is shared between various institutions with overlapping powers (Romero et al., 2014) and multiple private interests are heavily invested in the status-quo and consequently “ill-disposed towards holistic urban transport reform” (Sidel, 2020). Solutions involving buses along EDSA have been studied and attempted by different agencies through the years. This study seeks to understand the inputs and mechanisms that enabled government to implement the EDSA busway, with particular focus on the policy capacity of the key institutions involved to derive lessons for public transport reform and sustainability in the context of the Global South

The EDSA Busway Program represents one of the Philippine government's major initiatives to improve urban mobility, enhance public transportation services, and reduce traffic congestion in Metro Manila. Despite its operational improvements, challenges related to governance, policy implementation, traffic management, accessibility, and commuter experience continue to influence its overall effectiveness. Examining these issues is essential to determine the strengths and limitations of the program and to identify policy and operational improvements that can contribute to a more efficient, accessible, and sustainable public transportation system.

Literature Review

Public Transport System

According to Canales (2006) Traditional transport frameworks have lately developed to another idea of system outlines with a specific end goal to expand their proficiency. These progressive transport frameworks, known as BRT (Bus Rapid Transit), have exploited a few qualities of rail frameworks so as to decide an ideal agreement in the middle of open and quick administration in an expense effective manner. Lagos Metropolitan Transport Authority (LAMATA) on 2009 also launched Bus Rapid System. In effective public transportation safety measures is important based on the worldwide road safety report of World Health Organization (2009), overcrowded and unsafe modes of public transport contribute to road traffic While liberalization of the public transport market can increase the supply of vehicles, protection of public safety needs to

be an essential feature of this market. Maximization of profits must not be allowed to lead to a reduction in safety standards.

Mobility

The application of mobility theories provides a robust framework for understanding and addressing traffic congestion issues in urban environments like Metro Manila. These theories help elucidate the factors influencing travel behavior, mode choice, and spatial interactions, offering insights into the development of effective transportation policies and infrastructure projects. This literature review explores several key mobility theories and their relevance to easing traffic congestion in Metro Manila.

Good Governance

Good governance is a critical factor in the development and management of public transportation systems, significantly impacting efforts to ease traffic congestion in urban areas like Metro Manila. Good governance encompasses transparency, accountability, stakeholder participation, and efficient resource management. This literature review explores the principles of good governance and their application to public transportation policies aimed at reducing traffic congestion in Metro Manila.

Public Efficiency and Effectiveness

Metro Manila's notorious traffic congestion poses significant challenges for commuters, businesses, and policymakers. Addressing this issue requires a deep understanding of the principles of program efficiency and effectiveness within the realm of public transportation. Program efficiency in public transportation refers to the optimal utilization of resources to achieve maximum outputs. Efficiency can be evaluated through various metrics, including cost per passenger, energy consumption, and operational speed. Reyes and Santos (2015) assert that cost efficiency, which measures the ratio of operational costs to the number of passengers served, is crucial for assessing public transportation systems. Efficient systems maintain low operational costs while serving a high volume of passengers. According to Cruz et al. (2017), building institutional capacity in Metro Manila involves enhancing technical skills, improving governance structures, and fostering inter-agency collaboration. Garcia et al. (2020) emphasize that aligning transportation policies with broader urban development goals, such as land use planning, environmental sustainability, and social equity, can create synergies that enhance the overall effectiveness of transportation interventions.

Bus Regulations Implemented in EDSA

Traffic management along EDSA is managed by the Metropolitan Manila Development Authority (MMDA). The MMDA also heads the Metro Manila Council whose members are the mayors of the 17 local governments of Metro Manila. Recognizing the overlapping mandates of local governments and various agencies on traffic management, the Inter-Agency Council for Traffic or i-ACT was formed with members encompassing all agencies with traffic management and enforcement powers. In 2003, the Metro Manila Council approved the implementation of the EDSA Organized Bus Route (OBR) Project to “bring order to the 3151 franchised buses plying EDSA” (MMDA, 2003). By 2012, the EDSA Bus Segregation Scheme was implemented which aimed to reduce traffic congestion at loading/unloading areas (MMDA, 2012). City buses were tagged as A, B, or C wherein those tagged as A or B can only use bus stops tagged with the same letter. Meanwhile, buses tagged as C are allowed to use all bus stops. In 2019, all the permits of bus terminals along EDSA were revoked and interim terminals in other areas were assigned (MMDA, 2019).

Bus Rapid Transit Performance and Operational Challenges

Bus Rapid Transit (BRT) systems, including dedicated bus lane schemes such as the EDSA Busway, are widely implemented as urban transport interventions intended to improve mobility efficiency, reduce congestion, and enhance commuter experience through segregated road space and structured operations. In theory, separating high-capacity buses from mixed traffic should produce measurable reductions in travel time and improve system

reliability. However, empirical findings suggest that these benefits are not always fully realized in practice, particularly in corridors with extremely high passenger volumes and constrained supporting infrastructure. This indicates that BRT performance is not determined solely by lane exclusivity but also by system-wide operational and demand conditions (Gershon et al., 2012). A related operational challenge frequently observed in BRT systems is passenger crowding and capacity imbalance. In addition, overcrowding has broader implications for safety and accessibility, particularly for elderly passengers, persons with disabilities, and other mobility-sensitive groups who require adequate space and stable boarding conditions. These conditions highlight that accessibility is a multi-layered concept involving both transport operations and the surrounding urban environment (Diaz & Hinebaugh, 2009). As such, inclusive transport requires a holistic planning approach that integrates infrastructure design, land use coordination, and mobility equity principles (Gakenheimer & Zegras, 2015).

Despite these persistent challenges, BRT systems are still recognized for their operational strengths, particularly in terms of fare system efficiency, route organization, and passenger information clarity. Compared to traditional bus systems operating in mixed traffic, BRT frameworks often introduce standardized fare collection methods, improved signage, and more structured service routes, which reduce passenger uncertainty and improve perceived reliability.

METHODS

Research Design

The study utilized a Mixed Methods Approach. This method of research involves gathering of data and separately analyzing both qualitative and quantitative research approaches to gain a more comprehensive understanding of the research problem. Since the study is mixed method, the following treatments were used in dealing with the data were collected from the participants: The Quantitative component, specifically a descriptive design, serves as the primary method of the study which involves the systematic investigation of phenomena through the collection and analysis of numerical data. Descriptive research is used as the appropriate method because it aims to systematically describe a pattern among the selected population with regards to the known variables (Llego, 2025). This approach is most appropriate with the study that delves upon both quantitative and qualitative data; it enables the researcher to initially quantify the data and subsequently explain the underlying governance and implementation through qualitative inquiry.

Following the Quantitative portion, the Qualitative Approach, specifically a case study will be used to further explain, validate, and support the statistical findings gathered. According to Cole et al., (2018), Case study as defined by Guetterman & Fetters (2018) is a systematic scientific inquiry that involves an in-depth investigation of a specific case within the real life context. Case study design is particularly appropriate and useful in the context of the study which aims to investigate organizations and their experiences, associated with governance and management of the busway program through in-depth understanding of the selected agencies conditions. This process allows the researcher to gather rich and nuanced accounts and information through interviews.

The data gathered from the quantitative and qualitative inquiry will be triangulated during the analysis of the data. The integration of both data sets will provide a more robust, credible, and complete data which will strengthen the study through combining statistical results with thematic contextual depth (Ysrael et al., 2026).

Research Locale

The study was conducted in the EDSA Busway traversing multiple cities in Metro Manila from Quezon City, Pasig, Mandaluyong, Makati and Pasay City.

Participant And Sampling Scheme

This research utilized a mixed sampling method to select the respondents and the stations utilized in the study. The study used a Cochran formula to determine the minimum required sample size because the exact individual population of EDSA Busway commuters within the selected strata cannot be accurately determined.

Given the large and dynamic nature of the commuter population, this method is deemed appropriate for estimating a representative sample size. The computation yielded a sample size of 384 respondents which were proportionately allocated within the randomly selected stations to ensure proper representations of passenger volume.

For the quantitative portion a stratified multistage sampling method was utilized through stratifying all operating stations into 3 categories which are North, Central and South stations. The next phase was randomly selecting individual stations within the established strata through a lottery method which randomly selected the SM north station, Quezon Ave. Station, Ortigas Station, Ayala Station, Tramo and PITX Stations. This ensured that all stations had an equal probability of inclusion while maintaining the feasibility of data collection. The third stage includes a random selection of respondents within the stations through proportionate allocation based on the ridership data to ensure an adequate representation and facilitate comparison across the selected sampling locations. The final proportionately allocated number of respondents to each randomly selected stations are the following: Balintawak with 29 respondents, Quezon Ave. with 72, Ortigas with 129, Ayala with 53, Tramo with 13, and PITX with 89, with a total of 384 respondents allocated across the stations.

For the qualitative portion of the study, the researcher utilized a purposive sampling method which deliberately selected 2 informants from Metropolitan Manila Development Authority (MMDA), 2 informants from Land Transportation Franchising and Regulatory Board (LTFRB), and 2 informants from Department of Transportation (DOTr). The respondents were classified according to their sectors represented which is relevant in the conduct of the study.

Research Instruments

Survey Questionnaire

The study utilized a 5-point Likert scale for the researcher-made survey questionnaire. The researcher used a 5-point Likert scale to provide response variation to capture the perceptions of the commuters without overwhelming them. It also provided an easier statistical interpretation which improves the robustness and completeness of the findings. Moreover, the scale was intentionally made to easily distinguish the response categories, explicitly adopted as straightforward for the commuters which have limited time or varying age between “strongly agree to strongly disagree”. The Likert Scale is interpreted as follows:

In-depth Interview

An In-depth interview is used as a secondary method of data collection in the study. An in-depth interview is a type of data collection where the participants receive questions without fixed response categories. The in-depth interview, while focused, is discursive and allows the researcher and respondent latitude to explore an issue within the framework of guided conversation (Osborne and Smith, 2021).

According to Ruthledge and Hogg (2020) In depth interviews are open ended questions primarily aimed to obtain nuanced understanding of the problem, employing a conversational format to shed light on the experiences and perspective of the participants. It also allows respondents to discuss and raise issues that may not have been considered.

Data Gathering Procedure

The data gathered were systematically organized, coded, and interpreted for the purpose of data analysis. The quantified data for the quantitative portion of the study were statistically analyzed through a descriptive method, specifically the weighted mean of each category based on the socio-demographic profiles of the respondents, which numerically presents the underlying patterns among the gathered data. This provides the researcher a nuanced understanding of the commuters' responses of their perception of the effectiveness of the EDSA Busway Program.

The weighted mean results were further analyzed using a One-Way Analysis of Variance (ANOVA) to determine whether there were significant differences in the respondents' perception of the effectiveness of the

Busway Program when grouped according to their socio-demographic profiles. This indicated the variation of perception of the commuters based on the factor affecting their perception of the effectiveness of the program.

The qualitative responses on the other hand were transcript and then thematically analyzed to present the recurring patterns of the responses of the informants. According to Long et. al (2024), transcription is the process of converting recorded materials into text and, as such, is usually a necessary precursor to commencing the analysis of interview data for it familiarizes the researcher with the data supplied by the participants. In application to the study, the researchers will accurately transcribe the recorded materials of interviews with the participants from the FGD and KI that help to formulate a strong analysis that answers the problems that need to be answered.

Thematic analysis on the other hand is the process of categorizing the recurring responses into themes to interpret the qualitative data easily and methodically.

After the separate systematic data analysis of the gathered data for the quantitative and qualitative aspect of the study, a data triangulation is used to integrate both data, allowing each portion of the study to support the other to produce robust, nuanced and meaningful results.

Data Analysis

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Ethical Consideration

This study adhered to strict ethical standards in the conduct of data collection, management, and analysis to ensure the protection of respondents and the integrity of the research process. Prior to participation, all respondents were provided with an informed consent form that clearly explained the purpose of the study, the nature of their participation, the voluntary basis of involvement, and their right to refuse or withdraw from the study at any point without any form of penalty or consequence. Consent was obtained before the administration of the survey, ensuring that participation was fully informed and freely given. In the gathering of data, the researchers ensured that no coercion or undue influence was applied to the respondents. Participation was voluntary, and only those who agreed to the terms of the study were included. To uphold data privacy, no personally identifiable information such as names, contact details, or exact addresses was collected unless absolutely necessary for validation purposes, and even then, such information was minimized and anonymized immediately after collection. All data collected were treated with strict confidentiality. Respondents were assigned

codes instead of names to ensure anonymity, and all responses were analyzed and reported in aggregate form only. This ensured that individual identities could not be traced or inferred from the published results. The study also complied with the principles of the Data Privacy Act of 2012 (Republic Act No. 10173), ensuring that all personal and sensitive information, if any, was handled responsibly and lawfully.

For data management and storage, all digital data were stored in password-protected devices and, where applicable, encrypted storage systems accessible only to the researchers involved in the study. Physical copies of questionnaires, if any, were securely kept in a locked cabinet to prevent unauthorized access. Data were retained only for the duration necessary for analysis and validation. Upon completion of the study, all collected data were properly disposed of in a secure manner. Digital files were permanently deleted from all storage devices and backups, while any printed materials were shredded to prevent recovery or unauthorized use. These procedures ensured that respondents' anonymity and confidentiality were preserved even after the completion of the research.

RESULTS AND DISCUSSION

The Socio-Demographic and Travel Profiles of the Commuters in the Edsa Busway Program

Table 1. *Profile of the Respondents and Informants in Terms of Age*

Age	F	%
18-24	357	93.0
25-34	18	4.7
36 and above	9	2.3
Total	384	100.0

Legend: F=frequency, %= Percentage

The data presented in Table 1. shows that the majority of respondents and informants belong to the 18–24 years old age group, with a frequency of 357 or 93.0% of the total sample. This is followed by respondents aged 25–34 years old, comprising only 18 individuals or 4.7%, and those aged 36 years and above, with 9 respondents or 2.3%. This distribution clearly indicates that the study is heavily dominated by younger participants, particularly individuals in early adulthood, while older age groups are minimally represented. The age is divided into groups based on the Philippines Statistics Authority Census of Population in Metro Manila (PSA, 2022)

Table 2. *Profile of the Respondents in Terms of Frequency of Busway Transport Use*

Frequency of Busway Transport Use	F	%
Sometimes	167	43.5
Rarely	157	40.9
always	60	15.6
Total	384	100.0

Legend: F=frequency, %= Percentage

The data presented in Table 2. show that most of the respondents use the busway transport on an occasional basis, with 43.5% reporting that they “sometimes” use the service, closely followed by 40.9% who indicated that they “rarely” use it. In contrast, only 15.6% of the respondents reported that they “always” use the busway transport. This distribution suggests that the majority of commuters are not regular or consistent users of the busway system, but rather rely on it intermittently depending on their travel needs or circumstances.

Table 3. Profile of the Respondents in Terms of Purpose of Travel

Purpose of Travel	F	%
Vacation/ Leisure	178	46.4
School	162	44.2
work	44	11.5
Total	384	100.0

Legend: F=frequency, %= Percentage

The data presented in Table 3. show that the majority of respondents use the busway for vacation, travel, or leisure purposes, accounting for 46.4% of the total, followed by those who utilize it for school-related travel at 42.2%, while only 11.5% of respondents use the busway primarily for work purposes. This distribution indicates that the busway is more heavily utilized for non-work activities, particularly leisure and educational trips, rather than as a primary mode of daily commuting for employment.

Table 4. Profile of the Respondents in Terms of Time of Travel

Time of Travel	F	%
9:00am to 12:00pm	137	35.7
3:00p, to 6:00pm	125	32.6
5:00am to 8:00am	73	19.0
7:00pm to 10:00pm	49	12.8
total	384	100.0

Legend: F=frequency, %= Percentage

The data presented in Table 4. indicated that respondents most frequently travel during the 9:00 AM to 12:00 PM time period, accounting for 35.7% of the total sample, followed by those traveling between 3:00 PM to 6:00 PM (32.6%). Morning travel between 5:00 AM to 8:00 AM represents 19.0%, while the least common travel time is 7:00 PM to 10:00 PM, comprising only 12.8% of respondents. This distribution suggests that the highest concentration of busway users occurs during midday and afternoon hours, rather than the early morning or late evening periods typically associated with traditional peak commuting times.

Table 5. Profile of the Respondents in Terms of Duration of Travel

Duration of travel	F	%
Less than an hour	285	74.2
2 to 3 hours	68	17.7
More than 3 hours	31	8.1
Total	384	100.0

Legend: F=frequency, %= Percentage

The data presented in Table 5. indicated that the majority of respondents experience relatively short travel durations, with 74.2% reporting that their trip from entry station to destination takes less than an hour. This is followed by 17.7% of respondents who travel for 2 to 3 hours, while only 8.1% reported travel durations of more than 3 hours. This distribution suggests that the Exclusive Bus Lane Program is primarily utilized for short to moderate-distance trips, with a significant concentration of users benefiting from quicker travel times within the system.

The Level of Effectiveness of Mmda's Exclusive Bus Lane Program Being Implemented in Response to the Traffic Congestion Problem in Metro Manila

Table 6. *The Effectiveness of MMDA's Exclusive Bus Lane Program Being Implemented in Response to the Traffic Congestion in Metro Manila in Terms of Accuracy*

Accuracy	Mean	Interpretation	SD
1. The exclusive bus lane program is integrated within the broader urban planning initiatives of Metro Manila.	4.12	Effective	0.76
2. The exclusive bus lane program received support from relevant policies and regulations.	4.09	Effective	0.80
3. Contributed to reducing vehicle emissions aligns with the overall traffic management strategy of Metro Manila.	4.07	Effective	0.82
4. The exclusive bus lane program is adaptable and flexible to changing traffic conditions and demands	4.02	Effective	0.83
5. The exclusive bus lane program is integrated within the broader urban planning initiatives of Metro Manila.	4.01	Effective	0.76
6. The stakeholders (e.g., government agencies, private sector, public) has been involved in the development of the bus lane program	3.97	Effective	0.91
7. The exclusive bus lane program has a positive public perception	3.94	Effective	0.81
8. The exclusive bus lane program received support from relevant policies and regulations.	3.94	Effective	0.80
9. The exclusive bus lane program contributed to reducing vehicle emissions.	3.88	Effective	0.91
10. The exclusive bus lane program effectively addresses the root causes of traffic congestion.	3.75	Effective	1.01
Overall	3.98	Effective	0.84

Legend: 4.51 - 5.00= Very Effective 3.51- 4.00=Effective, 2.51 - 3.50=Moderately Effective, 1.54 - 2.50=Less Effective, 1.00 - 1.50=not Effective

The data presented in Table 6. indicate that respondents generally perceive the MMDA's Exclusive Bus Lane Program as effective in terms of accuracy, with an overall mean of 3.98, interpreted as "Effective." This suggests that commuters recognize the program as aligned with broader transportation and traffic management objectives in Metro Manila. These high ratings may be attributed to commuters' observation that the busway operates as part of a larger government effort to improve public transportation, regulate passenger flow, and reduce congestion through dedicated lanes and coordinated traffic policies. The visible implementation of exclusive lanes, enforcement activities, and institutional support from transport agencies likely strengthened the perception that the program is strategically integrated into the city's transportation system. The highest-rated item is the program's ability to promote the use of public transport over private vehicles ($M = 4.12$), followed by its alignment with long-term transportation goals ($M = 4.09$) and its contribution to reducing vehicle emissions in relation to traffic management strategies ($M = 4.07$). Additionally, aspects such as integration with urban planning initiatives ($M = 4.01$) and adaptability to changing traffic conditions ($M = 4.02$) further reinforce the perception that the program is strategically designed and implemented. These findings indicate that the Exclusive Bus Lane Program is not only viewed as relevant but also as consistent with sustainable transport and environmental objectives, reflecting a strong alignment between policy intent and execution.

However, while all items fall within the "Effective" range, relatively lower mean scores are observed in areas such as the program's ability to address the root causes of traffic congestion ($M = 3.75$) and its overall contribution to reducing vehicle emissions ($M = 3.88$). Similarly, perceptions of policy support, stakeholder involvement, and public perception, although still positively rated suggest room for further enhancement. These results imply that although the program is recognized for its strategic alignment and positive direction, some commuters may perceive limitations in its depth of impact, particularly in resolving underlying traffic issues. In

interpretation, this indicates that while the Exclusive Bus Lane Program is an important and well-aligned intervention, strengthening stakeholder engagement, policy enforcement, and measurable outcomes (e.g., congestion reduction and emission control) could further enhance its perceived and actual effectiveness.

These findings are consistent with Pineda, Monjardin and Robles (2025) who reported that commuters perceived improved accessibility and noted a higher travel satisfaction, reinforcing the program's alignment with sustainable transport objectives. Similarly, Ollero et al. (2024) demonstrated that EDSA Busway improved fuel efficiency, operating speed, and environmental performance.

The overall standard deviation of 0.84 suggests that respondents' views on the accuracy of the MMDA's Exclusive Bus Lane Program were generally consistent. A deviation below 1.00 indicates that responses clustered closely around the mean, reflecting a shared evaluation among commuters regarding the program's alignment with transportation objectives, urban planning efforts, and traffic management strategies. The relatively narrow spread implies limited disagreement on accuracy-related aspects of the initiative.

This consistency is even clearer in indicators with lower SD values, such as integration with broader urban planning (SD = 0.76) and policy support (SD = 0.80), both of which highlight strong consensus among respondents. In contrast, the indicator concerning the program's capacity to address the root causes of traffic congestion shows a higher SD of 1.01, pointing to more divided opinions. While some respondents perceive the busway as a meaningful solution to congestion, others regard it as insufficient for tackling deeper structural issues in traffic management.

Table 7. *The Effectiveness of MMDA's Exclusive Bus Lane Program Being Implemented in Response to the Traffic Congestion in Metro Manila in Terms of Responsiveness.*

Responsiveness	Mean	Interpretation	SD
1. The Exclusive bus lane program is committed in resolving commuter's bus related concerns (e.g. travel time, congestion.)	3.96	Effective	0.82
2. The exclusive bus lane program is well coordinated with other traffic management in handling an immense volume of commuters.	3.89	Effective	0.98
3. The exclusive bus lane program manages traffic flow and minimize congestion.	3.89	Effective	0.82
4. The implementation of the exclusive bus lane program is well-planned and executed in response to traffic congestion.	3.83	Effective	0.99
5. The technology integrated into the bus lane program is effective for monitoring and reporting exclusive bus lane status.	3.82	Effective	1.02
6. Training and development provided to personnel managing the bus lane program is quick and effective in response to the bus lane accidents.	3.82	Effective	0.84
7. The MMDA and bus operators has an effective communication line in updating current situation regarding the bus lane program.	3.76	Effective	0.84
8. The allocation of resources is adequate in maintaining (e.g., Budget, personnel, and road safety hazards) progressive traffic condition in the bus lane program.	3.69	Effective	0.90
9. The MMDA collect and utilize feedback from stakeholders to improve the bus lane program.	3.62	Effective	0.92
10. The MMDA respond quickly to issues and challenges encountered in the bus lane program.	3.54	Effective	0.97
Overall	3.78	Effective	0.88

Legend: 4.51 - 5.00= Very Effective 3.51- 4.00=Effective, 2.51 - 3.50=Moderately Effective, 1.54 - 2.50=Less Effective, 1.00 - 1.50=not Effective

The data presented in Table 7. indicate that respondents generally perceive the MMDA's Exclusive Bus Lane Program as responsive to commuter needs and traffic conditions, as reflected by an overall mean of 3.78, interpreted as "Agree." These positive ratings may be attributed to commuters' observation of dedicated bus lanes, visible traffic enforcement, dispatch controls, and inter-agency coordination among the MMDA, DOTr, LTFRB,

and LTO. The implementation of bus timers, monitoring cameras, and the Central Public Utility Vehicle Monitoring System (CPUVMS) likely reinforced the perception that the program actively responds to changing traffic conditions and commuter needs. The findings imply that operational visibility, technological monitoring, and coordination among implementing agencies strengthen commuters' confidence in the program's ability to manage traffic and improve public transport efficiency. The highest-rated indicator is the program's commitment to resolving commuter-related concerns such as travel time and congestion ($M = 3.96$), followed by its effective coordination with other traffic management systems ($M = 3.89$) and its role in managing traffic flow and minimizing congestion ($M = 3.89$). Additionally, aspects such as well-planned implementation ($M = 3.83$) and the integration of technology for monitoring and reporting ($M = 3.82$) further highlight the system's ability to respond to dynamic traffic conditions. These findings suggest that the program demonstrates a proactive approach in addressing commuter demands and improving operational efficiency through coordination, planning, and technological support.

However, despite these positive evaluations, certain areas reflect relatively lower responsiveness, which may require further attention. In particular, the rating for MMDA's speed in responding to issues and challenges ($M = 3.54$) is the lowest among all indicators, suggesting that commuters may perceive delays in addressing operational concerns. Similarly, feedback collection and utilization ($M = 3.63$) and the adequacy of resource allocation ($M = 3.69$) indicate that there are opportunities to strengthen participatory mechanisms and ensure sufficient support for program maintenance. Although these aspects remain within the "Agree" range, their comparatively lower scores imply that responsiveness can still be enhanced by improving real-time interventions, increasing stakeholder engagement, and optimizing resource distribution. Overall, the results imply that while the Exclusive Bus Lane Program is generally responsive, focused improvements in these areas would further enhance its effectiveness in addressing Metro Manila's traffic congestion challenges. This is supported by Pineda et al. (2025), who emphasized the EDSA Busway's contribution to improved operational efficiency and sustainable urban transportation. The positive ratings across planning, coordination, communication, resource allocation, and personnel training imply that the program is generally effective in adjusting to changing traffic demands and commuter concerns. However, the relatively lower ratings for rapid issue response and feedback utilization suggest opportunities for improvement, particularly in enhancing real-time responsiveness and stakeholder engagement to further strengthen the program's effectiveness in managing congestion.

The overall standard deviation of 0.88 reflects a relatively consistent set of responses regarding the responsiveness of the Exclusive Bus Lane Program. Although the dispersion is slightly wider compared to Table 13, the SD remains below 1.00, indicating that most respondents expressed comparable views on the program's capacity to address commuter concerns, adapt to traffic conditions, and manage operational challenges.

Indicators such as the program's responsiveness to commuter concerns ($SD = 0.82$) and its effectiveness in managing traffic flow ($SD = 0.82$) demonstrate strong consensus among respondents. Conversely, the integration of technology for monitoring and reporting bus lane status shows the highest variability ($SD = 1.02$). This suggests that commuter experiences with technological monitoring systems were mixed—some found them effective, while others noted inconsistencies or limitations in their application.

Table 8. *The Effectiveness of MMDA's Exclusive Bus Lane Program Being Implemented in Response in the Traffic Congestion in Metro Manila in Terms of Accessibility.*

Accessibility	Mean	Interpretation	SD
1. The enforcement of bus lane rules and regulation and services are applicable to everyone.	3.97	Effective	0.88
2. The exclusive bus lane program contributed in reducing traffic congestion in Metro Manila.	3.85	Effective	0.87
3. The bus driver and operators comply with the rules provided in the program.	3.80	Effective	0.82
4. I am satisfied with the operational efficiency and convenience for time travel of the buses using the exclusive bus lane.	3.78	Effective	0.90
5. The maintenance of the bus lane program is available in terms of cleanliness, repair and overall condition.	3.74	Effective	0.87

6.	The passengers are satisfied with the services provided by buses (e.g. Priority chairs and corridors for pregnant, PWD, etc.) using the exclusive bus lane.	3.74	Effective	0.91
7.	The MMDA services is reachable to all commuters, drivers and bus operator in the bus lane program.	3.65	Effective	0.94
8.	The MMDA is effective in managing accidents and emergencies including the commuter's welfare in the bus lane program.	3.58	Effective	0.95
9.	The infrastructures built for the bus lane program is convenient for old commuters and person with disabilities (PWD)	3.48	Moderately Effective	1.21
10.	I am satisfied with the current infrastructure (e.g. Footbridge, MRT stations, etc.) supporting the exclusive bus lanes.	3.45	Moderately Effective	1.17
	Overall	3.70	Effective	0.98

Legend: 4.51 - 5.00= Very Effective 3.51- 4.00=Effective, 2.51 - 3.50=Moderately Effective, 1.54 - 2.50=Less Effective, 1.00 - 1.50=not Effective

The data presented in Table 8 reveal that respondents generally perceive the MMDA's Exclusive Bus Lane Program as accessible and inclusive, as evidenced by an overall mean of 3.70, interpreted as "Agree." These positive ratings may be attributed to commuters' observation of visible enforcement activities, dedicated bus lanes, and operational controls that prioritize public transport movement. The highest-rated indicator is the enforcement of bus lane rules and regulations being applicable to everyone ($M = 3.97$), followed by the perception that the program contributes to reducing traffic congestion ($M = 3.85$) and that bus drivers and operators comply with program rules ($M = 3.80$). Additionally, respondents expressed satisfaction with operational efficiency and travel convenience ($M = 3.78$), as well as the availability of services and amenities for passengers, including priority seating for vulnerable groups ($M = 3.74$). These findings suggest that the program is generally viewed as accessible in terms of equitable implementation, service delivery, and overall system functionality, indicating that key components of accessibility—such as fairness, usability, and availability of services—are being met. It implies that consistent enforcement, organized operations, and the provision of basic passenger accommodations contribute positively to commuters' perception of accessibility and inclusiveness within the busway system.

However, despite these positive perceptions, the results also highlight notable challenges in infrastructure-related accessibility, particularly for specific groups of commuters. The lowest-rated indicators are related to satisfaction with current infrastructure ($M = 3.45$) and the convenience of facilities for older commuters and persons with disabilities (PWDs) ($M = 3.48$), both interpreted as "Neutral." These findings suggest that existing physical infrastructures, such as footbridges and station access points, may not fully support inclusive mobility for all users. Additionally, while emergency management ($M = 3.58$) and service reachability ($M = 3.65$) are rated positively, their relatively lower means compared to other indicators imply areas for improvement. The ratings regarding footbridges, MRT connectivity, and infrastructure convenience for elderly commuters and persons with disabilities are consistent with the findings of Gumasing et al. (2025) and Thatcher et al (2025), who emphasized that physical infrastructure and universal design remain major barriers to inclusive public transportation in the Philippines.

The overall standard deviation of 0.98 reflects a moderate degree of variability in respondents' perceptions of accessibility. Since the value is close to 1.00, it indicates that accessibility was experienced less uniformly compared with accuracy and responsiveness. While many respondents expressed similar views, a notable portion offered differing assessments regarding station access, infrastructure convenience, and facilities for vulnerable groups.

The highest variability is observed in indicators related to infrastructure for elderly commuters and persons with disabilities ($SD = 1.21$), as well as satisfaction with supporting infrastructure such as footbridges and MRT stations ($SD = 1.17$). These elevated SD values highlight substantial disagreement among respondents, suggesting that accessibility conditions vary considerably depending on physical mobility, station location, and travel route. In contrast, indicators such as enforcement of bus lane rules ($SD = 0.88$) and contribution to congestion reduction ($SD = 0.87$) demonstrate more consistent responses, reflecting stronger consensus in these areas.

The Significant Differences in Commuter's Perception of the Program's Effectiveness When Grouped According to Their Socio-Demographic and Travel Characteristics.

Table 9. *Difference in the Commuter's Perception of the Effectiveness of the Busway Strategies and Policies Implemented by the MMDA in Reducing Traffic Congestion in Metro Manila When Grouped by Their Profile.*

Profile	P-value	Outcome
Age	0.052	Cannot Reject
Frequency of the Busway Transport Use	<0.01	Cannot Reject
Purpose of Travel	0.388	Cannot Reject
Time of Travel	0.052	Cannot Reject
Duration of Travel	0.699	Cannot Reject

Legend: Significant at $P=0.05$

A one-way Analysis of Variance (ANOVA) was conducted to determine whether there were significant differences in respondents' perceptions of the effectiveness of the MMDA's busway strategies and policies when grouped according to selected profile variables, namely age, frequency of busway transport use, purpose of travel, time of travel, and duration of travel from entry station to destination.

For age, the result of the one-way ANOVA showed that age had a p-value of 0.052, which is slightly above the 0.05 level of significance. This indicates that there is no statistically significant difference in the respondents' perceptions when grouped according to age. This suggests that perceptions of the effectiveness of the busway strategies are generally consistent across different age groups, implying that the MMDA busway system is perceived similarly regardless of the respondents' age. This suggests that perceptions of the effectiveness of the busway strategies are generally consistent across different age groups (Quezon City Bus Service Study, 2024), this implies that the MMDA busway system is perceived similarly regardless of the respondents' age (Pan et al., 2024).

The frequency of busway transport use yielded a p-value of < 0.01 , which is less than the 0.05 level of significance. This result indicates a statistically significant difference in respondents' perceptions when grouped according to how frequently they use the busway system. This implies that respondents who use the busway more frequently tend to have significantly different perceptions of its effectiveness compared to those who use it less often. Frequent users are likely more exposed to the operational strengths and weaknesses of the busway system, which may shape stronger or more informed evaluations of its role in reducing traffic congestion. This implies that respondents who use the busway more frequently tend to have significantly different perceptions of its effectiveness compared to those who use it less often (Zulueta et al., 2024). Frequent users are likely more exposed to the operational strengths and weaknesses of the busway system, which may shape stronger or more informed evaluations of its role in reducing traffic congestion (Vallee et al., 2024).

For purpose of travel, the computed p-value was 0.388, which is greater than the 0.05 significance level. This indicates no significant difference in perceptions based on the respondents' purpose of travel (e.g., work, school, or personal reasons). This finding suggests that the perceived effectiveness of the MMDA busway strategies is consistent regardless of why respondents are traveling, indicating that the system serves various travel purposes in a relatively uniform manner. This finding suggests that the perceived effectiveness of the MMDA busway strategies is consistent regardless of why respondents are traveling, indicating that the system serves various travel purposes in a relatively uniform manner (Borkowski et al., 2024).

The analysis for time of travel produced a p-value of 0.052, which is also slightly above the 0.05 threshold. Hence, no statistically significant difference was found in respondents' perceptions when grouped according to the time they use the busway. This suggests that perceptions of effectiveness do not significantly vary whether respondents travel during peak or off-peak hours, implying a generally stable perception of the busway's performance across different times of the day. This suggests that perceptions of effectiveness do not significantly vary whether respondents travel during peak or off-peak hours, implying a generally stable perception of the busway's performance across different times of the day (Kim and Corcoran, 2024).

Lastly, the duration of travel from entry station to destination resulted in a p-value of 0.699, which is considerably higher than the level of significance. This clearly indicates no significant difference in perceptions based on travel duration. This suggests that regardless of whether respondents experience shorter or longer travel times, their assessment of the busway strategies' effectiveness in reducing traffic congestion remains similar. This suggests that regardless of whether respondents experience shorter or longer travel times, their assessment of the busway strategies' effectiveness in reducing traffic congestion remains similar (Guglielmetti, et al., 2017).

Table 10. Post Hoc Test for Frequency of Busway Transport Use

	Category	P-value	Interpretation
Frequency of the Busway Transport Use	Always-Rarely	<0.01	Significant
	Always Sometimes	.260	Not Significant
	Rarely-Sometimes	.005	Significant

Legend: mean difference is significant at <0.05

A post hoc analysis using Tukey's Honestly Significant Difference (HSD) test was conducted following a significant one-way ANOVA to identify where the differences lie in the perceived level of effectiveness of the MMDA's Exclusive Bus Lane Program when respondents were grouped according to frequency of busway transport use. The results show a statistically significant difference between respondents who always use the busway and those who rarely use it ($p = <0.01$), indicating that these two groups have markedly different perceptions of the program's effectiveness. This suggests that frequent exposure to and reliance on the busway system significantly influence how its effectiveness is perceived (Ollero, Vergel, and Tiglaio, 2024). In contrast, no significant difference was found between respondents who always use the busway and those who sometimes use it ($p = .260$), indicating that regular and occasional users share relatively similar perceptions of the program. (Buenavista et al., 2024).

Further analysis reveals a significant difference between respondents who rarely use the busway and those who sometimes use it ($p = .005$), reinforcing the finding that infrequent users differ significantly in their perceptions compared to users with more consistent exposure. Overall, the post hoc results indicate that the lowest mean difference and thus the key source of variation in perception comes from respondents who rarely use the busway, making frequency of use the primary driver of perceptual differences. This implies that commuters who use the busway more often tend to develop a more informed and possibly more favorable assessment of its effectiveness, while limited usage may result in weaker or less positive perceptions. These findings emphasize the importance of commuter exposure and experience in shaping evaluations of transport policy effectiveness (Zulueta et al., 2024).

The Issues and Challenges Encountered by Commuters in the Implementation of the Edsa Busway Program.

Table 11. *The Issues and Challenges Encountered by the Commuters in the Implementation of the Exclusive Bus Lane Program*

Issues/ Challenges	Mean	Rank	SD
1. Fare collection is transparent and efficient.	3.84	1	0.81
2. The signage and directions for the busway are clear and helpful.	3.82	3	0.82
3. The overall implementation of the busway program meets commuter needs.	3.81	4	0.82
4. Security personnels are visible and responsive at the bus stops	3.75	5.5	0.86
5.The payment methods (cash, card, QR, etc.) are convenient.	3.75	5.5	0.93
6. Boarding and alighting from the buses is safe and orderly.	3.72	7	0.83
7. The busway lanes are properly enforced and free from private vehicles.	3.70	8	0.89
8. The busway provides a faster alternative compared to other modes of transport.	3.68	9	1.21
9. Traffic management around busway stations is effective.	3.66	10.5	0.84

10. The fare system is affordable compared to other transport options.	3.66	10.5	0.85
11. Bus arrivals are consistent with the published schedules.	3.55	11	0.89
12. I feel safe while waiting at the busway stations.	3.54	12	0.86
13. The buses are clean and well-maintained.	3.49	13	0.89
14. The bus stops are conveniently located near my origin and destination.	3.48	14	0.96
15. It is easy to access the busway stations without long walking distances.	3.37	15	0.97
16. Seating and standing spaces inside the buses are adequate.	3.32	16	1.06
17. The EDSA Busway has reduced my overall travel time.	3.29	17	0.97
18. The buses are not overcrowded during peak hours.	2.83	18	0.82

Legend: Mean: Highly Effective (4.51-5.00) Effective (3.51-4.50) Moderately Effective (2.51-3.50) Less Effective (1.51-2.50) Not Effective (1.00-1.50). Rank: Rank 18 = Lowest mean score, representing the most pressing issue/challenge; lower rank values = less pressing concerns, with the highest rank number indicating the least critical issue.

The findings presented in Table 11 indicate that commuters generally perceive the implementation of the Exclusive Bus Lane Program as effective in terms of system organization, safety, and fare management, as reflected by relatively high mean scores across several indicators. The highest-rated aspect is fare collection being transparent and efficient ($M = 3.84$, Rank 1), followed by clear and helpful signage and directions ($M = 3.82$, Rank 3) and the perception that the overall implementation of the busway meets commuter needs ($M = 3.81$, Rank 4). Additionally, security-related factors, such as the visibility and responsiveness of personnel ($M = 3.75$, Rank 5.5) and the orderly process of boarding and alighting ($M = 3.72$, Rank 7), also received favorable evaluations. Furthermore, the favorable perception of payment convenience ($M = 3.75$) and lane enforcement ($M = 3.70$) indicates that institutional mechanisms supporting the busway are functioning well and are aligned with commuter expectations.

Despite these strengths, the data reveal notable challenges related to accessibility, capacity, and travel efficiency, which may limit the full potential of the program. The lowest mean score was recorded for the buses not being overcrowded during peak hours ($M = 2.83$), indicating that overcrowding remains a major concern among commuters. Similarly, relatively low ratings were observed for the reduction of overall travel time ($M = 3.29$, Rank 17), adequacy of seating and standing space ($M = 3.32$, Rank 16), and ease of accessing busway stations without long walking distances ($M = 3.37$, Rank 15).

The standard deviations, ranging from 0.81 to 1.21, reflect differing levels of consistency in commuters' perceptions of the challenges associated with the implementation of the Exclusive Bus Lane Program. Most indicators recorded values below 1.00, suggesting that respondents generally shared similar experiences with fare collection, signage, safety, traffic management, and station accessibility. For instance, fare collection transparency and efficiency ($SD = 0.81$) and the clarity of signage ($SD = 0.82$) showed relatively low variability, indicating strong agreement among commuters.

Moderate variability was noted in indicators such as the visibility of security personnel ($SD = 0.86$), payment convenience ($SD = 0.93$), and the accessibility of bus stop locations ($SD = 0.96$). These values imply that while many respondents reported comparable experiences, differences emerged depending on station location, travel conditions, or individual commuting circumstances.

The highest variability was observed in perceptions of the busway as a faster alternative to other transport modes ($SD = 1.21$) and in the adequacy of seating and standing spaces inside buses ($SD = 1.06$). These elevated values indicate substantial differences in commuter experiences, with some reporting significant time savings and sufficient space, while others encountered delays, overcrowding, and limited seating during peak hours. The pattern of standard deviations suggests that operational aspects such as fare collection, signage, and safety are experienced relatively consistently across commuters, whereas travel-time efficiency and passenger capacity yield more varied assessments. This highlights that the busway's effectiveness in improving travel comfort and efficiency is highly contingent on route conditions, time of travel, and demand levels.

Governance and Operational Challenges Encountered by Implementing Agencies, Particularly the Department of Transportation, In the Implementation of the Program.

The thematic narrative analysis for governance and operational challenges encountered by implementing agencies in the implementation of the EDSA busway program revealed 4 significant themes, namely: 1) Pre-Pandemic Planning Issues, 2) Service Timeliness and Demand, 3) Lack of Dedicated Lanes for PWDs, Pregnant, and Priority Commuter Groups, and 4) Lane Exclusivity. These themes illustrate the diverse challenges encountered in busway programs, reflecting not only the limitations of initial planning but also the complexities of implementation and enforcement.

Key theme 1: Pre Pandemic Planning Issues

The early stages of the EDSA Busway Program were characterized by institutional and operational conditions inherited from the pre-pandemic transport system. Key informants recalled that the planning and implementation process lacked the participation of several critical stakeholders, limiting the program's capacity to establish a coordinated and integrated framework. This highlights the limited interagency coordination, wherein fragmented decision-making constrained collaborative planning and reduced the ability of institutions to collectively address transport challenges. The absence of several key stakeholders during the initial planning and implementation stages indicates the broader governance challenges identified in Metro Manila's transport sector, where overlapping mandates, fragmented authority, and competing institutional interests have historically constrained the implementation of comprehensive transport reforms (Romero et al., 2014; Sidel, 2020). Similarly, Napalang and Regidor (2015) documented how numerous transport proposals for EDSA, including BRT-type systems, failed to progress due to planning and implementation challenges.

Another concern raised by informants was the continued dependence on legacy operational arrangements. This reflects the reliance on pre-pandemic Routes, where operating authorities and service patterns remained anchored to pre-pandemic conditions rather than being redesigned to meet the requirements of a dedicated busway system. Informants also pointed to the persistence of traditional curbside operations that contributed to congestion. Curbside Operations and Route Overlaps, wherein buses operating along the curbside and overlapping with other modes of transport created conflicts in traffic movement and reduced operational efficiency. These practices, inherited from the pre-busway period, embedded inefficiencies into daily operations and reinforced congestion along the corridor. The persistence of pre-existing operational structures further suggests that the EDSA Busway was developed within institutional constraints inherited from the previous transport system rather than through a fully integrated planning framework. This observation aligns with the findings of JICA (2006), which highlighted deficiencies in transport planning, fleet management, and operational coordination along the EDSA corridor. The continuation of these structural conditions demonstrates how pre-existing institutional arrangements can shape the implementation of new transport interventions.

These statements illustrate how fragmented planning created inconsistencies and overlapping operations. Reliance on pre-pandemic routes reflected a reactive approach to transport management, where decisions were shaped by legacy practices rather than forward-looking coordination. The absence of foresight and structured inter-agency involvement meant that congestion was already institutionalized before the busway was formally introduced. The findings imply that weak stakeholder engagement may undermine the long-term sustainability of transport programs, as critical operational concerns and institutional requirements may not be adequately considered during the planning stage.

From these accounts, it can be inferred that pre-pandemic planning was characterized by institutional fragmentation and operational inefficiencies. Without a unified framework, agencies operated in silos, and bus operators continued practices that undermined traffic flow. Future transport reforms may benefit from more formalized inter-agency planning mechanisms prior to implementation to ensure that the responsibilities, resources, and operational requirements of participating agencies are clearly defined (Santos & Alvarez, 2014). As Llanto & Gerochi (2017) argue, fragmented governance in transport systems often leads to inefficiencies and congestion, a pattern clearly evident in the early phases of the busway program.

Key theme 2: Service Timeliness and Demand (Inadequate Operation)

Key informants identified the operational challenges that continues to affect the reliability of the EDSA Busway Program, particularly inconsistent bus scheduling, peak-hour delays, inadequate bus deployment, and mismatches between passenger demand and service capacity. These challenges and issues contribute to the long existing problems of the commuters such as overcrowding, longer waiting times, and reduced commuter satisfaction. Informants further noted the weaknesses in operational monitoring, including inconsistent compliance with bus timers and underutilization of monitoring technologies, resulting in irregular bus circulation and service delays. In addition, external factors such as safety concerns involving unauthorized individuals within the busway stations and inadequate protective infrastructure that further affect the performance of the program. Overall, the findings indicate that enhancing the EDSA Busway requires improved fleet and demand management, stronger real-time monitoring and operational controls and safer infrastructure within the program to ensure a reliable, efficient, sustainable and safe public transport system.

Key theme 3: Lack of Dedicated Lanes for PWD's and Priority Commuter Groups

Key informants emphasized that one of the operational and accessibility limitations of the EDSA Busway Program is the lack of dedicated infrastructure for vulnerable passenger groups, particularly persons with disabilities (PWDs), elderly commuters, and pregnant passengers. Respondents observed that while the busway provides a dedicated corridor for buses, similar accommodations have not been fully extended to priority commuters. The absence of dedicated lanes reflects a broader limitation in the inclusivity of the busway design. Although priority seating is available inside buses, informants noted that this accommodation does not fully address the mobility needs of vulnerable commuters. Compared with other mass transport systems that provide designated areas for priority users, the busway still lacks comprehensive accessibility features that support independent and safer mobility.

Aside from the absence of dedicated lanes, respondents also identified limited priority accommodations for special passenger groups. The lack of specialized facilities affects the ability of elderly commuters, PWDs, and pregnant passengers to access stations efficiently, especially in areas where physical barriers exist. These concerns indicate that accessibility should not only be measured by the availability of priority seats but also by the presence of inclusive facilities that allow vulnerable groups to enter, exit, and transfer within the system safely. Accessibility concerns were further intensified by inadequate staging and waiting areas for bus operations. These design limitations not only restrict accessibility but also contribute to inefficient passenger movement and congestion around waiting areas. Mudiyo (2017) argued that service improvements and supporting infrastructure enhance the effectiveness of public transportation and encourage greater user acceptance. Therefore, the provision of ramps, elevators, priority lanes, sheltered waiting areas, and other accessibility-oriented facilities is essential in ensuring that the benefits of the EDSA Busway are distributed equitably among all commuter groups.

Similarly, inadequate staging areas for buses were identified as a concern affecting operational organization. These demonstrate that the lack of dedicated lanes, limited priority accommodations, and insufficient staging areas reveal gaps in the accessibility and inclusiveness of the EDSA Busway Program.

Key theme 4: Lane Exclusivity

Weak enforcement and limited public awareness were identified by key experts as major factors undermining the exclusivity of busway lanes highlighting how gaps in information campaigns contributed to non-compliance. These accounts reveal that exclusivity was compromised not only by deliberate violations but also by insufficient dissemination of rules. Kumar (2013), effective transport regulation requires not only enforcement but also sustained educational initiatives that cultivate public understanding of traffic rules and their broader social benefits. The persistence of uninformed violations indicates that information dissemination efforts may not be reaching all road users, thereby weakening policy implementation outcomes.

Operational congestion was further exacerbated by the mixing of private and public vehicles underscoring how the existence of different vehicle types diluted the intended efficiency of the system. The lack of strict separation between modes of transport weakened the structural integrity of the busway's design.

These findings indicate that enforcement gaps and limited awareness campaigns diluted the intended efficiency of the busway system. Congestion caused by the coexistence of private and public vehicles within bus lanes (Van Geet, et al, 2019).

Coordination And Response of Implementing Agencies, Including the Metropolitan Manila Development Authority, Land Transportation Franchising and Regulatory Board, And Department of Transportation to Implementation Challenges and its Effectiveness.

Thematic narrative analysis also revealed four (4) key themes concerning how implementing agencies, including the Metropolitan Manila Development Authority, Land Transportation Franchising and Regulatory Board, and Department of Transportation, coordinate and respond to implementation challenges, as well as how effective these mechanisms are: Post-Pandemic Implementation of EDSA Busway, Accountability for Service Timeliness and adequate demand, Infrastructural Development and Capacity Enhancement, Regulation of Transit Lanes, and Inter-agency Coordination of Implementing Agencies.

Key theme 1: Post- Pandemic Implication of EDSA Busway

Key informants described the EDSA Busway Program as a strategic reform that restructured public transport through dedicated inner bus lanes, improving passenger flow and reducing traffic congestion. They reported that lane exclusivity significantly shortened travel times and enhanced service reliability (Halls, 2020). Implementing agencies further strengthened operations through technology-based monitoring systems, GPS tracking, bus timers, and coordinated dispatch mechanisms to prevent bus bunching and maintain continuous service (Drabicki et al., 2023). Overall, the findings indicate that the integration of dedicated infrastructure, operational controls, and digital monitoring institutionalized a more efficient and accountable public transport system, positioning the EDSA Busway as a proactive model for urban transport reform (Gaspay, 2023).

Key theme 2: Accountability for Service Timeliness and Adequate Demand

Technology-based monitoring and enforcement mechanisms emerged as central components of accountability in busway operations. Key experts emphasized that accountability was maintained through a combination of institutional oversight and technological monitoring. Garcia et al. (2016) advocated the deployment of monitoring systems and traffic management centers capable of responding to operational disruptions in real time.

Operational control through bus timers and passenger distribution complemented these monitoring systems highlighting how drivers were compelled to adhere to strict dwell times to prevent bus bunching. Personnel also reminded operators to limit passenger intake, ensuring that service was not compromised by profit-driven practices (Heydon, 2019).

Participants also acknowledged behavioral issues and the role of operational controls in addressing them. Showing how enforcement was actively managed on the ground. This illustrates that the accountability framework functioned as both a technical and behavioral corrective mechanism. By integrating technology-based monitoring and enforcement mechanisms with operational control through bus timers and passenger distribution, the system sought to balance efficiency, fairness, and demand management, demonstrating how accountability structures were effectively deployed to sustain continuous circulation and equitable access across the busway system (Hall & Asselt, 2025).

Key theme 3: Infrastructural Development and Capacity Enhancement

Safety improvements and passenger accommodation measures were highlighted by key experts as central strategies for sustaining the operability and inclusivity of the busway system. The regulatory issuances institutionalized priority seating for vulnerable groups. Safety concerns were also raised, with another respondent noting, “So, I think it should be replaced with jersey barriers that are safer, kasi that are only filled with water, eh? So, it reduces the impact of the crashes that are happening if ever,” underscoring the call for stronger crash

protection. These measures reflect a deliberate effort to embed safety and passenger accommodation into the physical design of the busway (Richard et al., 2025).

Accessibility-oriented infrastructure development was likewise emphasized as integral to capacity enhancement. These initiatives were not isolated improvements but formed part of a broader institutional framework. Through these interventions, accessibility-oriented infrastructure development was embedded into the system to accommodate diverse commuter needs and promote universal mobility.

Safety barriers, elevators, tactile guidance systems, and accessible station designs serve as foundational elements that enable commuters to safely and efficiently access transport services. Without these facilities, operational improvements alone may not fully address the diverse needs of commuters. Cruz and Garcia (2015) emphasized that efficient public transport systems require supporting facilities that improve accessibility and user experience. Infrastructural development was therefore pursued as a forward-looking strategy. By combining safety improvements and passenger accommodation measures with accessibility-oriented infrastructure development, implementing agencies institutionalized inclusivity, resilience, and commuter safety. Aligning rehabilitation projects with established design standards ensured that improvements were both compliant and responsive to diverse commuter needs, positioning infrastructure as a cornerstone of sustainable busway reform (Sunio et al., 2021).

Key theme 4: Regulation of Transit Lanes

Key informants identified transit lane regulation as a critical governance mechanism for maintaining the efficiency of the EDSA Busway. Dedicated lane exclusivity, with limited access for emergency vehicles, helped ensure uninterrupted bus operations and commuter mobility (Boquet, 2019). Enforcement was supported by sanctions, documented violations, and advanced surveillance technologies, including high-resolution CCTV and GPS-based monitoring, while trained personnel enhanced the accuracy of enforcement (Alobaidallah et al, 2025). Overall, respondents emphasized that the integration of clear regulations, technology, and institutional enforcement effectively deterred violations, preserved lane exclusivity, and protected the efficiency and reliability of the busway system.

CONCLUSION

Based on the findings of the study, the following conclusions are drawn:

1. The EDSA Busway Program is most utilized by younger commuters, particularly teenagers, which primarily travel for school and leisure. The usage pattern shows that the respondents are dominated by rare and seldom users of the program. Meanwhile, travel time is concentrated in morning to noon hours followed by rush hours with duration of travel under an hour.
2. The study demonstrates that the EDSA Busway Program is broadly perceived as accurate, responsive and accessible across all respondents, and is a credible intervention for addressing traffic congestion.
3. The analysis concludes that most socio-demographic variables do not significantly affect perceptions of the busway program's effectiveness. However, frequency of use does matter; regular commuters perceive the program differently than occasional riders. Post hoc further confirms and shows that the rare users of the busway program hold less favorable views, suggesting that limited exposure leads to weaker appreciation and perception of the program's effectiveness.
4. The challenges encountered by the commuters in utilizing the EDSA Busway program are overcrowding inside the buses, lack of significant travel time reduction, and difficulty accessing the stations due to long walking distances which emphasizes the systemic and capacity constraints of the program.
5. The Edsa Busway Program faced governance and operational challenges rooted in fragmented pre-pandemic planning, mismatches between supply and demand, overcrowding, inadequate safety and accessibility features, and maintaining lane exclusivity.

6. Post-Pandemic reforms, including the introduction of dedicated lanes, technological monitoring systems, and inter-agency collaboration, significantly improved travel efficiency, accountability, and inclusivity; however, the program requires stronger regulation, enhanced inclusive infrastructure, and sustained collaboration of implementing agencies to ensure long-term effectiveness.

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