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Mapping Community Insights: An Exploratory Analysis on Traffic Management of Davao City, Philippines

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Abstract

Traffic congestion is a growing concern worldwide, including in Davao City, Philippines. Despite efforts to address this issue through technical and engineering-centered strategies, the community-based knowledge is overlooked. This study aims to recognize and ascertain the factors influential to the traffic management in Davao City carved from the quantified community responses through Exploratory Factor Analysis (EFA). Results showed four significant factors namely: 1) Strict Enforcement of Traffic Laws and Strategic Improvements to Infrastructure where high loading factors emphasize the community's strong association between government actions and effective traffic management, underlining that the community acknowledges the local government's effort to manage the traffic in Davao City (0.775), and the effectivity of traffic lights (0.711) and road improvements (0.613); 2) Traffic Congestion Influences on Community's Daily Routine where traffic congestion notably impacts daily life, stressing a communal agreement that congestion increases their travel time to work/school (0.824), congestion as a major issue (0.804), and congestion affecting their daily routine (0.767); 3) Community Engagement and Inclusive Approaches where community engagement is deemed crucial for effective traffic solutions, showing the community's point of view being essential for effective traffic solution (0.715), moderate trust on the local government's responsiveness (0.657), and desire for the involvement of the non-governmental organizations (NGOs); and 4) Efficient Public Transportation and Infrastructure where public transportation is identified as essential for congestion reduction, accentuating the community's perspective on the effectiveness of public transportation in reducing traffic congestion (0.583), supporting policies encouraging public transit (0.558), and preference of taking for public transportation instead of driving (0.458).

Keywords: Traffic Management, Exploratory Factor Analysis.

1. Introduction

Traffic congestion is a global issue in many countries due to increasing urbanization. In cities where the growth of vehicular traffic consistently exceeds the development of supporting infrastructure, managing such presents significant challenges (de Souza et. al, 2017). Agyapong & Ojo (2018) argued that it being a global phenomenon will become a problem in the future. Proposals in addressing this issue have already been made, however, many center around technicalities and engineering areas of recommendation. An impression that the solutions for traffic congestion are limited to determining road

width, provision of vehicle parking, and installing traffic signals (Takyi, Poku, & Anin, 2013). Ergo, the integration of community-based knowledge in developing traffic management strategies tend to be frequently neglected, overlooking the potential for local insights to contribute to more responsive and sustainable solutions.

Effective traffic control extends beyond managing vehicle flow and requires perspectives of those directly impacted by traffic management strategies. Hook (2023) underscored the importance of local communities as key sources of knowledge, offering unique insights into traffic patterns, road conditions, and transportation needs. Engaging with these communities allows traffic management authorities to leverage this information, resulting in more tailored and responsive strategies.

Moreover, in Queensland and New South Wales, a bottom-up approach is being exemplified, prioritizing community engagement and incorporating local insights as key components of their traffic planning and management strategies (Lee, 2023).

Discourse on the community's participation in approaching transportation issues posits significance as the overall condition of the people are inconspicuously at stake. Traffic jams situations are the essential factors from the social, economic and environmental sectors that can impact public health (Nadrian et al., 2019). One of the impacts to the community brought by traffic congestion is low performance on quality life (Ghazali et al., 2017). Near-road communities, meanwhile, are in danger since the congestion escalates the risks for cerebrovascular and respiratory mortalities due to constant exposure (Pedde et al., 2017).

According to Kumar et. al, (2021), severe traffic congestion has a particularly detrimental impact on cities, which are vital to a nation's development. The Philippines, for example, is among the countries with some of the worst traffic conditions globally.

Several studies have examined theories surrounding traffic congestion in the Philippines. Ambata et al., (2019) investigated the different elements of congestion, including both public and private vehicles. It suggested the implementation of a system using Convolutional Neural Networks for vehicle counting, detection, recognition, and classification. Moreover, Estacio et al., (2019) highlighted the key contributors to congestion, such as population growth, urbanization, and industrialization, hence, they advocate for environmentally sustainable transportation options, such as diesel-electric vehicles.

On a negative note, a Zamboangueño paper discovered that commuters lack knowledge on comprehensive planning and coordination among different transportation authorities and agencies, thus, the ineffective traffic management (Moreno, 2023). With this, Filipinos must realize that their voices are vital in creating sound policies to alleviate this problem, likewise that the government shall provide platforms where the public can be heard.

Succinctly, while traffic congestion is a daily concern and has attracted researchers to conduct studies about the subject, few studies have tackled the importance of engaging with the communities that are most affected by traffic congestion in the locale of Davao City. Hence, the researchers are eager to present a study that seeks to provide detailed insights into the community's perspective on traffic congestion in the city, with the aim of developing community-informed solutions. This study aims to recognize and ascertain the factors influential to the traffic management in Davao City carved from the quantified community responses through Exploratory Factor Analysis (EFA) in order to develop inclusively informed recommendations to relieve and resolve the traffic issues in the city.

2. Methodology

This study employed a quantitative approach utilizing surveys conducted via Google Forms to facilitate broad and efficient respondent participation. The researchers gathered 165 responses from various respondents in Davao City. The researchers formulated questions relative to traffic management in the city which were reviewed and validated by transportation experts to ensure the reliability and accuracy of the research instrument. The data was collected through survey questionnaires and then analyzed by Likert Scale, where the respondents rated the statements in the questionnaires on a five-point scale where 1=Strongly Disagree, 2= Disagree, 3=Neutral, 4=Agree, and 5=Strongly Agree. It presents a series of statements (items) that reflect a real-life situation relevant to the traffic management in the city. Participants were asked to indicate their level of agreement with each statement, ranging from "strongly disagree" to "strongly agree" on a numerical scale. Each statement collectively contributed to revealing a particular dimension of the participants' attitudes toward the issue, establishing a necessary interconnection among the items (Singh, 2006).

Exploratory Factor Analysis (EFA) was eventually applied to determine the critical factors, a commonly used technique in quantitative research to uncover the underlying factors among the latent variables (Fabrigar et. al, 1999). This analysis summarizes the data to highlight the relationships and patterns among the observed variables in the measurement tool for easier understanding and interpretation (Auerswald & Moshagen, 2019). Its main goal is to reduce complex data sets, making them more understandable and useful.

Furthermore, to validate if the data is suitable for factor analysis, it must undergo through the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett Test of Sphericity.

Firstly, the KMO measure evaluates the suitability of the data for factor analysis by examining the ratio of partial correlations to total correlations. Kaiser (1970) introduced the Measure of Sampling Adequacy (MSA), which was refined by Kaiser and Rice (1974). Known as the KMO statistic, this measure ranges from 0 to 1 and assesses the extent to which each variable in a dataset is accurately predicted by the other variables, with higher values indicating better predictive accuracy. A KMO value near 0 suggests that partial correlations are high compared to total correlations, indicating that factor analysis may not be appropriate as the patterns are not well-defined. On the other hand, a KMO value close to 1 suggests that partial correlations are low relative to total correlations, indicating that factor analysis is likely to produce clear and reliable factors. Generally, a KMO below 0.5 implies that additional data or variable adjustments may be necessary before conducting factor analysis.

Secondly, to confirm the validity of the correlation matrix structure, Bartlett's Test of Sphericity was employed. This test assesses whether the correlation matrix significantly differs from an identity matrix, which would suggest no shared variance among the dataset’s variables and render factor analysis ineffective. A p-value below 0.05 in Bartlett's test indicates substantial correlations among variables, supporting the use of factor analysis to identify underlying patterns within the data (Tobias & Carlson, 1969).

Thirdly, a Scree Plot will visually represent and help identify the factors to retain for exploratory factor analysis.

Finally, the tool Jamovi was used to run the data (The Jamovi project, 2022).

3. Results and Discussion

This section outlines the study's findings obtained through EFA and discusses their implications. The co-

llected data was thoroughly analyzed to identify the key patterns and trends through EFA. These findings were then contextualized within the existing research literature, enhancing insights into the phenomenon under study. KMO measure of sampling adequacy and Bartlett Test of Sphericity were used to validate if the data is appropriate for factor analysis.

Results of the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity is shown in Table 1 below.

Table 1. KMO and Barlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.831
Bartlett's Test of Sphericity	Approx. Chi-Square	2233
	df	435
	Sig.	0.001

The KMO score of 0.831 suggests strong correlations among the samples, surpassing the recommended threshold of above 0.05, hence, the data is suitable for factor analysis. Likewise, Bartlett's test yielded significant results with a value of 2233 with a significance level of less than 0.001, rejecting the null hypothesis of no correlation among variables and affirming the presence of identifiable factors among the community perspective on traffic management in Davao City.

Scree Plot was used to represent and help identify the factors to retain for exploratory factor analysis as shown in the Figure 1 below.

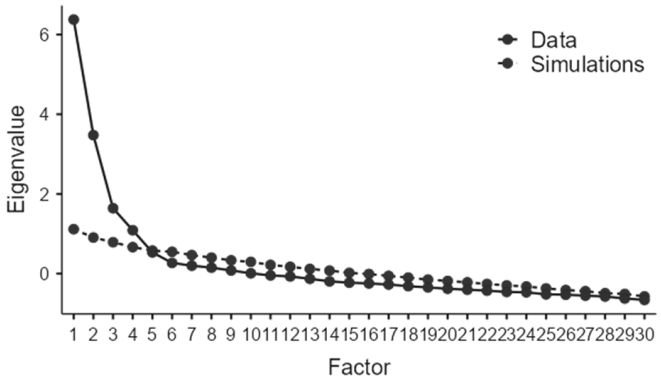

Figure 1. Scree Plot

Figure 1 visually shows the total variance and Eigenvalues across all factors, showing the significance of each factor. The Scree Plot depicts a declining trend of Eigenvalues, and serves as a means to assess the significance of each factor. This plot is helpful in determining the optimal number of factors to retain, as it identifies the inflection point where the curve starts to flatten (Yong, 2013). The large drop on the Scree Plot is used to determine the number of factors.

In this study, the curve begins to flatten at the fifth component, where Eigenvalues fall below 1. Any dimension with items falling below the minimum threshold shall be eliminated. This is essential as it indicates a decrease in importance. As can be seen in the figure above, the line flattens at about 5, which means that the Eigenvalues of the first four factors are higher than those of the rest, suggesting they have more significance in explaining the data.

3.1 Rotated Component Matrix

The results of the EFA are displayed in four tables, with each table representing a distinct factor. These factors are derived from the Jamovi statistical software and are based on the common characteristics of the attributes within the dataset.

Table 2 presents the attributes grouped under "Strict Enforcement of Traffic Laws and Strategic Improvements to Transportation Infrastructure."

Table 2. Strict Enforcement of Traffic Laws and Strategic Improvements to Transportation Infrastructure

Factor	Attributes	Loading
Strict Enforcement of Traffic Laws and Strategic Improvements to Transportation Infrastructure	Item 15 - The local government is doing enough to manage traffic in Davao City.	0.775
	Item 10 - Traffic lights and signs in the city are effective in controlling traffic flow.	0.711
	Item 6 - Public transportation in Davao City is efficient.	0.697
	Item 16 - The current traffic laws are adequately enforced.	0.660
	Item 4 - The government's efforts to reduce congestion have been effective.	0.613
	Item 18 - I am satisfied with the road infrastructure improvements made by the government.	0.613
	Item 17 - The introduction of stricter traffic rules has helped reduce congestion.	0.549
	Item 9 - Widening existing roads is a good solution to reduce traffic congestion.	0.510
	Item 26 -There are enough public transportation options available in Davao City.	0.487

The table above shows that high loading factors indicate that the community strongly associates government actions with effective traffic management. Item 15 ("The local government is doing enough to manage traffic in Davao City") shows the highest loading (0.775), which suggests that this attribute strongly influences perceptions of the ability of the government to implement policies relative to traffic management. Attributes related to infrastructure, such as the effectiveness of traffic lights and signs (Item 10,0.711) and satisfaction with road infrastructure improvements (Item 18, 0.613), also carry

significant weight. These items stress the importance of concrete and observable government interventions in shaping positive community perceptions. Furthermore, the moderate loading on Item 6 ("Public transportation in Davao City is efficient," 0.697) shows that efficient public transportation is essential for the community, who view it as part of the long-term traffic management strategy.

Effective law enforcement is crucial in managing traffic congestion as supported by the attributes related to the enforcement of traffic laws and the introduction of stricter rules (Items 16 and 17, with loadings of 0.660 and 0.549, respectively). Meanwhile, Item 9 ("Widening existing roads is a good solution to reduce traffic congestion," 0.510) shows moderate support for the expansion of roads as a practical traffic management strategy. Finally, the relatively lower loading for Item 26 (availability of public transportation options, 0.487) suggests that the availability of public transportation is important.

The results are supported by several papers. Lozano et al., (2014) stated that there are various strategies that could be utilized in addressing traffic congestion including expansion of road networks by improving current ones or constructing new roads, enhancing public transportation services, and efficient traffic management through control systems. Harris et al. (2017) and Little (2002) affirmed that the deteriorating state of roads, highways, and bridges are often seen as main factors that contribute to traffic congestion. Lozano et al., (2014) recognized that widening the roads is frequently viewed as a way to address traffic issues. However, closely monitoring traffic conditions is the initial step in creating an effective traffic management system (Nellore & Hancke, 2016). Additionally, strict enforcement of traffic laws can be used as a response to traffic congestion. Bjørnskau, T., & Elvik, R. (1992) showed that road users are likely to obey the traffic laws when the perceived benefits of lawful behavior surpass the consequences of engaging in violations.

Table 3 presents the attributes grouped under "Traffic Congestion Influences on Community's Daily Routine.

Table 3. Traffic Congestion Influences on Community's Daily Routine

Factor	Attributes	Loading
Traffic Congestion Influences Community's Daily Routine	Item 3 - Congestion increases my travel time to work/school.	0.824
	Item 1 - Traffic congestion in Davao City is a major concern for me	0.804
	Item 2 - Traffic congestion affects my daily routine.	0.767
	Item 14 - I avoid certain routes because of heavy traffic.	0.681
	Item 13 - The increase in vehicles is the primary cause of traffic congestion in Davao City.	0.560

The table above shows that the highest loading is associated with Item 3 ("Congestion increases my travel time to work/school;" loading = 0.824), presenting that extended travel times are a predominant effect of traffic congestion, impacting individuals' ability to maintain consistent schedules and fulfill daily routine.

Closely related is Item 1 ("Traffic congestion in Davao City is a major concern for me;" loading = 0.804), which reflects a high level of personal concern, showing that congestion is a pressing issue affecting the community's overall quality of life. Similarly, Item 2 ("Traffic congestion affects my daily routine;" loading = 0.767) emphasized the prevalent impact of traffic congestion on the community's routines, suggesting that the unpredictable duration of travel has become a troublesome reality for the community. Item 14 ("I avoid certain routes because of heavy traffic;" loading = 0.681) demonstrates moderate association, which means that residents adjust their behavior by choosing alternative routes to avoid heavy traffic congestion. This behavioral adjustment reflects the community's attempt to mitigate the negative impact of congestion on their daily lives.

Finally, Item 13 ("The increase in vehicles is the primary cause of traffic congestion in Davao City;" loading = 0.560) highlights community's perceptions of increased vehicle numbers as a main contributing factor to congestion, although this factor is somewhat less notable than the direct impacts on their routines and travel times.

In general, the analysis exhibits that traffic congestion has a negative effect on the community's daily life, particularly regarding travel time, routine disruption, and the necessity for behavioral adjustments. The community's concerns about rising vehicle numbers further support the view that vehicle volume, as one of the reasons for congestion, is a crucial factor in understanding and addressing community's dissatisfaction with the traffic conditions in Davao City.

The results are consistent with the fact the community's daily routines are primarily disrupted by traffic congestion problems compared to the overall community lifestyle. As a result, traffic congestion negatively impacts the quality of life in the community as revealed in the findings of Ghazali et al., (2017). Moreover, as observed by Mondschein, A., & Taylor, B. (2017), congestion leads to slower speeds, which extends travel time for people to reach their destinations. This increase in travel time creates further challenges to the community's daily activities and ultimately decreases accessibility.

Table 4 presents the attributes grouped under "Community Engagement and Inclusive Approaches."

Table 4. Community Engagement and Inclusive Approaches

Factor	Attributes	Loading
Community Engagement and Inclusive Approaches	Item 19 - Local residents' opinions are essential for effective traffic solutions.	0.715
	Item 22 - I trust the local government to consider the community's feedback.	0.657
	Item 23 - I believe non-governmental organizations (NGOs) should be more involved in traffic management strategies.	0.624
	Item 20 - I feel that my suggestions would be considered by policymakers.	0.563
	Item 21 - Traffic management in Davao would improve if the government listened more to the public.	0.521

	would help reduce traffic congestion.	

Table 4 of the component matrix analysis revealed that the highest loading is found in Item 19 ("Local residents' opinions are essential for effective traffic solutions;" loading = 0.715), indicating a strong consensus among community members that their input is vital for developing effective traffic management strategies. This high loading suggests that the people believe in meaningful engagement with the public to achieve sustainable solutions to traffic congestion.

Item 22 ("I trust the local government to consider the community's feedback;" loading= 0.657) reflects a moderate level of trust in governmental responsiveness, which is also essential for fostering collaborative relationships between the community and local authorities. This trust is further emphasized by Item 20 ("I feel that my suggestions would be considered by policymakers;" loading = 0.563), suggesting that while residents may feel that their feedback is valued, there remains a level of uncertainty about how their contributions are integrated into decision-making processes.

Furthermore, Item 23 ("I believe non-governmental organizations (NGOs) should be more involved in traffic management strategies;" loading = 0.624) indicates a recognition of the potential role that NGOs could play in enhancing traffic management through community involvement and advocacy, thereby enriching the discourse around inclusive traffic solutions. This suggests that the people view NGOs as complementary partners in traffic management efforts.

While Item 21 ("Traffic management in Davao would improve if the government listened more to the public;" loading = 0.521) reaffirms the community's belief that enhanced governmental responsiveness could lead to better outcomes, Item 30 ("Introducing carpooling systems would help reduce traffic congestion;" loading = 0.400) reflects a lesser but still noteworthy endorsement for specific initiatives aimed at traffic reduction, such as carpooling. This item's relatively lower loading indicates that while the community is open to new strategies, the focus remains primarily on engagement and inclusive approaches rather than individual interventions.

On a final note, the rotated matrix analysis underscores the significance of community engagement in traffic management. Residents believe their input is crucial and express a desire for increased responsiveness from local government and greater involvement from NGOs, emphasizing the need for collaborative approaches to address traffic congestion effectively in Davao City.

The results are supported by Banerjee et al., (2022), who said that public engagement is less common in transportation than in other areas of public policy. The exclusion of key community groups from engagement efforts has played a role in the inequities seen in today's transportation system. Syal et al. (2024) emphasized that broad community involvement is essential in creating a more effective and equitable system as it fosters a deeper understanding of the needs of those who will use and be impacted by the system while ensuring the inclusion of diverse perspectives from the community. Table 5 presents the attributes grouped under "Efficient Public Transportation and Infrastructure."

Table 5. Efficient Public Transportation and Infrastructure

Factor	Attributes	Loading
Efficient Public Transportation and Infrastructure	Item 24 - Public transportation helps reduce traffic congestion.	0.583
	Item 28 -I support policies that encourage	0.558

	the use of public transportation.	
	Item 25 -I prefer using public transportation over driving.	0.458
	Item 29 -Building more roads will solve traffic congestion in Davao City.	0.445
	Item 27 -Improving the public transportation system will significantly reduce traffic congestion.	0.425

Table 5 delves into the community's perceptions regarding public transportation's role in alleviating traffic congestion in Davao City. The strongest loading is associated with Item 24 ("Public transportation helps reduce traffic congestion;" loading = 0.583), indicating that the community recognizes that effective public transportation systems are pivotal in mitigating traffic congestion. This suggests a fundamental belief that enhancing public transportation could serve as a critical strategy for managing traffic flow within the city.

Moreover, Item 28 ("I support policies that encourage the use of public transportation;" loading = 0.558) reflects a moderate level of community support for initiatives aimed at promoting public transit usage. This finding indicates the people's willingness to engage with policies designed to improve public transportation infrastructure, emphasizing the potential for collaborative efforts between the government and community members to foster a more sustainable transportation system.

While Item 25 ("I prefer using public transportation over driving;" loading = 0.458) shows a growing preference for public transport, it indicates that this option may not yet be the dominant choice among respondents, which suggests that challenges in using the available public transportation is not yet resolved. Furthermore, Item 29 ("Building more roads will solve traffic congestion in Davao City;" loading = 0.445) reveals a moderate perception that expanding road infrastructure may contribute to lessen the traffic congestion. However, the relatively lower loading connotes that there may be skepticism about the effectiveness of simply building more roads as a long-term solution.

Lastly, Item 27 ("Improving the public transportation system will significantly reduce traffic congestion;" loading = 0.425) carries the lowest loading in this group, indicating that while residents acknowledge the need for public transportation improvements, there may be a perception that such changes alone may not suffice to address the congestion issue comprehensively.

The rotated matrix analysis highlights the community's strong recognition of public transportation as a crucial element in reducing traffic congestion. While there is significant support for improving public transit and policies promoting its use, the findings also show the need for a holistic approach to effectively mitigate traffic congestion in Davao City.

Redman et al. (2013) observed that urban areas experience pressure on transport infrastructure as demand for public transportation continually grows. This observation is supported by Kuang et al. (2019) who noted that the demand for public transportation is rapidly increasing. In response, communities in urban areas call for efficient public transit solutions that can alleviate traffic congestion by accommodating larger numbers of commuters. Otherwise, traffic congestion severity will worsen through time and will have negative impacts on the community’s daily life.

The results are consistent with the idea that reducing private car usage in urban areas is the main goal for sustainable transportation. To lessen the negative impacts of private motorized transport dependency,

various solutions have been proposed and implemented with varying levels of success (Loukopoulos, 2007). One of the most preferred sustainable choices is the provision of efficient public transportation as what Holmgren (2007) considered a sustainable and viable alternative to private car use.

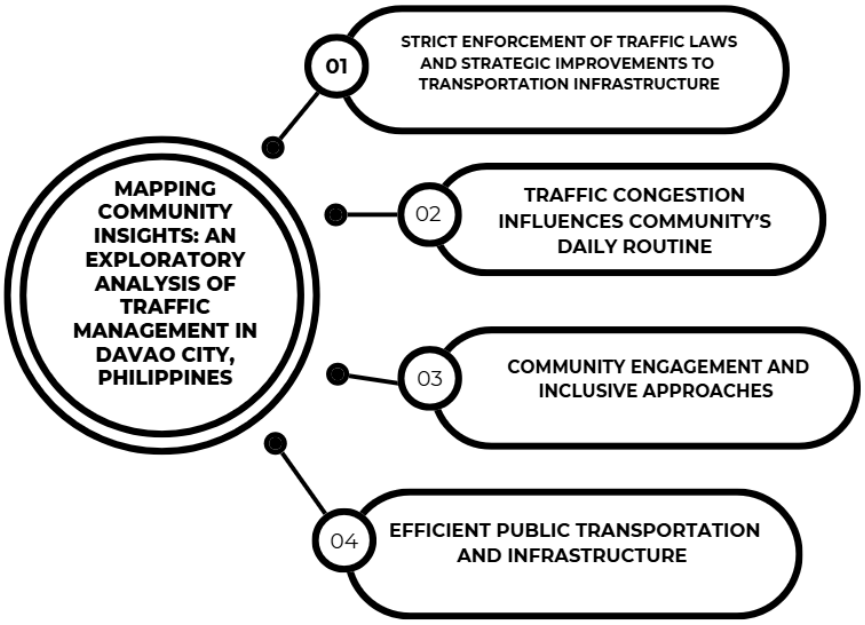

Figure 2. Community Perspective Framework on Traffic Management in Davao City, Philippines

4. Conclusion

Four major factors emerged from the data analysis, which were subsequently grouped into thematic areas: 1) Enhancing traffic management through strict enforcement of traffic laws and strategic improvements to transportation infrastructure; 2) The impact of traffic congestion on the community's daily routine; 3) The importance of community engagement and inclusive approaches in traffic management; and 4) The role of efficient public transportation and infrastructure in reducing traffic.

The analysis of community perspectives on traffic management in Davao City highlights several key insights regarding the enforcement of traffic laws and improvements to transportation infrastructure. The findings revealed strong community belief in the effectiveness of government actions, particularly in terms of managing traffic. The highest loading score of 0.775 for the statement "The local government is doing enough to manage the traffic in Davao City." Underscores this sentiment, indicating a perception that government policies are making a significant impact. Effective traffic control measures, such as traffic lights and road signs (loading = 0.711), alongside efficient public transportation (loading = 0.697), are viewed as critical components for alleviating congestion.

Moreover, the analysis indicates that strict enforcement of traffic laws plays a vital role in reducing congestion, supported by significant loadings for related items. However, the findings also showed some skepticism regarding the sufficiency of current public transportation options, as shown by a lower loading score of 0.487, suggesting that enhancements in this area are necessary.

Traffic congestion's impact on daily life is profound, as indicated by the high loading scores for items addressing increased travel time and routine disruptions. The highest loading of 0.824 for the item

stating, "Congestion increases my travel time to work/school," demonstrated that residents feel the effects of congestion most acutely in their daily routines. This concern is compounded by the perception that increased vehicle numbers significantly contribute to the problem, with a loading score of 0.560.

Community engagement is another critical area for improving traffic management, as highlighted by the high loading of 0.715 for the belief that local residents' opinions are essential for crafting effective solutions. This finding suggested that the local government should actively seek community feedback to foster trust and collaboration. While trust in governmental responsiveness is moderately positive (loading = 0.657), there is room for improvement in how community suggestions are integrated into traffic management strategies.

Efficient public transportation and infrastructure has a significant role in reducing traffic. The data indicates a strong belief that public transit is essential for alleviating congestion, with the highest agreement on Item 24 ("Public transportation helps reduce traffic congestion;" loading = 0.583). The lowest loading (Item 27; loading = 0.425) suggests that residents see transit improvements as necessary but not solely sufficient to solve congestion, highlighting the need for a comprehensive, multi-faceted approach.

5. Recommendations

Based on the results, the researchers recommend the following initiatives: 1) strengthen law enforcement, 2) invest in public transportation, 3) promote community engagement, and 4) address infrastructure needs.

Davao City should enhance traffic law enforcement by implementing stricter regulations and consistent monitoring. Increased visibility through checkpoints and patrols will promote compliance and reduce congestion. Local authorities must focus on improving public transportation. Developing reliable options like buses and jeepneys will offer residents viable alternatives to private vehicles. Community support for these initiatives indicates a desire for change, and collaboration with transport agencies is essential.

Moreover, creation of regular opportunities for community engagement in traffic management should also be considered. Local officials need to seek resident input through public forums and surveys, fostering trust and collaboration in decision-making. Rather than solely widening roads, Davao City should adopt a comprehensive approach. Enhancing existing infrastructure alongside improved public transportation will ensure a balanced strategy, addressing both immediate traffic challenges and long-term sustainability.

This study shows an urgent need to create a more efficient traffic management system to address the pressing issues of congestion and transportation inefficiencies in Davao City. By focusing on a multifaceted approach, the city can significantly improve the daily lives of its residents and enhance overall community well-being.

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