

Effectiveness of Traffic Management Unit in Ozamiz City as Perceived by the Stakeholders

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Abstract: Traffic management is a crucial aspect of urban development, ensuring the safe and efficient movement of vehicles and pedestrians. This study examines the level of perception of stakeholders regarding the effectiveness of the Traffic Management Unit (TMU) in Ozamiz City. Using correlational design quantitative approach, the research evaluates stakeholders' awareness, satisfaction, and overall assessment of the TMU's functions, including traffic regulation enforcement, congestion mitigation, and road safety promotion. Data were collected primarily through surveys involving key stakeholders, such as motorists, pedestrians, local business owners, and government officials. The findings reveal varying levels of perception influenced by factors such as communication effectiveness, enforcement consistency, and stakeholder engagement. While many stakeholders acknowledge improvements in traffic flow and safety, some expressed concerns about gaps in policy implementation and responsiveness to emerging traffic challenges. Based on the results, recommendations are proposed to enhance the TMU's performance and strengthen collaboration with the community. This study highlights the importance of stakeholder feedback in creating an adaptive and effective traffic management system.

Keywords: Traffic Management, Safe, Stakeholders.

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I. INTRODUCTION

Ozamiz City, settled in the province of Misamis Occidental, Philippines, stands as a bustling urban center known for its rich history, vibrant culture, and strategic location (Abinales & Amoroso, 2017). Situated along the northern coast of Mindanao, Ozamiz City serves as an essential gateway to various tourist destinations and commercial hubs in the region. With its diverse population and dynamic economy, the city flourishes as a melting pot of traditions, industries, and opportunities (Parisi & Eger, 2020). Effective traffic management plays a critical role in sustaining the socio-economic vitality and livability of urban centers like Ozamiz City (Rui & Othengrafen., 2023). As populations grow and urbanization accelerates, the demand for efficient transportation systems becomes increasingly pressing (Verma & Subramanian, 2021).

The Traffic Management Unit (TMU) stands as a key entity entrusted with the responsibility of overseeing traffic control and enforcing regulations in Ozamiz City (Chowdhury et al., 2020). Tasked with managing vehicular flow, ensuring road safety, and implementing traffic policies, the TMU plays a crucial role in maintaining order and efficiency on the city's roads (Goetsch & Lobaton, 2023). In existing literature on traffic management and urban governance, there remains a noticeable empirical gap in understanding the effectiveness of Traffic Management

Units (TMUs), particularly within the context of cities like Ozamiz (Pahadiya & Ranawat, 2023). While studies have explored various aspects of traffic control and management strategies, there is a lack of comprehensive research that specifically examines the role and impact of the TMU in Ozamiz City (Oskarbski et al., 2020).

The stakeholder experiences and perceptions are crucial for informing evidence-based policies and interventions aimed at addressing traffic management issues effectively (Mohan et al., 2020). Stakeholders, including TMU personnel, city officials, law enforcement officers, commuters, and residents, bring diverse perspectives and insights that can offer valuable perspectives on the TMU's role and effectiveness in Ozamiz City. In exploring stakeholders' experiences, challenges, and suggestions related to traffic management, researchers can gain a comprehensive understanding of the complexities and dynamics of urban mobility (Paiva et al., 2021). The primary purpose of this study is to investigate the effectiveness of the Traffic Management Unit (TMU) in Ozamiz City. Specifically, the research seeks to evaluate the TMU's performance in managing traffic flow, ensuring road safety, and enforcing traffic regulations within the city. Through assessing key indicators such as traffic congestion levels, accident rates, and public compliance with traffic rules, the study aims to provide insights into the overall impact and efficacy of the TMU's operations (Chen et al., 2024).

In addition to assessing the TMU's effectiveness, this study places a strong emphasis on understanding stakeholder perspectives regarding traffic management in Ozamiz City. In engaging with diverse stakeholders, including TMU personnel, city officials, law enforcement officers, commuters, and residents, the research seeks to capture a comprehensive range of viewpoints and experiences related to traffic control measures. Through structured surveys and quantitative analysis, the study aims to measure stakeholders' perceptions, identify challenges, and gather suggestions for improving traffic management strategies (Haghighi et al., 2021). This study has the potential to significantly influence traffic management policies and practices in Ozamiz City and beyond. In providing empirical insights into the effectiveness of the Traffic Management Unit (TMU) and understanding stakeholder perspectives, the research can inform evidence-based decision-making processes. Policymakers and city officials can use the findings to identify areas of improvement within the TMU's operations, prioritize resource allocation for targeted interventions, and develop strategic initiatives to address traffic management challenges. By focusing on quantifying stakeholder experiences and perceptions, this study aims to make a significant contribution to the improvement of traffic control measures in Ozamiz City. Through structured surveys administered to TMU personnel, city officials, law enforcement officers, commuters, and residents, the research will identify both strengths and weaknesses in current traffic management practices.

II. THEORETICAL FRAMEWORK

This study will be anchored on the following theories: Stakeholder Theory by R. Edward Freeman (1984) Diffusion of Innovation Theory Everett Rogers (1962) and Community-Based Participatory Research (CBPR) by Israel et al. (1998). Stakeholder Theory, initially proposed by R. Edward Freeman in his seminal work "Strategic Management: A Stakeholder Approach," published in 1984, revolutionized the field of organizational management by advocating for a broader consideration of stakeholders beyond just shareholders (Freeman, 2010). The theory has been further developed and refined by scholars across disciplines, contributing to a deeper understanding of stakeholder dynamics and their implications for organizational decision-making and performance. Stakeholder Theory has become a cornerstone in strategic management and corporate governance, guiding organizations in navigating complex stakeholder relationships, managing conflicts of interest, and achieving sustainable long-term growth and success.

Stakeholder Theory provides a comprehensive framework for understanding the dynamics of organizational decision-making by emphasizing the importance of considering the interests and perspectives of all relevant stakeholders (Valentinov & Will, 2019). In the context of traffic management in Ozamiz City, this theory offers valuable insights into how various stakeholders, such as TMU personnel, city officials, law enforcement officers, commuters, and residents, perceive the effectiveness of the

Traffic Management Unit (TMU). Furthermore, Stakeholder Theory underscores the importance of stakeholder engagement and dialogue in decision-making processes to ensure that diverse perspectives are considered and accommodated (Limani et al., 2024). In the context of this study, Stakeholder Theory highlights the significance of actively involving stakeholders in discussions about the TMU's effectiveness and traffic management strategies in Ozamiz City.

Stakeholder Theory is utilized in various studies, including business ethics and corporate management studies. Business ethics (Ugoani, 2023). refers to the moral principles and standards that guide the behavior of individuals and organization in the business world. Ultimately, practicing good business ethics builds trust, enhances reputation, and contributes to long term success and sustainability. And also, strategic management (Rothaermel, 2019) is the process of setting goals, making plans, and allocating resources to achieve long-term objectives in a business or organization. It involves analyzing the internal and external factors that may affect the organization's success, such as competitors, market trends, and technological advancement.

Diffusion of Innovation Theory, proposed by Everett Rogers in his seminal work "Diffusion of Innovations," first published in 1962, offers a framework for understanding how new ideas, practices, or technologies spread and are adopted within a society or organization. The theory posits that the adoption of innovations follows a predictable pattern characterized by the stages of knowledge, persuasion, decision, implementation, and confirmation. In diffusion of innovation theory, one of the studies is Technology Adoption (Weinberg, 2004) refers to the process by which individuals, organization or societies start using new technologies. It involves becoming familiar with the technology, deciding whether to use it, and integrating it into daily life or operations.

Additionally, Diffusion of Innovation Theory can inform strategies for promoting the adoption of effective traffic management practices and overcoming barriers to implementation (Amini & Jahanbakhsh, 2023). For instance, by targeting early adopters within the community, such as city officials, opinion leaders, or influential community members, the TMU can leverage their influence to encourage others to embrace new traffic control measures. In the context of exploring the effectiveness of the Traffic Management Unit (TMU) in Ozamiz City, Diffusion of Innovation Theory offers valuable insights into the adoption and implementation of traffic management strategies and initiatives (Al-Razgan, 2021). In applying this theory to the study, researchers can analyze how new traffic control measures or technologies introduced by the TMU diffuse through the community and are adopted by various stakeholders, including TMU personnel, city officials, law enforcement officers, commuters, and residents.

Community-Based Participatory Research (CBPR) is a collaborative approach to research that involves equitable partnerships between researchers and community members in all aspects of the research process. First articulated by Israel et al. in 1998, it emphasized the importance of engaging community members as active participants in identifying research priorities, designing studies, collecting and analyzing data, interpreting findings, and disseminating results. In community-based participatory research, one of the studies is community development (Christone, 2019), is the process of working together to improve the well-being of a community. It involves identifying local needs, strengths, and resources, and then taking action to address issues and create positive change. Through collaboration and empowerment, community development aims to enhance quality of life and promote social justice within neighborhoods and regions. And also, Public Health (Turnock, 2012) is the effort to keep communities healthy and prevent diseases, it involves promoting healthy behaviors, ensuring access to healthcare threats like epidemics and pollution. Public health works to improve the overall well-being of society by focusing on prevention and education.

III. CONCEPTUAL FRAMEWORK

The effectiveness of traffic management relies on the ability to ensure smooth vehicular and pedestrian movement while minimizing congestion and delays. This involves implementing measures that regulate road use, optimize infrastructure, and address bottlenecks. Traffic flow efficiency pertains to the capacity of the Traffic Management Unit (TMU) to optimize vehicular movement and reduce congestion within the transportation network (Chen et al., 2024). The ability to maintain smooth vehicular and pedestrian movement is critical in reducing congestion and delays. This is measured through indicators such as average travel time, vehicle speed, and congestion levels at peak hours. Infrastructure optimization, road widening, and the implementation of intelligent traffic management systems contribute to improving flow efficiency.

The enforcement of traffic rules is a critical operational function of the TMU that involves ensuring compliance with established traffic regulations (Head et al., 2022). Strict implementation of traffic regulations is essential in ensuring compliance among motorists and pedestrians. This is assessed through the number of traffic violations recorded, apprehension rates, and the effectiveness of penalties in deterring infractions (Luca, 2024). Public safety within the context of traffic management involves the prevention of road accidents and the protection of road users, including drivers, passengers, and pedestrians (Khan & Das 2024). Reducing accidents, injuries, and fatalities is a primary goal of traffic management. Public safety is measured through road accident statistics, emergency response times, and pedestrian safety assessments (Qari, 2019).

Stakeholder satisfaction reflects the degree to which the TMU meets the expectations of diverse groups, including road users, local communities, businesses, and governmental agencies (Zmud et al., 2022). Public perception and feedback play a significant role in evaluating the efficiency of traffic management. The environmental impact of traffic management operations involves evaluating how TMU initiatives influence air quality, noise pollution, and ecological sustainability (Musa et al., 2023). Traffic management also affects environmental sustainability through measures that reduce pollution levels. Indicators such as air quality index, noise pollution levels, and fuel consumption rates assess the impact of road congestion on the environment (Chen et al., 2023).

Stakeholders' perception of traffic management reflects how different groups—including motorists, pedestrians, commuters, business owners, and policymakers—evaluate the effectiveness of traffic systems and policies. Their perception is shaped by various factors, including education, infrastructure, law enforcement, environmental conditions, and economic considerations. Traffic education involves initiatives aimed at improving road users' awareness, knowledge, and behavior regarding traffic laws and safety practices (World Health Organization, 2023). This is assessed by the level of public awareness, participation in road safety programs, and adherence to traffic rules. Schools, government agencies, and private organizations contribute to this aspect by implementing road safety education in curricula, conducting seminars, and using media to disseminate information (Chen et al., 2023).

Traffic engineering focuses on the planning, design, and optimization of road infrastructure to facilitate safe and efficient traffic flow (Hosseinian & Mirzahosseini, 2024). Its effectiveness is measured through road capacity, signal optimization, the presence of pedestrian-friendly pathways, and the reduction of congestion points (Babić et al., 2022).

Traffic enforcement involves the systematic application of traffic laws to regulate road user behavior and maintain order on the roads (Siebrits et al., 2020). This is evaluated through the frequency of law enforcement activities, apprehension rates, and public satisfaction with how authorities handle violations (Pineda-Jaramillo et al., 2022). The traffic environment encompasses all external factors that influence road safety and traffic flow, including road conditions, weather, lighting, and urban design elements (Hammad et al., 2019).

Traffic economics deals with the financial impact of traffic management, including fuel costs, productivity losses due to congestion, and government expenditures on infrastructure and enforcement (Allen & Arkolakis, 2022). This is assessed through cost-benefit analyses, economic losses due to traffic congestion, and revenue generated from transportation systems such as toll fees and public transit (Tumminello et al., 2023).

IV. SUMMARY, FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

A. Summary

This study aimed to evaluate the effectiveness of the Traffic Management Unit (TMU) in Ozamiz City by examining the perceptions of various community members regarding traffic management practices, environmental and situational factors, and overall effectiveness. The primary objective was to assess how these perceptions differ based on respondents' roles in the community, length of residence or work in the city, and age. A descriptive research design was employed, utilizing a survey questionnaire to gather data from a sample of residents and workers in the city. The respondents included commuters, business owners, drivers, local government officials, traffic enforcers, and visitors. The instrument used for data collection was a structured questionnaire that measured the perceived effectiveness of the TMU across different aspects. Statistical tools, including Analysis of Variance (ANOVA), were applied to determine significant differences in perceptions based on the respondents' profiles.

B. Findings

The following were the significant findings of the study:

- The majority of respondents in Ozamiz City are commuters, drivers, or operators, with a notable proportion being relatively new residents or workers in the city. A large portion of the sample falls within the 18–39 years age range, reflecting a youthful and active community. This demographic plays a key role in shaping the public's perceptions of traffic management effectiveness, with the community's frequent interaction with the city's traffic system influencing their views.
- The respondents perceive the Traffic Management Unit (TMU) as highly effective across key traffic management areas. Traffic enforcement, in particular, received the highest ratings, reflecting satisfaction with consistent law enforcement. Traffic education also garnered positive feedback, showing that public awareness programs are considered effective. However, dimensions like traffic economics, engineering, and the environment showed slight variability, suggesting that some aspects of traffic management could be improved.
- The Traffic Management Unit (TMU) is perceived as highly effective across all evaluated dimensions, particularly in stakeholder satisfaction, which received the highest mean score. Public safety and environmental impact were also rated positively, indicating that the TMU's efforts in ensuring road safety and managing environmental concerns are appreciated. However, traffic flow efficiency and enforcement, while positively regarded, showed slightly higher variability in responses, suggesting room for improvement.
- There is a significant relationship between stakeholders' perceptions of traffic management and the effectiveness of the Traffic Management Unit (TMU) in Ozamiz City. Positive perceptions of traffic education, engineering, enforcement, and environmental factors are strongly correlated with higher evaluations of the TMU's

performance. This emphasizes the importance of aligning traffic management practices with the public's expectations to improve overall effectiveness.

- Several factors serve as predictors of the effectiveness of the Traffic Management Unit (TMU) in Ozamiz City. Key predictors include traffic education, engineering, enforcement of traffic rules, public safety measures, stakeholder satisfaction, and environmental impact. Positive perceptions of these factors significantly contribute to higher evaluations of the TMU's overall effectiveness.

C. Conclusions

The following were the conclusions of the study based on the findings:

- The results indicate a diverse group of stakeholders in Ozamiz City, with commuters, drivers, and younger individuals being central to the assessment of traffic management. Their perspectives provide valuable insights into the community's perception of the Traffic Management Unit's (TMU) effectiveness, as their everyday experiences influence how they view the system.
- While the TMU is viewed positively, particularly regarding traffic enforcement and education, variability in responses regarding other dimensions' points to the potential for improvements. Addressing areas with moderate ratings could lead to more consistent and comprehensive stakeholder satisfaction.
- The overall effectiveness of the TMU is recognized, especially in the areas of stakeholder satisfaction, public safety, and environmental impact. However, there are still opportunities to enhance traffic flow efficiency and enforcement to meet community expectations more consistently.
- The findings highlight that stakeholders' positive perceptions are closely linked to their assessment of the TMU's effectiveness. Therefore, improving stakeholder engagement and meeting their expectations are critical factors in enhancing the overall traffic management system.
- The effectiveness of the TMU is influenced by a combination of factors, with stakeholder satisfaction and the quality of traffic education and enforcement being particularly important predictors. Addressing these factors can significantly improve the overall traffic management system.

D. Recommendations

The following were the recommendations of the study based on the significant findings:

- It is recommended that the Traffic Management Unit (TMU) continue engaging with this dynamic and diverse group by targeting public awareness campaigns and feedback initiatives at commuters and younger residents. Providing more tailored solutions for these groups could further enhance the overall effectiveness of the traffic management system.

- It is recommended that the TMU enhance efforts in traffic engineering, economics, and environmental management to address areas of variability. Focusing on these aspects could result in even higher levels of stakeholder satisfaction and effectiveness.
- It is recommended that the TMU focus on improving traffic flow efficiency and enforcement of traffic rules. Implementing advanced technology for traffic management and enhancing enforcement practices could further elevate stakeholder satisfaction and effectiveness.
- It is recommended that the TMU actively involve stakeholders in the planning and implementation of traffic management initiatives. Soliciting regular feedback and aligning strategies with stakeholder expectations will improve overall performance and public satisfaction.
- It is recommended that the TMU focus on enhancing public awareness programs, improving infrastructure, and ensuring consistent enforcement of traffic rules. Additionally, prioritizing stakeholder satisfaction and environmental concerns will help improve the effectiveness and sustainability of traffic management efforts.

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