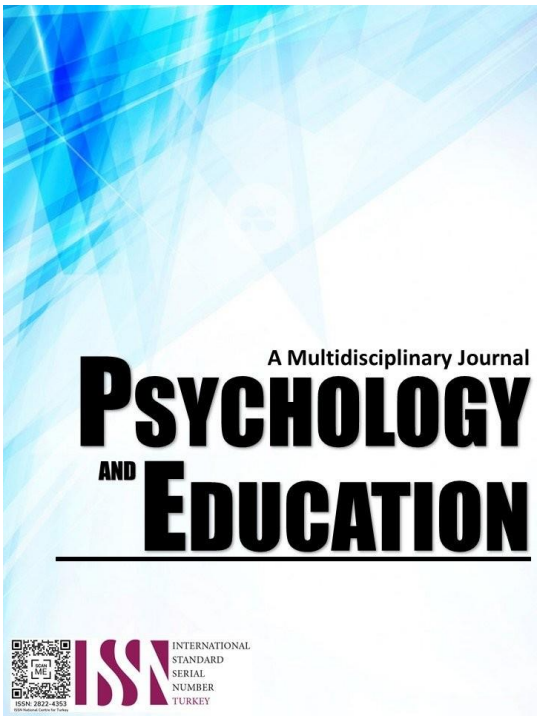
PUBLIC TRANSPORTATION SYSTEM IN THE CITY OF DASMARIÑAS: BASIS FOR A PROPOSED SUSTAINABLE MOBILITY PROGRAM



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Research Article

Public Transportation System in the City of Dasmariñas: Basis for a Proposed Sustainable Mobility Program

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Abstract

The study provides a comprehensive analysis of the demographic profile of respondents in terms of age, sex, educational attainment, and employment status. It highlights key findings such as the distribution of respondents across different age brackets, gender representation, educational backgrounds, and employment status among individuals with disabilities in Taft, Eastern Samar. The results shed light on the unique challenges and needs of various demographic groups within the PWD community, emphasizing the importance of targeted interventions and inclusive policies to support their socioeconomic integration. Furthermore, the assessment of the sustainable mobility of public transportation systems in Dasmariñas City Cavite reveals insights into safety and security, infrastructure, and environmental compliance. The findings indicate the perceived strengths and areas for improvement in the public transportation system, with a focus on emergency response procedures, integration with other modes of transportation, and adherence to environmental practices. The relationship between the profile of the respondents and their assessment of sustainable mobility shows significant correlations based on age, sex, and frequently used transportation. These correlations highlight the influence of individual factors on perceptions of safety, security, infrastructure, and environmental compliance within the public transportation system, underscoring the importance of considering diverse perspectives in transportation planning and policy-making. Moreover, the proposed sustainable mobility program for Dasmariñas Cavite outlines key initiatives such as transitioning to electric and low-emission vehicles, implementing mobility-as-a-service platforms, creating multi-modal transport hubs, developing non-motorized transport infrastructure, promoting transit-oriented development, and enhancing inclusive and accessible transport options. These initiatives aim to improve the efficiency, sustainability, and accessibility of the public transportation system, ultimately enhancing the quality of life for residents and reducing environmental impact. Overall, the study and proposed program reflect a holistic approach to addressing the diverse needs and challenges within the public transportation system, emphasizing the importance of sustainability, inclusivity, and innovation in promoting a more efficient and equitable transport network for Dasmariñas Cavite.

Keywords: *public transportation, mobility, program*

Introduction

Public transportation provides commuters with a convenient method to reach their destination faster and cheaper compared with private vehicles. (Teknomo, 2016). The Philippines has 4.9 million registered vehicles, with 103 million train passengers, half of whom rely on LRT 1.

According to the 2022 Urban Mobility Readiness Index, the capital of the Philippines, Manila, ranked 58th out of the 60 cities analyzed worldwide with the poorest public transit systems in terms of "urban mobility readiness." Additionally, Manila placed 48th for Sustainable Mobility and 56th for Public Transit.

Public Utility Vehicle (PUV), aside from its cheaper price, it does provide faster mode of transportation (Teknomo, 2016). Jeepney is one of the most used vehicle in the Philippines which is also a symbol of Philippine culture (Westerman, 2018). It also gives cheaper but faster mode of reaching the drop-off destination (Teknomo, 2016). Many Filipinos have negative perception when it comes to public utility vehicles because some drivers are driving recklessly even though it is the cheapest form of transportation in the society (Tribdino, 2016).

However, it is characterized by its unsafe, unhealthy, unreliable, and uncomfortable nature. Public utility buses (PUBs) and public utility jeepneys (PUJs) cater to 67% of the demand but occupy only 28% of the road space. PUJs dominate the road-based public transport sector, with a total of 180,000 PUJs nationwide, 90% of which are 15 years old and above. These older vehicles contribute to the significant ambient air pollution, accounting for 17% in Metro Manila and up to 80% in other cities. Furthermore, passengers of PUJs are ten times more likely to experience accidents than private car riders. The country also suffers from a staggering economic loss of 2.4 billion due to traffic congestion, as reported by JICA in 2014. (Samson, 2023)

Moreover, the public transportation system in the Philippines faces various challenges, including issues with comfort, safety, and efficiency (Rahman, 2012). These challenges are particularly evident in the case of Metro Manila buses, which have been found to be overcrowded and not ergonomically suited for Filipino passengers (Bombais, 2017). There is a significant problem with accessibility, particularly for persons with disabilities and other behavioral factors. (Samson, 2023)

In Davao City, the fare system of urban public transportation services has been studied, with lower fares being found to increase

individual benefit, social surplus, and the modal share of public transportation (Ninomiya, 2017). The perception of service quality among paratransit users in Metro Manila has also been explored, with factors such as vehicle condition, customer care, and reliability being identified as important (Tiglao, 2020).

On the other hand, environmental issues have also been a concern in public transportation. Transport is the largest source of air pollution and energy-related Greenhouse gases (GHG) (34% of total GHG emissions) in the Philippines, whereby road transport is the largest contributor (with over 80%). In October 2015, the Philippines submitted their official conditional GHG mitigation target to the United Nations Framework Convention on Climate Change (UNFCCC) as Intended Nationally Determined Contribution (INDC), in which the Government stated an emission reduction target of 70% until 2030 with international support. In order to achieve this emission reduction as well as climate change adaptation the Philippine government had launched several programmes and regulations. One of them is the Climate Change Act, a policy framework to systematically address climate change, under which the Climate Change Commission (CCC) was established. The CCC is in charge of coordinating, monitoring and evaluating governmental programmes and action plans related to climate change, as well as implementing the Philippine Greenhouse Gas Inventory Management and Reporting System.

The main challenges facing transportation in Cavite include rapid population growth, urbanization, and industrialization development, leading to worsening traffic congestion. This congestion not only causes environmental pollution and energy waste but also contributes to increased levels of road accidents. The lack of environmentally sustainable transport alternatives, such as diesel-electric vehicles, further exacerbates the problem. (Elardo, 2017)

The City of Dasmarinas is a landlocked component city in the coastal province of Cavite. The transportation issues in Dasmarinas, Cavite, Philippines, can be multifaceted, as with many rapidly growing urban areas. To address these challenges, the researcher was able to conduct this research that focuses on the existing problems in public transportation system in the City of Dasmarinas in terms of safety and security, infrastructure, and environmental compliance. Moreover, a policy enhancement program is proposed that will address these existing problems.

Research Questions

This study aimed to determine the assessment of the respondents on the sustainable mobility of public transportation system in the City of Dasmarinas, Cavite. Specifically, it sought to answer the following questions:

1. What is the demographic profile of the respondents in terms of:
    1.1. age;
    1.2. sex; and
    1.3. frequently used transportation?
2. What is the assessment of the respondents on the sustainable mobility of public transportation system in Dasmariñas City Cavite in terms of:
    2.1. safety and security;
    2.2. Infrastructure; and
    2.3. environmental compliance?
3. Is there a significant relationship between the profile of the respondents and their assessment on the sustainable mobility of public transportation system?
4. What sustainable mobility program can be proposed to enhance the public transportation and improve the traffic management in the City of Dasmariñas?

Methodology

Research Design

This research study employed Descriptive quantitative research. This is a method used to describe the characteristics of a population or phenomenon being studied. Unlike other forms of research, which might aim to establish causality or test hypotheses, descriptive research focuses solely on describing what is observed. It seeks to answer questions like "What?" or "How many?" rather than "Why?" or "How?".

This type of research often involves collecting numerical data through surveys, questionnaires, observations, or existing datasets. Researchers then analyze this data using statistical techniques to identify patterns, trends, or relationships. Descriptive statistics such as means, frequencies, percentages, or measures of central tendency (like mean, median, mode) are commonly used to summarize and present the findings.

Creswell (2012) stated that survey research designs are procedures in quantitative research in which investigators administer a survey to a sample or to the entire population of people to describe the attitudes, opinions, behaviors, or characteristics of the population.

Moreover, the researcher utilized descriptive quantitative research to understand the dynamics of the public transportation system in the Philippines, which could ultimately contribute to more informed decision-making and improvements in the system's efficiency,

accessibility, and sustainability.

Respondents

The research participants were the selected two hundred fifty (250) commuters in the City of Dasmarinas. The researcher chose the commuters as they are the frequent user of public transportation.

Total population random sampling, also known as simple random sampling, is a method used by the researcher to identify the respondents. This is considered one of the most straightforward and unbiased sampling methods because it ensures that every member of the population has an equal chance of being included in the sample. Randomly, the researcher selected commuters from the list to form the sample. This process ensures that every commuter in the population has an equal opportunity to be included in the sample.

Moreover, by using total population random sampling to select a sample of commuters, the researcher can obtain a representative sample that accurately reflects the characteristics of this group. This approach ensures that the findings of the study are applicable to the broader population of public transportation users and can inform decision-making and policy development related to public transportation infrastructure and services.

Instrument

This study used self-made questionnaire, validated by the three research experts. A self-made questionnaire refers to a survey instrument that is created by the researcher rather than using an existing standardized questionnaire or survey tool. The set of questions designed by the researcher to gather specific information related to their research objectives were based on the existing literature and studies about public transportation system.

The research questionnaire has two parts. The first part has the profile of the respondents such age, sex, and frequently used public transportation. Moreover, the second part is the assessment of the respondents on the sustainable mobility of public transportation system in Dasmariñas City Cavite in terms of safety and security, Infrastructure, and environmental compliance.

Procedure

To begin with the data gathering, the researcher asked permission to the Dasmarinas LGU to gather data. The purpose of permission is to formalize the conduct of research and served as the reference for legality.

After approval, the researcher disseminated the questionnaire face to face. The answering took an estimated of 5-10minutes. Finally, the researcher retrieved all the questionnaire distributed to intended respondents; and data reflected in the questionnaire was collected, analyzed and interpreted with the help of the statistician and research expert.

Data Analysis

The data that was obtained from the questionnaires were analyzed through the use of quantitative and interpretative method of analysis.

Percentage. This was employed in order to know the percent equivalent of the number of participants in each profile category.

Rank. This was used to determine the position of the profile categories as well as the position of the respondents on their disaster preparedness.

Weighted Mean. This was applied to determine the overall average of the responses of the respondents.

Ethical Considerations

Informed consent was being secured by the researcher. This is to ensure that participants are fully informed about the purpose, procedures, risks, and benefits of the study before they agree to participate. Obtain voluntary, informed consent from participants, and respect their right to withdraw from the study at any time without consequences.

Moreover, the researcher treated the participants with respect, dignity, and sensitivity throughout the research process. He considered their perspectives, preferences, and cultural backgrounds when designing and conducting the study.

Results and Discussion

This part of the study shows the presentation, analysis and interpretation of the data gathered from the questionnaires answered by the respondents. Such presentation is in accordance with the specific questions posited on the objectives of the study.

Profile of the Respondents

As stated in Table 1, out of 250 total-respondents, 64 of them or 25.60% at rank 1 came from the age range of 24 - 29 years old whereas 16 or 6.40% at rank 7 were from the age range of 54 years old and above.

In terms of the respondents' sexes, 145 or 58.00% at rank 1 were female seated at rank 1 while 105 or 42.00% at rank 2 were male. For the respondents' frequently used transportations, jeep gained the highest frequency count of 123 or 49.20% at rank 1. Meanwhile, 23

or 9.20% at rank 2 used taxi.

Table 1. *Profile of the Respondents*

Variables	*Frequency*	*Percentage*	*Rank*
Age			
18 - 23 years old	56	22.40	2
24 - 29 years old	64	25.60	1
30 - 35 years old	32	12.80	3
36 - 41 years old	30	12.00	4
42 - 47 years old	24	9.60	6
48 - 53 years old	28	11.20	5
54 years old and above	16	6.40	7
Total	250	100	
Sex			
Female	145	58.00	1
Male	105	42.00	2
Total	250	100	
Frequently Used Transportation			
Jeep	123	49.20	1
Bus	44	17.60	3
Taxi	23	9.20	4
Others	60	24.00	2
Total	250	100	

Meanwhile, jeepney is one of the most used vehicles in the Philippines which is also a symbol of Philippine culture (Westerman, 2018). It also gives cheaper but faster mode of reaching the drop-off destination (Teknomo, 2016).

Assessment of the Respondents on the Sustainable Mobility of Public Transportation System in Dasmariñas City Cavite.

In Terms of Safety and Security

Table 2. *Assessment of the Respondents on the Sustainable Mobility of Public Transportation System in Dasmariñas City Cavite In Terms of Safety and Security*

	Items	*Weighted Mean*	*Interpretation*	*Rank*
1.	There is a visible security presence (security guards, police) in the main roads of the city	2.00	Not Observed	5
2.	Surveillance cameras are functional in roads.	2.01	Not Observed	4
3.	I do not experienced or witnessed any safety or security incidents in public transportation	2.05	Not Observed	3
4.	The current safety and security measures on public transportation are adequate	2.49	Not Observed	2
5.	There is emergency response procedures or communication methods on public transportation	2.59	Observed	1
	Composite Mean	2.23	Not Observed	

As presented in Table 2, the respondents observed thatthere is emergency response procedures or communication methods on public transportation with the highest weighted mean of 2.59 and the highest rank of 1.

The statement suggests that respondents in the study were generally aware of emergency response procedures or communication methods on public transportation, and they rated these procedures/methods relatively positively, considering them to be the most important aspect among those evaluated.

Effective emergency response procedures and communication methods are crucial for public transportation systems, as they can significantly impact the overall response effectiveness (Velásquez, 2005). Incident severity and duration can have a significant impact on transportation network performance, which in turn affects the ability of Emergency Medical Services (EMS) to provide timely response (Sisiopiku, 2012). Immediate actions for transit agencies, such as recognizing and responding to emergencies, are essential for protecting passengers and minimizing consequences (Rizek, 2011). The changing nature of terrorism presents new challenges for public transportation agencies, requiring them to assume more responsibility for activities to mitigate the impacts of terrorism and improve emergency response capabilities (Okasaki, 2002).

Moreover, Matherly (2011) underscores the importance of inclusive planning and effective communication with vulnerable populations in emergency situations, with a specific focus on transportation and emergency management.

However, the said group of respondents revealed that a visible security presence (security guards, police) in the main roads of the city was not observed with the least weighted mean of 2.00 and the least rank of 5.The statement suggests that respondents in the study

noted a lack of visible security presence, such as security guards or police officers, in the main roads of the city. They rated this aspect relatively low in terms of importance and effectiveness, considering it to be the least important aspect among those evaluated.

Research has shown that visible security measures, such as security guards and police officers, can positively impact feelings of safety in urban spaces (Dalgaard-Nielsen, 2016).

However, the presence of such measures can also contribute to the creation of elite securityscapes, leading to a more closed and fragmented public realm (Morales, 2021). In cities like Beirut, the accumulation of security mechanisms can reflect and exacerbate social and political divisions (Fawaz, 2012). The importance of visibility and design in ensuring safety and security in urban public spaces has also been emphasized (Kiełek, 2022).

The composite mean of 2.23 signified that the respondents affirmed that the sustainable mobility of Public Transportation System in Dasmariñas City Cavite in terms of safety and security was not observed. This statement suggests that respondents indicated a lack of observable sustainable mobility in the public transportation system of Dasmariñas City, Cavite, particularly concerning safety and security. This implies that respondents perceived deficiencies in the safety and security measures within the public transportation system, which could potentially affect its sustainability and reliability.

Recent studies underscore the critical importance of safety and security in public transportation systems. Garcia (2022) emphasizes the need for a human-centric approach to safety, with a focus on safety equity outcomes. This is echoed by Srivastava (2019), who highlights the significant impact of security personnel and safety provisions on commuter satisfaction. Henezi (2023) further underscores the role of public transport in improving transport and public safety, particularly through the expansion of night public transport services. However, Matsumoto (2019) warns of the increasing physical and cyber threats to transportation and transit systems, emphasizing the need for ongoing research, development, and innovation in safety and risk management.

The safety and security of public transportation in Dasmarinas Cavite is a complex issue, influenced by various factors. Carr (2006) emphasizes the importance of community involvement and collaboration with other agencies to maintain improvements in safety and security. Ceccato (2015) further underscores the multi-scale nature of these concerns, highlighting the need for a comprehensive approach that considers the micro, meso, and macro transit settings. Kruger (2007) and Shaw (2003) both address specific challenges, with Kruger focusing on the vulnerability of commuters to crime and the role of the physical environment, and Shaw highlighting the need for appropriate protection for wheelchair riders. These studies collectively underscore the need for a holistic, community-driven approach to addressing safety and security challenges in public transportation in Dasmarinas Cavite.

In Terms of Infrastructure

Table 3. *Assessment of the Respondents on the Sustainable Mobility of Public Transportation System in Dasmariñas City Cavite In Terms of Infrastructure*

	Items	*Weighted Mean*	*Interpretation*	*Rank*
1.	The public transportation facilities equipped with necessary amenities such as seating, restrooms, and shelter from the weather	3.06	Observed	2
2.	I observe that there will be better integration with other modes of transportation (e.g., bike racks, modern jeepney facilities)	3.11	Observed	1
3.	The city has extensive network of roads and highways connecting major cities, towns, and rural areas.	3.04	Observed	3
4.	Terminals serve as hubs for passenger pick-up, drop-off, and transfers between different modes of transport.	3.00	Observed	4.5
5.	The accessibility of public transportation for persons with disabilities (PWDs) is adequate, with provisions for wheelchair access, ramps, and designated seating areas.	3.00	Observed	4.5
	Composite Mean	3.04	Observed	

As reflected in Table 3, the respondents observed that there will be better integration with other modes of transportation (e.g., bike racks, modern jeepney facilities) which yielded the highest weighted mean of 3.11 and the highest rank of 1.

In summary, the statement suggests that respondents perceived or anticipated improvements in the integration of various modes of transportation, such as through the introduction of bike racks and modern jeepney facilities. They rated this expectation quite positively, considering it to be the most important aspect among those evaluated. This indicates a recognition of the importance of multimodal transportation systems in enhancing accessibility, convenience, and sustainability.

The importance of bike racks and modern jeepney facilities in the Philippines is underscored by the country's reliance on public transportation, particularly among the urban poor and middle class (Guillen, 2012).

However, the current public transport system is often unsafe and inefficient, highlighting the need for improvements such as bike racks and modern jeepney facilities. These improvements can enhance the safety, efficiency, and environmental sustainability of the public transport system, as demonstrated by Dards (2009) in his assessment of jeepney vehicles. The unique operational features of jeepneys,

which are demand-activated and flexible, further emphasize the need for modernization (Grava, 1972). The demand for such improvements is evident in studies like Rañosa's (2017) on jeepney service operation and demand in Baguio City. Therefore, the implementation of bike racks and modern jeepney facilities is crucial for addressing the challenges and opportunities in the Philippines' public transportation system.

Additionally, the said group of respondents answered that terminals serve as hubs for passenger pick-up, drop-off, and transfers between different modes of transport; and the accessibility of public transportation for persons with disabilities (PWDs) is adequate, with provisions for wheelchair access, ramps, and designated seating areas were observed with the least equal weighted means of 3.00 and the least ranks of 4.5.

The statement indicates that respondents recognized the roles of terminals as hubs for passenger activities and the efforts made to enhance accessibility for PWDs. However, they rated these aspects relatively neutrally and ranked them lower in importance compared to other factors evaluated, suggesting that there may still be room for improvement in these areas according to respondent perspectives.

The concept of terminals as hubs for passenger pick-up, drop-off, and transfers between different modes of transport is a key element in the development of multimodal passenger traffic (Pshinko, 2022). Streamline design and optimization are crucial for the efficient functioning of these hubs (Yu-ting, 2012). The design of airport terminals, in particular, is important for serving transfer passengers, with pier-finger configurations being preferable in certain circumstances (Neufville, 1978). Lastly, the role of public transportation in relieving traffic congestion and the need for comfortable and secure intermodal terminal stations are emphasized (Pitsiava-Latinopoulou, 2008)

Moreover, recent studies in the Philippines have highlighted the need for improved public transportation, particularly for vulnerable groups such as persons with disabilities (PWD) and pregnant women. Gumasing (2020) identified the need for ergonomic improvements in the design of public utility jeepneys to enhance passenger comfort and safety. Mayo (2020) emphasized the importance of safety in public transport mode choice, a factor that is likely to be particularly relevant for PWD and pregnant women. Cagayan (2022) found that both public and private birthing facilities in Legazpi City, Albay, were not fully functional, with transportation and communication being a key area for improvement. Mabazza (2019) highlighted the role of paratransit as a feeder to mass transit, suggesting that improvements in paratransit services could enhance the overall performance of the public transportation system. These studies collectively underscore the need for a more inclusive and efficient public transportation system in the Philippines, with a focus on the needs of PWD and pregnant women.

Additionally, Guevara, (2023) stated that there's also a massive issue regarding accessibility for persons with disabilities (PWDs). Pedestrian lanes (if there are any in the first place) and public stations are favored towards people who have no problem with climbing tall flights of stairs, squeezing into tight corners, and waiting in line for hours on end.

The composite mean of 3.04 implied that the respondents affirmed that the sustainable mobility of Public Transportation System in Dasmariñas City Cavite in terms of infrastructure was observed. This findings suggests that respondents perceived the public transportation system in Dasmariñas City, Cavite, as exhibiting sustainable mobility, particularly in terms of its infrastructure.

The Philippines faces significant challenges in its public transportation system infrastructure, particularly in its major urban areas. Boquet (2019) and Sidel (2020) both highlight the need for a shift in the bus system's operation and the implementation of a bus rapid transit (BRT) system to alleviate traffic congestion. Cal (2021) underscores the worsening transport and traffic problems in these areas, as well as issues in communications, water supply, wastewater treatment, solid waste management, and energy. Garcia (2016) contributes to the discussion by proposing a bus travel time prediction model for Metro Manila, which could potentially improve the efficiency of the public transportation system.

However, the success of these projects is contingent on improving public investment efficiency and revenue mobilization (Komatsuzaki, 2016, 2019).

In Terms of Environmental Compliance

Table 4. *Assessment of the Respondents on the Sustainable Mobility of Public Transportation System in Dasmariñas City Cavite In Terms of Environmental Compliance*

Items	*Weighted Mean*	*Interpretation*	*Rank*
The city government has an observed environmentally safe public transportation.	3.15	Observed	3
Environmental practices are strictly observed in the public transport.	3.09	Observed	5
Strong implementation of emission testing is observable.	3.18	Observed	2
Vehicles, such as jeepneys, buses, and tricycles, run on diesel fuel, contributing to air pollution through emissions of particulate matter, nitrogen oxides (NOx), sulfur dioxide (SO2), and carbon monoxide (CO)	3.26	Highly Observed	1
Vehicles with outdated engines and inadequate mufflers contribute to noise pollution in urban areas.	3.11	Observed	4
Composite Mean	3.16	Observed	

As revealed in Table 4, the respondents highly observed that vehicles, such as jeepneys, buses, and tricycles, run on diesel fuel, contributing to air pollution through emissions of particulate matter, nitrogen oxides (NOx), sulfur dioxide (SO2), and carbon monoxide (CO) which gained the highest weighted mean of 3.26 and the highest rank of 1.The statement suggests that respondents highly recognize the environmental implications of vehicles running on diesel fuel, particularly in terms of air pollution caused by emissions of various harmful pollutants.

This is supported by the study of Regidor (2009). The environmental impact of jeepneys and other public transportation in the Philippines is a significant concern. The results highlights the carbon emissions and other environmental issues associated with jeepneys, while Andalecio (2020) discusses the challenges and miscommunication in the implementation of modernized jeepneys. Mateo-Babiano (2020) further explores the transition from informal to formal regulation in the jeepney industry, which could potentially address some of these environmental concerns. Gumasing (2021) presents a sustainability model for e-jeepney operations, emphasizing the importance of service quality and profitability in contributing to sustainable public transportation.

Besides, the said group of respondents observed thatenvironmental practices are strictly observed in the public transport which garnered the least weighted mean of 3.09 and the least rank of 5.In summary, the statement indicates that respondents perceived a moderate level of observance of environmental practices within the public transportation sector, with room for improvement. Despite not being rated extremely negatively, the aspect of environmental practices was ranked lower in importance compared to other factors, suggesting that respondents may prioritize other aspects of public transportation over environmental considerations.

A range of studies have explored the environmental impact of public transportation systems and proposed strategies for improvement. Hameed (2016) and Al-Zubaidi (2021) both highlight the need for better maintenance and management of buses to reduce emissions.

Moreover, Chen (2018) suggests the implementation of a rail-based Park-and-Ride scheme, combined with environmental regulations, to promote public transport and reduce pollution. Mishra (2012) emphasizes the importance of planning environmentally sustainable transport systems, particularly in rapidly urbanizing cities like Delhi.

The composite mean of 3.16 affirmed that the respondents affirmed that the sustainable mobility of Public Transportation System in Dasmariñas City Cavite in terms of infrastructure was observed.

The findings suggest that respondents perceived the infrastructure of the public transportation system in Dasmariñas City, Cavite, as contributing to sustainable mobility. The moderately positive rating indicates that respondents generally viewed the infrastructure favorably concerning aspects like accessibility, safety, and environmental considerations. This affirmation underscores the importance of investing in infrastructure to promote sustainable transportation practices and enhance the overall mobility experience for residents and commuters.

The Philippines faces significant environmental challenges in its public transportation sector, including air pollution and greenhouse gas emissions (Agaton, 2020; Lu, 2022). To address these issues, the government has implemented policies to promote sustainable transportation, such as the use of electric vehicles and non-motorized transportation (Guillen, 2008; Ristroph, 2012).

However, there are still obstacles to the widespread adoption of these measures, including financing issues and the need for stronger government support (Agaton, 2020). Stricter implementation of these policies, along with the establishment of charging stations and the development of local-made electric vehicles, is recommended to further promote sustainable public transportation in the Philippines (Agaton, 2020).

Relationship Between the Profile of the Respondents and Their Assessment on the Sustainable Mobility of Public Transportation System

Table 5. *Relationship Between the Profile of the Respondents and Their Assessment on the Sustainable Mobility of Public Transportation System*

Variable	*r-value*	*p-value*	*Decision*	*Interpretation*
Age				
Safety and Security	0.24	0.00013	Reject Ho	Highly Significant
Infrastructure	0.14	0.02687	Reject Ho	Significant
Environmental compliance	0.20	0.00148	Reject Ho	Highly Significant
Sex				
Safety and Security	0.15	0.01763	Reject Ho	Significant
Infrastructure	0.05	0.43122	Failed to Reject Ho	Not Significant
Environmental Compliance	0.13	0.03999	Reject Ho	Significant
Frequently Used Transportation				
Safety and Security	0.20	0.00148	Reject Ho	Highly Significant
Infrastructure	0.26	0.00032	Reject Ho	Highly Significant
Environmental compliance	0.28	0.00001	Reject Ho	Highly Significant

As displayed in Table 5, when the responses of the respondents on the sustainable mobility of public transportation systems in Dasmariñas City Cavite were compared based on their ages, the computed r-values of 0.24 for safety and security, and 0.20 for

environmental compliance have corresponding p-values of less than 0.01, thus rejecting the hypothesis.

In addition, the computed r-value of 0.14 for infrastructure has a corresponding p-value of less than 0.05, thus rejecting the hypothesis.

These safely inferred that the responses of the respondents on the sustainable mobility of public transportation systems in Dasmariñas City Cavite have high significant relationships in terms of safety and security, and environmental compliance; and significant relationship in terms of infrastructure when compared based on their ages.The findings suggest that perceptions of safety, security, environmental compliance, and infrastructure within the public transportation system are influenced by both individual factors (such as age) and broader contextual factors.

Furthermore, when the responses of the respondents on the sustainable mobility of public transportation systems in Dasmariñas City Cavite were compared based on their sexes, the computed r-values of 0.15 for safety and security, and 0.13 for environmental compliance have corresponding p-values of less than 0.05, thus rejecting the hypothesis.

However, the computed r-value of 0.05 for infrastructure has a corresponding p-value of more than 0.05, thus failing to reject the hypothesis.

These safely concluded that the responses of the respondents on the sustainable mobility of public transportation systems in Dasmariñas City Cavite have significant relationships in terms of safety and security, and environmental compliance; and no significant relationship in terms of infrastructure when compared based on their sexes.

Lastly, when the responses of the respondents on the sustainable mobility of public transportation systems in Dasmariñas City Cavite were compared based on their frequently used transportation, the computed r-values of 0.20 for safety and security, 0.24 for infrstructure, and 0.28 for environmental compliance have corresponding p-values of less than 0.01, thus rejecting the hypothesis.

These safely generalized that the responses of the respondents on the sustainable mobility of public transportation systems in Dasmariñas City Cavite have high significant relationships in terms of safety and security, infrastructure and environmental compliance when compared based on their frequently used transportations.

Recent studies in the Philippines have explored various factors influencing public transportation commuters. Rith (2019) found that increasing road public transport line density and reducing the distance to the nearest railway station could decrease car choice by 10.49%. Mayo (2020) identified safety as the top priority for commuters, with private and semi-private for-hire vehicles being preferred over mass transport systems. Mee (2022) highlighted the importance of efficiency for Malaysian commuters and reliability for Filipino commuters. Fallaria (2019) provided a cultural perspective, emphasizing the impact of the Metro Manila traffic crisis on the commuting culture and the need for a platform to address commuter needs.

Moreover, a range of issues in the security and safety of riding jeepneys in the Philippines have been identified. Coz (2015) highlighted the health and safety risks faced by drivers due to poor working conditions, including limited mobility and obstructed line of sight. Andalecio (2020) discussed the challenges and miscommunication in the implementation of modernized jeepneys, which could impact safety. Rogelio (2018) found that the design of traditional jeepneys does not effectively absorb crash impacts, potentially leading to fatal injuries. Ong (2023) emphasized the importance of safety in passenger satisfaction, suggesting that improvements in this area could enhance the overall service quality of jeepneys.

On the other hand, in terms of infrastructure, the jeepney industry in the Philippines faces a range of challenges, from the need for modernization (Mateo-Babiano, 2020) to the implementation of modernized jeepneys (Andalecio, 2020). These challenges are further compounded by ergonomic issues in the drivers' workspace, including musculoskeletal discomfort and awkward postures (Seva, 2011; Coz, 2015). The transition to a more formalized model, as proposed by the Public Utility Vehicle Modernization Program, is likely to exacerbate these issues, making it crucial to address them in the process of modernization.

Moreover, The jeepney industry in the Philippines faces significant challenges in environmental compliance. Mateo-Babiano (2020) highlights the difficulties in transitioning from an informal to a formal model of regulation, while Regidor (2009) underscores the need for sustainable transformation, including the potential for carbon reduction through technology adoption. Gumasing (2021) further emphasizes the importance of sustainability, particularly in the context of e-jeepney operations.

However, Madueño (2019) points out the alarming levels of air pollutants emitted by jeepneys, particularly black carbon, which significantly contribute to poor air quality in Manila. These studies collectively underscore the urgent need for environmental compliance in the jeepney industry, and the potential for sustainable transformation through modernization and technology adoption

Conclusions

Commuter- respondents affirmed that the sustainable mobility of Public Transportation System in Dasmariñas City Cavite in terms of safety and security was not observed. This statement suggests that respondents indicated a lack of observable sustainable mobility in the public transportation system of Dasmariñas City, Cavite, particularly concerning safety and security. This implies that respondents perceived deficiencies in the safety and security measures within the public transportation system, which could potentially affect its sustainability and reliability.

Commuter- respondents affirmed that the sustainable mobility of Public Transportation System in Dasmariñas City Cavite in terms of infrastructure was observed. This findings suggests that respondents perceived the public transportation system in Dasmariñas City, Cavite, as exhibiting sustainable mobility, particularly in terms of its infrastructure.

Commuter- respondents affirmed that the sustainable mobility of Public Transportation System in Dasmariñas City Cavite in terms of infrastructure was observed. The findings suggest that respondents perceived the infrastructure of the public transportation system in Dasmariñas City, Cavite, as contributing to sustainable mobility. The moderately positive rating indicates that respondents generally viewed the infrastructure favorably concerning aspects like accessibility, safety, and environmental considerations. This affirmation underscores the importance of investing in infrastructure to promote sustainable transportation practices and enhance the overall mobility experience for residents and commuters.

The City of Dasmarinas Cavite should develop comprehensive, long-term transportation plans that integrate various modes of transport, including buses, trains, bikes, and pedestrian pathways. Invest in modern, eco-friendly buses and trains to enhance reliability and reduce environmental impact. Moreover, they should upgrade and maintain transport facilities, such as bus stops, stations, and terminals, to ensure they are safe, clean, and accessible.

To the Department of Public Works and Highways (DPWH). They should prioritize the expansion and maintenance of major roads and highways to accommodate increased traffic and reduce congestion. Also, Adopt universal design standards for all public transportation infrastructure to ensure accessibility for people with disabilities, the elderly, and other vulnerable groups.

Future Researchers should conduct an international comparative analysis. Compare public transportation systems and policies across different countries and regions to identify best practices and lessons learned that can be applied in diverse contexts.

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