

**PUBLIC UTILITY VEHICLE DRIVERS' PERCEPTIONS OF NEW
TRAFFIC LIGHTS: SATISFACTION, EFFECTIVENESS,
AND SAFETY IN OZAMIZ CITY**

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ABSTRACT

This study explores at how Public Utility Vehicle (PUV) drivers in Ozamiz City view the new traffic lights. It focuses on their satisfaction, perceived effectiveness, and safety. In cities where public utility vehicles are the main form of transportation, efficient traffic management is essential to enhancing urban mobility and road safety. A descriptive-correlational research design was used to collect and analyze data from major intersections where the traffic lights have been installed. The respondents included 120 randomly selected PUV drivers who often work in these areas. To gather data, structured questionnaires were distributed after obtaining permission from local authorities. A pilot test ensured the questionnaires were reliable before they were fully used. Descriptive statistics, like mean and standard deviation, measured drivers' levels of satisfaction, effectiveness, and safety perceptions. Pearson correlation coefficients were used to explore relationships between these factors. The results showed that drivers felt very highly satisfied with the traffic lights, particularly regarding traffic flow, waiting time, convenience, and compliance. They viewed the system as very highly effective in reducing congestion and travel time, thus improving operational efficiency. Additionally, drivers considered the traffic lights to be very safe, expressing strong confidence in intersection safety and a perceived reduction in accidents. However, the analysis revealed no significant relationship between satisfaction or perceived effectiveness and perceived safety. These findings underscore the need for overall traffic safety strategies that include infrastructure upgrades, law enforcement, and driver education to maintain safety and efficiency in Ozamiz City. Therefore, it is recommended that traffic management agencies use an integrated approach that combines these measures to enhance overall road safety.

Keywords: *Behavior, Driver, Management, Ozamiz City, Public Utility, Traffic lights, Traffic management, Vehicle*

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The Researchers

DEDICATION

*This paper is dedicated to our Almighty God,
whose grace, wisdom, and strength have guided us throughout this journey.*

and also

*To our families, whose unwavering patience, support, and encouragement have served as
our pillars of strength during this journey.*

*Their love has always been an inspiration, and their faith in us gave us the willpower to
keep going. We are thankful for all of the sacrifices made along the way and celebrate
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INTRODUCTION

Background of the Study

Traffic management and road safety are essential components in ensuring smooth transportation flow and minimizing accidents within the urban environment (Paje, et al., 2022; Moreno, 2023). Effective traffic management involves the strategic regulation of vehicle movements through the implementation of traffic light, road signs, and traffic enforcements that facilitate safe and efficient travel for all road users (Nigam, et al., 2023; Justine, 2024). In Ozamiz City, recent initiatives such as the installation of new traffic lights aim to improve traffic flow and reduce congestion, thereby enhancing safety (Moreno, 2023; Abdelati, 2024). However, the success of these measures largely depends on proper planning, coordination with local authorities, and the active cooperation of drivers and pedestrians (World Health Organization, 2023). Maintaining high standards of road safety is crucial in safeguarding lives, reducing traffic-related injuries, and promoting a more orderly urban transportation system (Khan, & Das, 2024).

Public utility vehicles (PUVs) are an essential part of urban transport in that they offer affordable, accessible, and reliable mobility for the commuting public (Cedar, 2021; Lalio & Navarro, 2025). In cities such as Ozamiz, PUVs like jeepneys, vans, motorcab, and buses are the main mode of transport for most residents, particularly those who do not have private vehicles (Malasique, & Rosete, 2022). These vehicles support the daily commuting of individuals to schools, offices, markets, and other critical destinations, hence sustaining economic activity and social contacts (Stein, et al., 2022; Mouratidis, et al., 2021). PUVs also help in decongesting traffic by providing mass transit services that can transport many passengers at once (Guno, et al., 2021; Adesanya, 2023). Their operational

efficiency is critical to urban mobility, and their safety and satisfaction levels directly influence the overall performance of the transportation system in city (Mavlutova, et al., 2023; Maylonakou, et al., 2023).

Traffic light systems are essential components of city traffic control, designed to regulate vehicle and pedestrian movements at intersections to ensure safety and efficiency (Vieira, et al., 2024; Sepehr, 2024). These systems utilize traffic lights typically red, yellow, and green to manage the flow of traffic, minimizing conflicts and reducing the likelihood of accidents (Paul, et al, 2022; Radivojević, et al., 2021). Effective implementation of traffic lights involves strategic placement, synchronized timing, and sometimes adaptive control systems that respond to real-time traffic conditions (Zerroug, et al., 2024; Gheorghe, & Soica, 2025). In urban settings, such as Ozamiz City, proper deployment and maintenance of traffic light systems enhance traffic flow, decrease congestion, and improve overall safety for all road users (Sakr, et al., 2023; Villaluz, 2023). Continuous monitoring and timely upgrades are necessary to ensure these systems work effectively, especially amidst increasing urban traffic demands (Mohanty, et al., 2025)

Satisfaction of PUV drivers with new traffic lights tends to be mostly dependent on how well such traffic lights enhances traffic flow and safety at intersections (De Ocampo, & Tanpoco, 2024). As traffic lights are well-coordinated and properly maintained, the drivers report higher satisfaction as there is less congestion, smooth driving conditions, and fewer delays (Tariq, 2025; Jagarlamudi, 2024). Besides, drivers will feel more comfortable and confident with their driving conditions knowing that traffic management interventions are being taken to control the movement of vehicles (Meuleners, et al.,2023). But grievances will be brought about if traffic lights are defective, ill-timed, or unnecessarily

delaying, which disrupt normal activities and create discontent among PUV drivers. Overall, positive attitudes toward the traffic light system are most closely associated with their perceived efficacy and effect on everyday traffic situations (Alwidyan, et al., 2022; Chada, et al., 2023).

The efficiency of the new traffic lights in alleviating traffic congestion hinges on many variables such as their timing, location, and coordination with other traffic regulation measures (Vieira, et al., 2024). Optimally calibrated traffic lights can dramatically enhance the flow of traffic by eliminating unnecessary halts and providing a smoother, more uniform movement of automobiles through intersections (Tomar, et al., 2022; Khang, & Singh, 2025).). This diminishes congestion during rush hours and keeps delays of PUV drivers and other drivers to a minimum. On the contrary, if the traffic lights are ineffectively timed or don't work well, they are less likely to dispel jams or could potentially cause traffic congestions, thereby being less useful (Caquot, 2022; Kim & Jerath, 2021). In conclusion, when appropriately utilized, the new traffic lights are likely to have a notable reduction in the degree of traffic jams and maximize road network effectiveness as a whole for Ozamiz City (Villaluz, 2023; Moreno & Sulasula, 2024).

Drivers' safety perceptions regarding the new traffic light system are generally positive when the traffic lights are properly set and contribute to organized traffic flow (Madvari, et al., 2023; Majstorović, 2023). Many drivers feel that well-maintained and synchronized traffic lights reduce the risk of accidents by minimizing confusion and conflicts at intersections (Siddig, 2022; Sakib, 2024). They perceive the system as a vital safety measure that guides vehicle movements, especially in busy areas, thereby decreasing the likelihood of collisions (Elsagheer Mohamed, 2022). However, safety concerns may

arise if traffic lights malfunction, are not visible, or are poorly timed, which can lead to risky driving behavior and accidents (Azadani, & Boukerche, 2021). Overall, the perception of safety improves when drivers trust the reliability and effectiveness of the traffic light system, reinforcing its role in promoting safer road conditions (Cao, et al., 2022; Hosseinian, & Mirzahosseini, 2024).

The implementation of new traffic lights positively impacts PUV drivers' daily operations by streamlining traffic flow and reducing delays at intersections (De Ocampo, et al., 2022). This allows drivers to adhere more easily to schedules, which is crucial for maintaining passenger satisfaction and operational efficiency (Wang, et al., 2023; Nwuso, et al., 2024). Improved traffic management minimizes unnecessary stops and starts, leading to smoother journeys and potentially reducing fuel consumption and vehicle wear and tear (Romero, et al., 2024). Additionally, the enhanced safety provided by correctly functioning traffic lights can lessen the occurrence of traffic-related incidents, further supporting the stability of PUV operations (Saputra, 2023; Loulhaci, & Bensouna, 2024). However, if the new traffic lights are not well-maintained or malfunction frequently, they could disrupt daily routines, causing frustration and potentially delaying trips (Litman, 2021). Overall, properly implemented traffic lights contribute to more efficient and predictable daily operations for PUV drivers.

Drivers' feedback serves as a critical basis for future traffic policy improvements by providing firsthand insights into the effectiveness and issues of existing traffic management systems (Grote, et al., 2021). Their perceptions and experiences highlight areas where policies may be lacking, such as inadequate signage, timing of traffic lights, or safety concerns, enabling policymakers to address specific problems and tailor

interventions accordingly (Khan & Das, 2024; Dubey, et al., 2025). Incorporating drivers' feedback fosters a participatory approach, promoting policies that are practical, well-received, and effectively implemented (Awah, et al., 2024). Additionally, ongoing feedback mechanisms can help authorities monitor the impact of recent updates and make data-driven adjustments to enhance traffic flow, safety, and overall road-user satisfaction over time (Maji & Ghosh, 2025).

The traffic light infrastructures greatly contribute to road safety and road-user behavior in Ozamiz City by controlling motor vehicle flow and minimizing the possibilities of crashes within intersections (Echaluze, & Macabeo, 2024). The effective working traffic lights ensure there is organized crossing and respect of traffic rules, which maximizes safety among motorists, pedestrians, and other commuters (Selvi, 2025; Bhuiyan, et al., 2024). They also impact drivers' behavior in terms of inviting compliance with indications, lowering aggressive driving, and reducing hazardous moves like jaywalking or illicit turns (Hasan, et al., 2022). In contrast, malfunctioning or incorrectly timed lights might cause confusion, frustration, and hazardous acts, thus contributing to a greater potential for accidents (Talbot, et al., 2023). Generally speaking, efficient traffic light systems are an essential mechanism for influencing safer driving habits and road safety improvement in Ozamiz City (Malang, et al., 2023).

The purpose of this research is to determine public utility vehicle drivers satisfaction, perceived effectiveness, and feelings of safety with the new traffic lights in Ozamiz City. It will evaluate how the traffic lights affect drivers behavior, compliance, and road safety in general. Through the experiences of PUV drivers, the research will determine where improvements can be made and give recommendations on how traffic management

can be maximized. Finally, the results will be used to improve road safety policies and ensure the traffic system serves the needs of the community.

In spite of increased relevance of traffic management in cities, much geographical research gap on Public Utility Vehicle attitudes towards new traffic lights in smaller urban cities such as Ozamiz is lacking. Previous studies on the efficacy and safety of traffic lights are predominantly centered on large cities, and regional settings remain under-researched. This geographical gap constrains the comprehension of how PUV drivers behavior and safety are affected by traffic lights design, visibility, and timing in mid-sized urban areas. Bridging this geographical gap is crucial in order to come up with traffic management strategies tailored to the distinct road conditions and user experience of Ozamiz City.

Theoretical Framework

This study was anchored on the theories of Technology Acceptance model by Davis (1989) and Theory of Planned Behavior by Ajzen (1991).

The Technology Acceptance Model (TAM) posits that an individual's acceptance of a new technology is primarily determined by two factors: perceived usefulness (PU) and perceived ease of use (Alsyounf et al., 2023; Kelly 2023). In the context of traffic systems, these constructions are instrumental in understanding how drivers assess the value and usability of modernized traffic control mechanisms, such as signal lights (Bucsuházy et al., 2025; Wided, 2023). Davis (1989) emphasized that technologies perceived as beneficial and easy to operate are more likely to be adopted and used consistently. For instance, in traffic settings, drivers are more receptive to systems that clearly improve their driving efficiency and reduce uncertainty at intersections (Naseri et al., 2025; Pimenow et al., 2025). In this study, TAM serves as a framework for analyzing how drivers evaluate the

practical advantages and user-friendliness of newly installed traffic lights in shaping their perceptions and compliance (Gumasing 2023; Voinea et al., 2020).

TAM is highly relevant in this study because it gives credence to understanding how drivers view and subsequently react to modern traffic systems. With its emphasis on perceived usefulness and perceived ease of use, it gives an explanation of people's satisfaction or compliance with the newly installed traffic lights (Yang et al., 2021). The higher the perceived usefulness and ease of use of traffic technologies, the more likely they are to be accepted and trusted by drivers (Biaassoni, & Gnerre, 2024; Wang et al., 2021). Thus, the model helps guide an analysis of how the perception of traffic control affects its effectiveness and safety in the city.

Empirical studies support the idea that user-friendly traffic technologies enhance driver satisfaction and promote safe driving behavior (Yang et al., 2023; Xiang et al., 2024). According to Eom et al. (2020), traffic lights with adaptive features and real-time responsiveness fostered higher levels of user trust and compliance. Their findings suggest that when drivers perceive such systems to be intuitive and responsive, their experience improves, leading to more disciplined driving patterns (Coyne et al., 2024; Day et al., 2018). Similarly, Lampropoulus et al., (2022) highlighted that systems perceived as easy to navigate significantly boost user confidence, encouraging repeated usage and safer practices. These findings reinforce the notion that designing traffic control technologies with usability in mind can directly contribute to public utility drivers' satisfaction and overall traffic system effectiveness (Diop et al., 2018; Lee et al., 2020).

To further support the study, the Theory of Planned Behavior (TPB), developed by Ajzen (1991), is another critical framework for this study. TPB proposes that behavior is

driven by three core components: attitude toward the behavior, subjective norms, and perceived behavioral control (Yu, 2024). These factors collectively shape an individual's behavioral intention, which is the most immediate predictor of actual behavior. In traffic-related scenarios, TPB helps explain how drivers' beliefs, social influences, and sense of control inform their willingness to follow or disregard new traffic regulations and systems (Ajzen, 1991; Taghavi and Maharati 2024).

The application of the Theory of Planned Behavior in this study is relevant because it helps understand what drives the behavior and intention of drivers with reference to the new traffic system. TPB accounts for some of the reasons behind the compliance or ignorance of most drivers toward the new traffic lights through their attitudes, social norms, and perceived behavioral control (Matović et al., 2024; Odoom et al., 2023). This concept also helps establish how the perceptions of usefulness and safety are subjected to individual judgment, as well as social and environmental pressures (Armitage et al., 2022; Akande, 2021). Furthermore, applying TPB in this study makes the investigation valuable since it tends to assess the psychological and social aspects affecting the satisfaction and better adherence of the drivers to traffic rules (Shukri, et al.m 2022).

Research suggests that by applying TPB in transportation contexts has shown its utility in predicting drivers' compliance with traffic rules and systems (Zhong et al., 2024; Choupani, 2020). According to Sieklicka (2022) found that drivers' decisions at signalized intersections were closely linked to their attitudes toward traffic laws and their perceived control over driving situations. For instance, drivers who viewed certain infractions as minor or necessary for efficiency were more prone to non-compliance (Elias, 2021; Curry et al., 2020). This supports TPB's emphasis on the role of both internal cognition and

external pressures in shaping behavior (Taper et al., 2020). Additionally, recent studies suggest that risk perception and control beliefs are crucial factors influencing road safety behaviors (Phipps and Hamilton, 2024; Chen et al., 2025) .

Conceptual Framework

In Ozamiz City, overall driver satisfaction of PUV drivers with the new traffic light system indicates their overall acceptance and satisfaction with its effect on their driving experience and operational efficiency (De Ocampo & Tanpoco, 2024; Landayan, et al., 2024). Their attitude is determined by the extent to which the traffic lights assist them in following schedules, reducing delays, and ensuring passenger safety while dealing with passenger demand (Hadas et al., 2023; Mathe et al., 2024). When traffic lights enhance traffic flow and reduce unnecessary stops, PUV drivers would have a positive view of the system, making it easy for them to accept and comply (Goetsch, & Lobaton, 2023; Ma, 2021). When the system generates frequent stops, disorientation, or unsafe conditions, their dissatisfaction could be higher, determining their motivation for adopting the new traffic rules (Dias, 2023; Long et al., 2023).

PUV drivers' satisfaction with traffic flow efficiency pertains to how smoothly the new traffic lights allow for easier transit of their vehicles through major intersections of Ozamiz City (Sergio, 2021; Gaspay, 2021). As traffic signals are coordinated to reduce stoppages and allow PUVs to move at constant speeds, drivers perceive a significant boost in operational efficiency, which can translate to improved schedule compliance (Malasique & Rosete, 2022). Where traffic signals cause repeated stopping or are inefficient in peak conditions, PUV drivers feel a loss of perceived efficiency and thus become dissatisfied (Lacsina et al., 2024). Overall, their perception of improved traffic stream directly

influences their acceptance of the new traffic light system and willingness to conform (Othman, 2021; Himawan, 2023; Shu, et al., 2021).

Satisfaction with waiting time of PUV drivers relies on the perception of waiting time at red light under the new traffic light system (Castor 2024; Zulueta et al., 2024). Predictable, shorter waiting times enable drivers to coordinate pick-up and drop-off of passengers more effectively and therefore become more satisfied (Machado-León, et al., 2024; Jehu-Appiah, 2024). Traffic lights causing longer or uneven red durations are perceived by PUV drivers as a deterrent that minimizes their income and service quality and therefore render them dissatisfied (Chuenyindee, et al., 2022; Kato, & Chalermpong, 2024).. Effective waiting time management is crucial to keep PUV drivers with positive perceptions and make them accept the new system (Reyes, et al., 2023). Convenience satisfaction of PUV drivers refers to how easier and safer driving at intersections with the new traffic lights contribute to their driving comfort (Bila 2022; Lalio & Navarro, 2024). If signals are clearly visible, unambiguous, and responsive, drivers find the system convenient, thereby enhancing their driving satisfaction (Shin & Kim, 2021).

Compliance satisfaction among PUV drivers implies their attitudes towards the degree to which the new traffic light system supports and encourages compliance with traffic rules (Valerio, 2024; Bendaña, & Abante). If signals are dependable, predictable, and reward safe driving habits, PUV drivers are confident that they are following rules properly, which increases their satisfaction (Sumad-On et al., 2024). If the system encourages road safety and smooth flow well, PUV drivers will be inclined to follow voluntarily, thinking that it simplifies their driving habits. But if signals are faulty or

confusing, PUV drivers will be skeptical or frustrated, decreasing their overall satisfaction with the traffic management system in Ozamiz City (De Ocampo et al., 2022).

Effectiveness is the measure of how efficiently the new traffic lights at Ozamiz City fulfill their purpose of controlling the flow of traffic and improving the operational efficiency of public utility vehicle (PUV) drivers (Villaluz, 2023; Sergio, 2021). Drivers judge the effectiveness from their day-to-day experiences—more specifically, whether or not the system enables them to pass intersections faster and with less confusion (Tan & Zhang, 2025). An effective traffic light system makes motorists comply with traffic laws, cuts down on stops that are not necessary, and reduces interference in their schedules and fuel consumption (Woods 2021; Ahmed, et al., 2024).

The effect on travel time mirrors the manner in which the new traffic lights affect the capacity of PUV drivers to arrive at destinations on time (Gomez et al., 2024). Drivers tend to like traffic systems that enable them to move at a consistent speed and minimize idle time at intersections (Elsagheer Mohamed, & AlShalfan, 2021). When adjusted to the right level, traffic lights can decrease stop-and-go traffic, enabling drivers to adhere to routes and schedules better (Veerakumar, 2024; Jame et al., 2022). Consequently, faster travel is usually linked with less stress, improved fuel efficiency, and higher satisfaction of drivers and commuters (Useche et al., 2024).

The impact perceived in alleviating traffic congestion is based on whether or not the new traffic light system improves the movement of vehicles overall, especially during rush hours (Faheem et al., 2024). PUV drivers usually observe whether the lights delay traffic accumulation and provide smoother flow through congested intersections (Villaluz, 2023; Balatbat, 2024). If the lights are properly synchronized, they can disperse congestion

by equalizing vehicle movement from various directions and reducing bottlenecks (Tomar et al., 2022). Poor timing or location, though, may create further gridlock, encouraging anger and diminishing the system's credibility among drivers (Lei, & Kaplan, 2023).

Ease of compliance identifies the extent to which naturally and comfortably PUV drivers would comply with the new traffic light signals in their daily operations (De Ocampo & Tanpoco, 2024). When traffic lights are intuitive, legible, and regular, drivers will more readily comply voluntarily without hesitation or confusion (Williamson, 2021; Griffin-Taylor, 2024). A system for facilitating rational vehicle flow and providing sufficient time for reaction at intersections enables voluntary compliance (Zhang, et al., 2025). On the other hand, too rapid, irregular, or ambiguous signals can provoke violations, anxiety, or hesitancy and reduce the effectiveness of traffic control (Hendrycks, et al., 2023). Safety, being one of the major constructs of this study, is a construct utilized by PUV drivers to refer to the impact of new traffic lights on overall road safety conditions, especially at intersections (Reyes, et al., 2023; Portera, 2024). This includes their sense of security in driving through congested crossings and their perception that the traffic light system reduces risk and accidents (Dias, 2021; Ma, et al., 2022). Understanding how drivers evaluate such safety dimensions gives useful information on how infrastructure affects behavior, decision-making, and traffic law compliance in urban places like Ozamiz City (Malang et al., 2023).

Perceived Accident Reduction is the belief that the new traffic light system has actually lessened the number or rate of road accidents (Subhan et al., 2021). It is motivated by perceived changes in driver behavior, improved road surfaces, and fewer reported crashes on major intersections (Sadeghi & Goli, 2024). PUV drivers witnessing the decline

in near-miss conflict or dangerous conditions are most likely to credit the new system with enhancing road safety. The stronger the belief is, the more it will encourage drivers to obey traffic laws and the stronger the driving culture will be reinforced in the safety domain in the city (Odoom et al., 2023; Youssef, 2024).

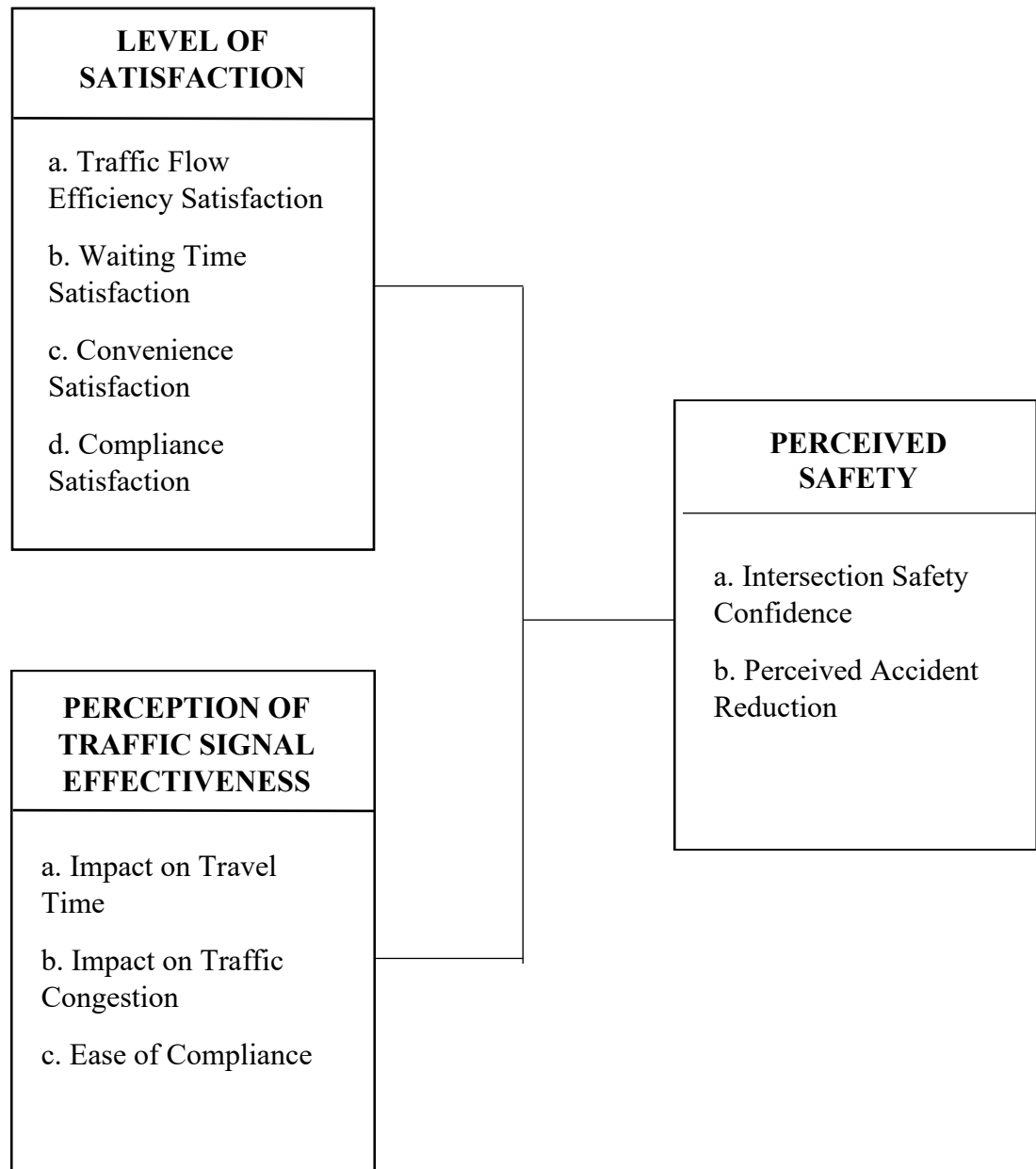


Figure 1. Schematic Diagram of the Study

Objectives of the Study

This research measured the degree of satisfaction, perception of effectiveness, and perceived safety by Public Utility Vehicle (PUV) drivers towards the newly installed traffic lights in Ozamiz City. Specifically, this research performed the following:

1. Measured the satisfaction of PUV drivers with traffic flow efficiency, waiting time, convenience, and compliance;
2. Determined the perception of PUV drivers towards the efficacy of the recently installed traffic lights in travel time, congestion, and ease of compliance;
3. Determined the perceived safety of PUV drivers, focusing on intersection safety confidence and reduction of accidents
4. Analyzed the strong relationship between drivers' satisfaction and their perceived safety towards the recently installed traffic lights; and
5. Examined the strong relationship between traffic light effectiveness perceived by drivers and their perceived safety in Ozamiz City.

Significance of the Study

This research is important as it examined public utility vehicle driver's satisfaction, perceived effectiveness, and safety regarding new traffic lights in Ozamiz City and inform their compliance and behavior at intersections. The determination of these perceptions is important since PUV drivers are subject to special risks and challenges within city traffic. Findings will provide insights into improvements in traffic lights placement and design that are directed towards enhancing efficiency and safety for PUV drivers. Finally, this study aims to help achieve better traffic management schemes specific to the needs of all categories of road users in Ozamiz City.

RESEARCH METHODOLOGY

Design

The research employed a descriptive-correlational design, which is a type of research that identifies the correlation among variables and is able to forecast future outcomes using present data (Stangor & Walinga, 2014). This type of design makes it possible to investigate associations among variables without causation, in which a connection between two variables does not always imply that one factor causes another. It is fitting for this research because it assessed the satisfaction level, perception of traffic light effectiveness, and perceived safety of motorcycle operators toward the newly installed traffic lights in Ozamiz City. Utilizing this design, the research can determine trends and correlations between these variables, offering data-based information to guide future traffic management policies and enhance road safety.

Setting

The research was carried out in Ozamiz City, targeting areas where the newly installed traffic lights are situated. Information was collected from PUV drivers who frequently pass through these intersections to assess their satisfaction level, perception of traffic lights efficiency, and perceived safety. The research involved significant roadways and heavy traffic areas where the new traffic lights were implemented, gathering information from drivers directly impacted by the changes. This geographic area ensures an overall evaluation of how the new traffic system affects PUV drivers' experience and offers applicable data to direct future improvements in traffic management in Ozamiz City.

Respondents

The research involved 120 PUV drivers in Ozamiz City who were randomly chosen as respondents. They were selected because they frequently use roads with newly installed traffic lights so that they would be able to give meaningful comments on their level of satisfaction, perception of traffic lights effectiveness, and perceived safety. This sample size will enable a full assessment of how the new traffic lights affect PUV drivers' experience and offer evidence-based recommendations for future traffic improvement in the city.

Instruments

A. *Level of Satisfaction Questionnaire.* The researchers constructed this Satisfaction Questionnaire to determine the respondents' level of satisfaction to the newly implemented traffic lights in Ozamiz City. The questionnaire went through pilot testing which was given to twenty (20) individuals before being formally distributed in order to find and address any potential problems that could compromise data gathering and quality. The questionnaire is composed of twenty (20) statements aimed at measuring different dimensions of satisfaction. The questions in this survey were deliberately developed based on review of relevant literature to provide an effective coverage of the major determinants of user satisfaction, including functionality, safety, efficiency, and convenience. Every statement was framed with simplicity and clarity to improve respondent comprehension and encourage honest responses. The data are analyzed using the following continuum:

Scale	Responses	Range	Interpretation
4	Strongly Agree	3.26 - 4.00	Very Highly Satisfied
3	Agree	2.51 – 3.25	Highly Satisfied
2	Disagree	1.76 – 2.50	Less Satisfied
1	Strongly Disagree	1.00 – 1.75	Not Satisfied

B. *Effectiveness Questionnaire*. This questionnaire was created by the researchers to measure the effectiveness of the newly implemented traffic lights in Ozamiz City.

The questionnaire went through pilot testing which was given to twenty (20) individuals before being formally distributed in order to find and address any potential problems that could compromise data gathering and quality. The questionnaire has fifteen (15) questions that are meant to measure the different aspects of effectiveness. The questions in this survey were deliberately developed based on review of relevant literature to provide an effective coverage of the major determinants of user satisfaction, including functionality, safety, efficiency, and convenience. Every statement was framed with simplicity and clarity to improve respondent comprehension and encourage honest responses. The following continuum is utilized to examine the data:

Scale	Range	Responses	Interpretation
4	Strongly Agree	3.26 - 4.00	Very Highly Effective
3	Agree	2.51 – 3.25	Highly Effective
2	Disagree	1.76 – 2.50	Less Effective
1	Strongly Disagree	1.00 – 1.75	Not Effective

C. Perceived Safety Questionnaire. This questionnaire was developed by the researchers to assess individuals' perceptions of the newly implemented traffic lights in Ozamiz City. The questionnaire went through pilot testing which was given to twenty (20) individuals before being formally distributed in order to find and address any potential problems that could compromise data gathering and quality. The questionnaire consists of ten (10) statements designed to measure various aspects of perceived safety. The questions in this survey were deliberately developed based on review of relevant literature to provide an effective coverage of the major determinants of user satisfaction, including functionality, safety, efficiency, and convenience. Every statement was framed with simplicity and clarity to improve respondent comprehension and encourage honest responses. The following continuum is used to analyze the data:

Scale	Range	Responses	Interpretation
4	Strongly Agree	3.26 - 4.00	Very Highly Safe
3	Agree	2.51 – 3.25	Highly Safe
2	Disagree	1.76 – 2.50	Less Safe
1	Strongly Disagree	1.00 – 1.75	Not Safe

Data Gathering Procedure

The researchers surveyed one hundred twenty (120) PUV drivers in Ozamiz City and distributed a questionnaire survey to assess their views about the satisfaction, effectiveness, and safety of the new traffic lights. The subjects are PUV drivers who use main intersections regularly where the new traffic lights have been installed. The focused method of selecting respondents ensured that the opinions gathered were a result of first-hand and frequent use of the traffic management system. Their response will be vital to

determine how the new traffic lights affect traffic movement, driver satisfaction, and overall road safety. By concentrating on PUV drivers, the study wanted to capture the specific viewpoint of this group of people, understanding their exposure on the road and the significance of efficient traffic management for their convenience and safety.

Ethical Considerations

The researcher requested a formal letter from the Mayor's Office of Ozamiz City to carry out a study with regards to perceptions of PUV drivers towards the new traffic lights that had been recently installed. This was in the hopes of providing the researcher an opportunity to gain data from frequent PUV drivers along main intersections of the city. In the said letter, the researchers will clarify that all gathered data would be maintained with the strictest confidentiality and would be for academic use alone.

In addition, the researcher sought clearance from the Local Government Unit of Ozamiz City to provide questionnaires to randomly chosen PUV drivers in the city. The researcher guaranteed the Local Government Unit of Ozamiz City that the study strictly follows ethical standards of research in protecting the privacy and anonymity of all respondents.

Through these permissions, the researcher sought to accumulate extensive information from PUV drivers in various zones. This would give an overall perspective of how the new traffic lights influence rider satisfaction, perceived effectiveness, and general road safety in Ozamiz City.

Data Analysis

The following statistical tools are used in the study:

Mean and standard deviation were applied to identify the level of PUV drivers' satisfaction, effectiveness, and safety on the new traffic lights in Ozamiz City. These descriptive measures gave an insight of how drivers rated the traffic light system and the degree of variation of their responses.

The Pearson Product Moment Correlation Coefficient was employed to investigate the correlations between PUV drivers' satisfaction and perceptions of the new traffic lights' effectiveness, as well as satisfaction and perceived safety. This identified whether higher satisfaction levels correlated with greater perceptions of effectiveness and safety, and it gave insight into how these operate.

RESULTS AND DISCUSSIONS

This chapter discusses the study's findings on how satisfied Public Utility Vehicle (PUV) drivers are with the newly installed traffic lights in Ozamiz City. It also looks at their views on effectiveness and safety. The results are analyzed with the right statistical tools and compared with existing literature and theories to better understand the drivers' beliefs and experiences. This discussion reveals important trends, similarities, and differences in responses, as well as the connections between key variables. The findings aim to assess how well the traffic light system works and highlight its impact on traffic management, road safety, and policy development in the local context.

Satisfaction of PUV Drivers towards the Traffic Lights

The satisfaction of Public Utility Vehicle (PUV) drivers on the recently installed traffic lights indicates their experiences and perceptions of how the latter affects their daily activities. Most of the drivers have stated that the new traffic lights have streamlined traffic flow and minimized traffic congestion in congested intersections, enabling smoother and safer travel through high-traffic zones. This not only helped shorten travel times but also improved road safety, reducing the possibility of accidents (Fisa, et al., 2022; Aleko, & Djahel, 2020). Some drivers did identify the initial difficulties like adjusting to new signal timings and occasional delays during rush hours. In general, most PUV drivers appear to welcome the improvement that the traffic lights have introduced, an indication of a good reception and possible future upgrade in traffic management systems. Public Utility Vehicle (PUV) drivers' satisfaction with the newly installed traffic lights was measured in four major aspects: Traffic Flow Efficiency, Waiting Time, Convenience, and Compliance.

With 120 drivers as the sample size, the findings showed consistently very high satisfaction at mean scores of between 3.59 and 3.72 and very high standard deviations. These improvements, in the opinion of the drivers, have significantly improved traffic flow and reduced waiting times at intersections, which are critical to maintaining efficient operations. The high variability in responses indicates a strong consensus among drivers that these improvements are both noticeable and beneficial.

Aside from increased traffic flow and decreased waiting, drivers also reported high satisfaction with the ease of coping with the new system and traffic rule compliance made possible by the lights. Compliance was the most pronounced satisfaction, indicating that drivers value the contribution of the traffic lights to ordering and safety in driving behavior (Cestac & Carnis, 2024; Bei et al., 2024). Overall, the results prove that the new traffic lights have contributed to the benefits of PUV drivers in their everyday lives by enhancing efficiency, convenience, and safety, and proving that the system is widely accepted and functional in responding to their operational requirements.

The reported satisfaction levels by PUV drivers toward the recently installed traffic lights match closely with past research findings on traffic management systems. Research works like those of Hussain et al. (2020); Sieklicka et al (2022), and Dasgupta et al. (2024) proved that improved traffic signals enhance the efficiency in traffic flow and decrease waiting times, which results in greater driver satisfaction. Likewise, the extremely high standard deviations within the research indicate uniform agreement by drivers, which is similar to the consistent positive responses given in these earlier research studies.

Furthermore, the strong satisfaction related to convenience and compliance is consistent with research emphasizing the importance of clear and user-friendly traffic

control measures. For example, Tumminello et al. (2023), Gahletia and Sidhu (2025), and Grobelna et al. (2025) found that well-designed traffic signals not only facilitate smoother driving experiences but also encourage better adherence to traffic rules, thereby enhancing road safety. The evidence is consistent with this, the highest satisfaction rating being for compliance, demonstrating just how effective traffic lights can be in promoting good driver behavior.

The high satisfaction levels of PUV drivers with the newly installed traffic lights would mean that such traffic management interventions are effective in improving operational efficiency and road safety. These favorable perceptions would mean that sustained investment in optimizing traffic signal systems would result in more smooth traffic flow, shorter waiting times, and higher compliance with traffic rules, ultimately to the benefit of both commuters and drivers. Policymakers and transport regulators should consider strengthening and retaining these systems, as well as including driver responses to enhance convenience and efficiency in traffic regulation measures.

Table 1. Level of satisfaction of PUV drivers to the newly implemented traffic lights (N=120)

Sub-construct	PUV Drivers' Satisfaction		
	Mean	SD	Remark
Traffic Flow Efficiency	3.66	0.05	Very Highly Satisfied
Satisfaction	3.59	0.02	Very Highly Satisfied
Waiting Time Satisfaction	3.64	0.03	Very Highly Satisfied
Convenience Satisfaction	3.72	0.01	Very Highly Satisfied
Compliance Satisfaction			

Note: PUV Drivers' Satisfaction Scale: 3.26-4.00 (Very Highly Satisfied); 2.51-3.25 (Highly Satisfied); 1.76-2.50 (Less Satisfied); 1.00-1.75 (Not Satisfied)

Traffic Signal Effectiveness

The efficiency of traffic signals is extremely important to facilitate smooth traffic movement, minimize congestion, and enhance road safety, particularly in metropolitan cities with high traffic intensity (Subair, et al., 2024; Vieira, et al., 2024; Elassy, et al., 2024). When well-planned and optimally positioned, traffic signals can control the movement of automobiles as well as pedestrians effectively, reducing conflicts at intersections to a bare minimum and ensuring better traffic discipline overall (Gamel et al., 2022; Tang, 2024; Kaul, & Altaf, 2022). Research has indicated that good traffic signaling decreases travel delays and raises adherence to traffic rules, hence decreasing the chances of accidents (Dewa, 2023; Hosseinian, & Mirzahosseini, 2024). In the case of public utility vehicles (PUVs), efficient traffic lights help in more certain travel times, which is crucial for their day-to-day operations. As proven by the high satisfaction rate of PUV drivers in this research, the present traffic light implementation has been effective in resolving important issues of waiting time, efficiency of flow, and compliance, which shows that such systems are valuable tools for contemporary traffic management..

The findings listed in Table 2 indicate that PUV drivers perceive the recently installed traffic lights as very highly effective in all the areas that were assessed. In particular, both the effect on travel time and effect on traffic congestion scored an average of 3.72 with standard deviations of 0.01 and 0.04, respectively. The results of the study imply that the traffic lights have greatly enhanced the overall convenience of road usage, enabling PUV operators to make rounds with less wastage of time and less stress brought about by congestion. The low range of responses also shows a high level of agreement

among drivers, affirming the integrity of the traffic system in controlling high-demand intersections and preventing bottlenecks.

The sub-construct ease of compliance got the highest mean of 3.79 (SD = 0.03), which indicates that drivers not only view the traffic light system as easy to follow but also as conducive to safe and orderly driving behavior. This is even more critical for PUV drivers, whose compliance with traffic rules has a direct impact on commuter safety and road discipline. The high ratings for all sub-constructs indicate the effectiveness of the newly installed traffic lights in solving primary issues of motorists namely, travel efficiency, traffic congestion management, and rule adherence. The data in general point to the traffic light system as a popular and effective traffic management tool that positively impacts the day-to-day activities of public utility motorists and overall traffic flow within the city.

The findings of this study, which indicate a very high level of perceived effectiveness of the newly implemented traffic lights among PUV drivers, are consistent with several previous studies on traffic signal systems. According to the study, traffic lights that are properly timed and strategically located significantly reduce travel delays and improve driver satisfaction, particularly in urban areas with high traffic volume (Faheem, et al., 2024; Segun, et al., 2024). In the same vein, Almatar, (2024) highlighted that effective traffic signal systems ensure smoother traffic flow, lower travel time, and reduce driver stress. These effects are reflected in the current study, where PUV drivers assessed both travel time impact and traffic congestion as very highly effective. The low standard deviations of the responses also validate the claims that properly designed traffic control systems have consistent experience for road users, giving rise to wide agreement on their

effectiveness. In addition, the strong satisfaction of PUV drivers for ease of compliance is supported by the results of Anilkumar et al. (2025), which emphasized that intuitive and understandable traffic signal systems ensure greater compliance and discourage traffic violations.

Their study pointed out that driving behavior is more compliant when signal systems are fair, visible, and predictable (Azadani, & Boukerche, 2021; Bouhsissin, et al., 2023). This is especially so for public utility drivers, who have to constantly drive through multiple stops and traffic situations throughout the day. The high degree of perceived compliance effectiveness in this study indicates that the traffic lights not only enhance operational effectiveness but also encourage safer driving behavior (Watson-Brown, et al., 2024; Jegan, et al., 2024). These findings complement the general literature calling for modernized, driver-friendly traffic signal systems as an important solution in facilitating road discipline and enhancing urban traffic situations. The findings of this research suggest that the recently introduced traffic light system has had a major positive contribution towards the daily functioning of PUV drivers by enhancing travel time, easing congestion, and increasing traffic rule compliance.

The extremely high perceived effectiveness by all sub-constructs indicates that such systems not only are operationally effective but also are well-accepted by the principal stakeholders in the public transportation sector. These results reinforce the imperative for investment in well-designed and strategically located traffic signals as a method of enhancing urban mobility and enhancing road safety. Policy makers and traffic agencies can then utilize these findings to inform the next generation of infrastructure upgrades, so that traffic networks continue to be responsive to drivers' and the public's needs.

Table 2. Level of perception of traffic signal effectiveness of PUV drivers to the newly implemented traffic lights (N=120)

Sub-construct	Effectiveness of Traffic Lights		
	<i>Mean</i>	<i>SD</i>	Remark
Impact on Travel Time	3.72	0.01	Very Highly Effective
Impact on Traffic Congestion	3.72	0.04	Very Highly Effective
Ease of Compliance	3.79	0.03	Very Highly Effective

Note: PUV Drivers' Satisfaction Scale: 3.26-4.00 (Very Highly Satisfied); 2.51-3.25 (Highly Satisfied); 1.76-2.50 (Less Satisfied); 1.00-1.75 (Not Satisfied)

Perceived Safety

The safety perception of PUV drivers is an important factor to consider in assessing the overall quality of traffic management systems, such as recently installed traffic lights (De Ocampo & Tanpoco, 2024; Farooq et al., 2020). In the present research, drivers perceived a high safety level, indicating that the traffic lights have made the movement of motorized vehicles at intersections more orderly and predictable. This is consistent with current literature which identifies that well-placed and highly visible traffic signs can considerably decrease the chances of accidents and enhance the feelings of safety for drivers on the road (Bayoudh et al., 2021; Ma et al., 2021).

For PUV drivers, whose daily activities consist of many stops and exposure to uncertain traffic conditions, safety is crucial not just for their own well-being but also for the confidence of passengers (Fabella, 2023; Chan et al., 2025). The positive image of safety shows that not only has the new traffic light system enhanced traffic efficiency but it has also contributed to a safer driving environment, showing the significance of organized traffic control in urban transport planning. (Obeidat et al., 2022; Ali et al., 2020;

Essa & Sayed, 2020). Table 3 reveals the perceived safety of PUV drivers to the newly installed traffic lights.

As indicated in Table 3, drivers of Public Utility Vehicles (PUVs) see an extremely high sense of safety when it comes to the recently installed traffic lights, as both sub-constructs Intersection Safety Confidence and Perceived Accident Reduction were rated very positively. The Intersection Safety Confidence attained the highest mean value of 3.79 with an extremely low standard deviation of 0.01, which shows that almost all respondents believe that intersections are now considerably safer. This attests that the traffic lights were able to coordinate the movement of vehicles and reduce confusion at key points, thus improving drivers' confidence in driving through them (Latif et al., 2025; Wang et al., 2021). This feeling of security is especially important for PUV drivers who are always driving through high-risk routes and are also subjected to erratic road behaviors during the day (Hussain et al., 2021; Acheampong, 2021).

Also, the sub-construct Perceived Accident Reduction had an average score of 3.73 ($SD = 0.05$), further solidifying that drivers perceive the new traffic lights help reduce the occurrence of vehicular accidents. While the standard deviation is more elevated compared to intersection safety, it still indicates strong agreement among drivers. These results align with earlier findings showing that signalized intersections significantly reduce collision rates while improving driver attentiveness (Younes et al., 2023; Tomar et al., 2022). The very high perception of safety among PUV drivers not only indicates the operational effectiveness of the traffic lights but also validates wider initiatives to enhance road safety within jam-packed urban areas (Mustapha & Ibitoye, 2022; Bassani et al., 2020). In general, the consistently high safety ratings highlight that the use of organized traffic signaling

systems is vital in ensuring a safer and more secure driving environment for public transport operators and commuters (Kan & Das, 2024; Muhammad et al., 2020; Hosseinian & Mirzahosseini, 2024).

The high perception of safety for PUV drivers in this research is corroborated by a number of connected studies that lay prime importance on the traffic signals in enhancing road safety. For example, studies have shown that implementing traffic signal systems at hazardous intersections leads to a marked decrease in road accidents and boosts driver confidence, particularly in urban transport settings (Retallack & Ostendorf, 2020; Cohn et al., 2020). In the same vein, previous findings indicate that signalized intersections enhance the predictability of vehicle behavior, which helps reduce accidents and promotes compliance with traffic regulations (Tomar et al., 2022; Zhang & Su (2021)). The similarity between this research and prior literature supports the inference that properly implemented traffic lights efficiently work towards making the environment for public utility drivers safer, eventually leading to enhanced public transport reliability and road discipline.

The strong perception of safety among PUV drivers implies that the newly implemented traffic lights are effective in creating a safer driving environment, which is crucial for reducing accidents and enhancing overall road safety. This positive feedback highlights the importance of continuing to invest in and maintain modern traffic control systems that not only improve traffic flow but also boost driver confidence and compliance with traffic regulations. Ultimately, prioritizing safety through effective traffic signaling can contribute to a more reliable and secure public transportation system.

Table 3. Level of perceived safety of PUV drivers to the newly implemented traffic lights (N=120)

Sub-construct	Perceived Safety		Remark
	<i>Mean</i>	<i>SD</i>	
Intersection Safety Confidence	3.79	0.01	Very Highly Safe
Perceived Accident Reduction	3.73	0.05	Very Highly Safe

Note: PUV Drivers' Satisfaction Scale: 3.26-4.00 (Very Highly Satisfied); 2.51-3.25 (Highly Satisfied); 1.76-2.50 (Less Satisfied); 1.00-1.75 (Not Satisfied)

Test of significant relationship between the satisfaction and perceived safety of PUV drivers to the newly implemented traffic lights

The test of significant relationship between the satisfaction and perceived safety of PUV drivers to the newly implemented traffic lights implies a moderate positive correlation. Thus, satisfied drivers perceive more safety with the newly implemented traffic lights. The suggested improvement in the efficiency of traffic flow, waiting time, and convenience implies direct contribution to the safety felt by drivers of these roads. Such results are in line with traffic management literature, which highlights the fact that traffic control measure satisfaction tends to improve compliance and decrease dangerous driving practices. The relationship between satisfaction and perceived safety reinforces the need for the design of traffic systems to achieve not only operational efficiency optimization but also the creation of a safe environment, eventually leading to improved safer driving habits on the part of PUV drivers. Table 4 shows the result of significant relationship between the satisfaction and perceived safety of PUV drivers to the newly installed traffic lights.

Table 4 presents the analysis of the relationship between PUV drivers' satisfaction and their perceived safety regarding the newly implemented traffic lights. The computed r-value of 0.5 indicates a moderate positive correlation between the two variables,

suggesting that, to some extent, higher satisfaction with the traffic lights may be associated with increased feelings of safety among drivers. However, the p-value of 0.95, which is well above the commonly accepted significance threshold of 0.05, indicates that this observed correlation is not statistically significant. This means that, despite the moderate correlation coefficient, we cannot confidently conclude that satisfaction and perceived safety are meaningfully related in this context based on the current data.

The fact that there is no significant relationship can be attributed to a number of reasons. For example, although drivers would feel mostly satisfied with things like traffic movement and wait time, their perception of safety could be subject to different variables not measured in the measurement of satisfaction, e.g., road condition, other people's behavior behind the wheel, or environmental conditions outside. This discovery reflects the nuance of driver attitudes and that enhancing satisfaction with traffic infrastructure does not directly correlate with enhanced perceived safety. Therefore, traffic management authorities should consider complementary measures such as enhanced road maintenance, driver education, and enforcement to holistically improve both satisfaction and safety perceptions among PUV drivers.

The absence of significant correlation between satisfaction among PUV drivers and their perceived safety can be interpreted to mean that the two constructs, as much as they are related, can be affected by varying factors and ought to be dealt with independently when formulating traffic management plans. This means that improving satisfaction alone through improved traffic movement or shorter waits may not necessarily translate into improved drivers' perceptions of safety. Traffic authorities and policymakers should thus implement a more integrated strategy that not only highlights operational efficiency but

also aims at safety-specific interventions like better road infrastructure, heavier enforcement of traffic regulations, and awareness campaigns among drivers to better enhance satisfaction and safety perceptions among PUV drivers.

Table 4. Significant relationship between the satisfaction and perceived safety of PUV drivers to the newly implemented traffic lights

Variables	<i>r</i> value	<i>p</i> value	Remarks
PUV Drivers' Satisfaction and Perceived safety	0.5	0.95	Not significant

*Note: * 0.05 (significant); ** 0.01 (highly significant)*

Test of the significant relationship between the perception of traffic signal effectiveness and perceived safety of PUV drivers to the newly implemented traffic lights

The test of the significant relationship between the perception of traffic signal effectiveness and the perceived safety of PUV drivers to the newly implemented traffic lights highlights the interconnections of these two factors in shaping driver experiences. When drivers perceive traffic signals as effective in managing traffic flow, reducing congestion, and facilitating compliance, they are more likely to feel safe navigating intersections and busy roadways. This correlation underscores that effective traffic signals not only enhance operational efficiency but also contribute significantly to drivers' confidence and sense of security on the road. The relationship aligns with previous research indicating that well-functioning traffic control systems can reduce accidents and improve driver behavior by creating predictable and orderly traffic environments. Consequently, improving the effectiveness of traffic signals can be seen as a critical step toward fostering both safer and more satisfactory driving conditions for PUV operators. Table 5 presents

the results of the significant relationship between the perception of traffic signal effectiveness and perceived safety of PUV drivers to the newly implemented traffic lights.

Table 5 presents the analysis of the relationship between PUV drivers' perception of traffic signal effectiveness and their perceived safety following the implementation of the new traffic lights. The computed r-value of -0.054 suggests a very weak negative correlation between the two variables, indicating that there is essentially no meaningful linear association between how effective drivers perceive the traffic signals to be and how safe they feel. Moreover, the p-value of 0.6 is substantially higher than the standard significance level of 0.05, leading to the conclusion that this relationship is statistically not significant. In other words, the data does not support the idea that perceptions of traffic signal effectiveness directly influence drivers' feelings of safety in this context.

This lack of significant relationship might reflect the complex nature of perceived safety, which is often influenced by multiple factors beyond the perceived operational effectiveness of traffic signals alone. For instance, the perceived safety might be impacted by the driver's behavior, road conditions, visibility, enforcement of the traffic laws, and environmental factors that may not necessarily be related to the lights themselves. Similarly, one might value the time or convenience that the signals provide without considering himself or herself safer because the perceptions of safety are indeed subjective and multi-dimensional. These findings highlight the need for a more holistic approach to improving road safety that combines effective traffic management with other safety measures, such as public awareness campaigns, improved infrastructure, and strict enforcement, to better address drivers' safety concerns.

The finding of no significant relationship between the perception of traffic signal effectiveness and perceived safety implies that improving traffic signal functionality alone may not be sufficient to enhance drivers' sense of safety. This indicates that although effective traffic light systems may optimize traffic flow and alleviate congestion, drivers' sense of safety is most probably determined by a whole host of other factors including road conditions, driving behavior, and traffic rule enforcement. Therefore, traffic management efforts should adopt a more comprehensive strategy that integrates effective signal systems with other safety interventions, including infrastructure improvements and driver education, to holistically improve both the efficiency and safety of the road environment for PUV drivers.

Table 5. Significant relationship between the perception of traffic signal effectiveness and perceived safety of PUV drivers to the newly implemented traffic lights.

Variables	<i>r</i> value	<i>p</i> value	Remarks
Effectiveness of Traffic Lights and Perceived safety	-0.054	0.6	Not significant

*Note: * 0.05 (significant); ** 0.01 (highly significant)*

CONCLUSION AND RECOMMENDATION

The study reveals that while Public Utility Vehicle (PUV) drivers express high levels of satisfaction and perceive the newly implemented traffic lights as effective and safe, the statistical analyses indicate no significant relationship between satisfaction and perceived safety, nor between the perception of traffic signal effectiveness and perceived safety. These results indicate that while traffic lights enhance the efficiency of operations and tend to be liked well, drivers' perception of safety is determined by a more comprehensive set of considerations than the two aforementioned factors alone. This makes safety perception multi-dimensional, emphasizing the need to have a holistic approach in managing traffic that controls not just infrastructure but also behavioral, environmental, and enforcement aspects in working towards improving road safety among PUV drivers.

Based on the results, traffic management agencies should keep investing in better traffic light systems to maintain high satisfaction and efficiency among public utility vehicle (PUV) drivers. However, improving perceived safety needs a more integrated approach. This involves consistent traffic law enforcement, targeted driver education programs, and public awareness campaigns that emphasize safe driving practices. It is important to acknowledge that some drivers have raised concerns about the shorter duration of green lights compared to red lights, as well as the placement of traffic signals in areas with relatively low traffic. Since there is no clear link between traffic signal effectiveness and perceived safety, traffic authorities are encouraged to consider about assigning Traffic Management Units (TMUs) or designated officers even in non-key intersections. They should also enforce stricter traffic policies to improve driver compliance and road safety.

Additionally, setting up regular feedback mechanisms with PUV drivers could help identify safety issues beyond traffic light performance. Keeping traffic signals well-maintained and making timely adjustments are important, along with having clear signage and effective public information campaigns. These steps can reduce delays and confusion. By addressing both operational effectiveness and safety perceptions, these measures can help create a safer and more efficient traffic environment, ultimately leading to fewer accidents and greater confidence among drivers and pedestrians.

.DECLARATION OF THE USE OF AI TOOLS

We acknowledge the use of ChatGPT [<https://chat.openai.com/>] to help create the Objectives and Theoretical Framework of the study.

We entered the following prompts: “Create 5 objectives of the study based on the statement of the problem”and “Create 2 theories that can be used in this study”

We used the output to generate thoughts for the objectives and theoretical framework of the study.

We acknowledge the use of ChatPDF [<https://www.chatpdf.com/>] to help create the Background of the study.

We entered the following prompt: “Create a list of topic outline for this study from broad to specific”.

We used the output as a starting point in making the introduction.

We acknowledge the use of Grammarly in helping check the whole work for spelling, grammar, spacing, and sentence structure.

We entered the following prompt: “Improve the clarity, correctness and concision of this study”.

We utilized the results to rectify the language and phrases, and updated the writing to better the overall paper.

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APPENDIX A

SURVEY QUESTIONNAIRES

Direction: Listed below are a series of statements that represents satisfaction of PUV drivers to the newly implemented traffic lights in Ozamiz City. With respect to your own feelings about your level of satisfaction to the newly implemented traffic lights, please rate the given statement below by marking (✓) using the given scale:

- 4 – Strongly Agree
- 3 – Agree
- 2 – Disagree
- 1 - Strongly Disagree

	4	3	2	1
A. Traffic Flow Efficiency Satisfaction				
1. I am satisfied with the smoothness of traffic flow at intersections with the new traffic lights (Younes et al., 2023).				
2. I satisfied with how the new traffic lights manage the movement of PUV's through intersections (Mulyadi et al., 2022).				
3. I am satisfied with the ability of the new traffic lights to reduce traffic congestion during peak hours (Aleko, & Djahel 2020).				
4. I am satisfied with how the new traffic lights minimize confusion among PUV drivers (Sumit et al., 2022).				
5. I am satisfied with the overall improvement in traffic movement after the installation of the new traffic lights (De Oliveira et al.,2020).				
B. Waiting Time Satisfaction				
6. I am satisfied with the amount of time you wait at red lights under the new traffic light system (Hussain et al., 2020).				
7. I am satisfied with the overall waiting time at intersections compared to the previous traffic system (Eom, & Kim 2020).				
8. I am satisfied with the balance between red, yellow, and green light durations for PUV drivers (Westerhuis et al.,2021).				
9. I am satisfied with how the new traffic lights prevent long waiting time and delays (Xu et al., 2020).				
10. I am satisfied with how the traffic lights reduce unnecessary waiting during non-peak hours (Geng et al., 2023).				
C. Convenience Satisfaction				
11. I am satisfied with how easy it is to navigate intersections with the new traffic lights (Eom, & Kim 2020).				
12. I am satisfied with how the new traffic lights accommodate PUV drivers' needs (Pearson et al., 2024)				

13. I am satisfied with the balance between green light duration and traffic volume for PUV drivers (Suprayogi et al., 2021).				
14. I am satisfied with the clarity and visibility of the new traffic light signals for PUV drivers (Kwalar et al., 2023) .				
15. I am satisfied with how the new traffic lights reduce the need for manual traffic direction (Eom, & Kim 2020).				
D. Compliance Satisfaction				
16. I am satisfied with how the new traffic lights promote safer driving behavior.				
17. I am satisfied with the ease of navigating intersections controlled by the new traffic lights (Aleko, & Djahel 2020).				
18. I am satisfied with the enforcement of traffic laws at intersections with the new traffic lights (Cohn et al., 2020).				
19. I am satisfied with how the new traffic lights encourage PUV drivers to follow traffic rules (Nadimi et al., 2021).				
20. I am satisfied with how clearly the new traffic lights indicate when to stop and go (Qadri et al., 2020).				

QUESTIONNAIRE ON EFFECTIVENESS

(A Questionnaire made by the Reseachers)

Direction: Listed below are a series of statements that represents level of effectiveness of PUV drivers to the newly implemented traffic lights in Ozamiz City. With respect to your own feelings about your level of effectiveness to the newly implemented traffic lights, please rate the given statement below by marking (✓) using the given scale:

- 4 – Strongly Agree
- 3 – Agree
- 2 – Disagree
- 1 – Strongly Disagree

Statement	4	3	2	1
A. Impact on Travel Time				
1. The waiting times at the new traffic lights are reasonable for PUV drivers (Mulyadi et al., 2022).				
2. The newly implemented traffic lights help reduce my travel time during peak hours (Hossan, & Nower 2020).				
3. The newly implemented traffic lights have increased my travel time (Shaikh et al., 2020).				
4. The green light durations are sufficient for PUV drivers to cross intersections safely and efficiently (Promraska et al., 2022)				
5. The new traffic lights cause unnecessary stops that increase my travel time (Eom, & Kim 2020).				
B. Impact on Traffic Congestion				
6. The traffic flow has become smoother due to the newly implemented traffic lights (Zadobrischi et al., 2020).				
7. There are fewer instances of traffic buildup at intersections with the new traffic lights (Gunes et al., 2021).				
8. The new traffic lights help reduce traffic congestion at busy intersections (Aleko, & Djahel 2020).				
9. The updated traffic lighs distribute vehicle flow more evenly across intersections (Liang et al., 2020).				
10. The new traffic lights reduce congestion during non-peak hours (Saracoglu et al., 2021)				
C. Ease of Compliance				
11. The traffic lights are clearly positioned and visible enough for easy compliance (Park, & Garcia 2020).				

12. It is convenient for PUV drivers to follow the new traffic signals without confusion (Espinosa et al., 2020).				
13. The new traffic lights are easy to understand and follow as a PUV driver (Cavallo et al., 2021).				
14. I find it easier to obey traffic rules at intersections with the newly installed traffic lights (Eom, & Kim 2020).				
15. The new traffic lights make it easier to know when to stop or proceed (Qadri et al., 2020).				

QUESTIONNAIRE ON SAFETY

(A Questionnaire made by the Reseachers)

Direction: Listed below are a series of statements that represents level of perceived safety of PUV drivers to the newly implemented traffic lights in Ozamiz City. With respect to your own feelings about your level of perceived safety to the newly implemented traffic lights, please rate the given statement below by marking (✓) using the given scale:

- 4 – Strongly Agree
- 3 – Agree
- 2 – Disagree
- 1 – Strongly Disagree

A. Intersection Safety Confidence	4	3	2	1
1. I feel safer when passing through intersections with the newly implemented traffic lights (De Oliveira et al., 2020).				
2. I trust that the new traffic lights effectively manage the flow of vehicles and reduce confusion at intersections (Arifin, & Zulkifli 2021).				
3. The new traffic lights are clearly visible and easy to understand while approaching intersections (Eom, & Kim 2020).				
4. The new traffic lights provide sufficient time for PUV drivers to cross intersections safely (Mulyadi et al., 2022).				
5. I believe the new traffic lights have made PUV drivers travel safer during both peak and non-peak hours (Satiennam et al., 2023).				

B. Perceived Accident Reduction	4	3	2	1
6. I feel that the new traffic lights have improved overall road discipline and accident prevention (Markkula et al., 2020).				
7. The new traffic lights have reduced the number of near-miss incidents involving PUV's (Jomnonkwao et al., 2023).				
8. I believe the new traffic lights reduce the risk of collisions at busy intersections (Sieklicka et al., 2022).				
9. The new traffic lights discourage reckless driving behavior among other road users (Cohn et al., 2020).				
10. The new traffic lights help reduce sudden and unsafe movements from other vehicles (Toh et al., 2020).				

APPENDIX B

SAMPLE OF THE FILLED OUT QUESTIONNAIRE

Name:

QUESTIONNAIRE ON EFFECTIVENESS

Direction: (A Questionnaire made by the Reseachers)
Listed below are a series of statements that represents level of effectiveness of PUV drivers to the newly implemented traffic lights in Ozamiz City. With respect to your own feelings about your level of effectiveness to the newly implemented traffic lights, please rate the given statement below by marking (✓) using the given scale:

- 4 - Strongly Agree
3 - Agree
2 - Disagree
1 - Strongly Disagree

A. Impact on Travel Time	4	3	2	1
1. The waiting times at the new traffic lights are reasonable for PUV drivers (Mulyadi et al., 2022).	✓			
2. The newly implemented traffic lights help reduce my travel time during peak hours (Hossan, & Nower 2020).	✓			
3. The newly implemented traffic lights have increased my travel time (Shaikh et al., 2020).	✓			
4. The green light durations are sufficient for PUV drivers to cross intersections safely and efficiently (Promraska et al., 2022)	✓			
5. The new traffic lights cause unnecessary stops that increase my travel time (Eom, & Kim 2020).	✓			

B. Impact on Traffic Congestion	4	3	2	1
6. The traffic flow has become smoother due to the newly implemented traffic lights (Zadobrischi et al., 2020).	✓			
7. There are fewer instances of traffic buildup at intersections with the new traffic lights (Gunes et al., 2021).	✓			
8. The new traffic lights help reduce traffic congestion at busy intersections (Aleko, & Djahel 2020).	✓			
9. The updated traffic lighs distribute vehicle flow more evenly across intersections (Liang et al., 2020).	✓			
10. The new traffic lights reduce congestion during non-peak hours (Saracoglu et al., 2021)	✓			
C. Ease of Compliance	4	3	2	1
11. The traffic lights are clearly positioned and visible enough for easy compliance (Park, & Garcia 2020).	✓			
12. It is convenient for PUV drivers to follow the new traffic signals without confusion (Espinosa at al., 2020).	✓			
13. The new traffic lights are easy to understand and follow as a PUV driver (Cavallo et al., 2021).	✓			
14. I find it easier to obey traffic rules at intersections with the newly installed traffic lights (Eom, & Kim 2020).	✓			
15. The new traffic lights make it easier to know when to stop or proceed (Qadri et al., 2020).	✓			

QUESTIONNAIRE ON SAFETY

(A Questionnaire made by the Reseachers)

Direction: Listed below are a series of statements that represents level of perceived safety of PUV drivers to the newly implemented traffic lights in Ozamiz City. With respect to your own feelings about your level of perceived safety to the newly implemented traffic lights, please rate the given statement below by marking (✓) using the given scale:

- 4 - Strongly Agree
3 - Agree
2 - Disagree
1 - Strongly Disagree

A. Intersection Safety Confidence	4	3	2	1
1. I feel safer when passing through intersections with the newly implemented traffic lights (De Oliveira et al., 2020).	✓			
2. I trust that the new traffic lights effectively manage the flow of vehicles and reduce confusion at intersections (Arifin, & Zulkifli 2021).	✓			
3. The new traffic lights are clearly visible and easy to understand while approaching intersections (Eom, & Kim 2020).	✓			
4. The new traffic lights provide sufficient time for PUV drivers to cross intersections safely (Mulyadi et al., 2022).	✓			
5. I believe the new traffic lights have made PUV drivers travel safer during both peak and non-peak hours (Satiennam et al., 2023).	✓			

B. Perceived Accident Reduction	4	3	2	1
6. I feel that the new traffic lights have improved overall road discipline and accident prevention (Markkula et al., 2020).	✓			
7. The new traffic lights have reduced the number of near-miss incidents involving PUV's (Jomnonkwao et al., 2023).	✓			
8. I believe the new traffic lights reduce the risk of collisions at busy intersections (Sieklicka et al., 2022).	✓			
9. The new traffic lights discourage reckless driving behavior among other road users (Cohn et al., 2020).	✓			
10. The new traffic lights help reduce sudden and unsafe movements from other vehicles (Toh et al., 2020).	✓			

APPENDIX C**SAMPLING COMPUTATION****A.QUESTIONNAIRE ON SATISFACTION**

A.	4	3	2	1	TOTAL:	MEAN
1	93	23	2	2	120	3.73
2	85	29	2	4	120	3.63
3	87	23	4	6	120	3.59
4	94	20	4	2	120	3.72
5	92	19	5	4	120	3.66

WEIGHTED**MEAN: 3.66**

B.	4	3	2	1	TOTAL:	MEAN
6	87	21	8	4	120	3.59
7	86	24	5	5	120	3.59
8	87	24	8	1	120	3.64
9	86	21	8	5	120	3.57
10	86	23	5	6	120	3.58

WEIGHTED**MEAN: 3.59**

C.	4	3	2	1	TOTAL:	MEAN
11	88	25	5	2	120	3.66
12	90	22	7	1	120	3.68
13	81	30	7	2	120	3.58
14	91	17	10	2	120	3.64
15	88	22	6	4	120	3.62

WEIGHTED**MEAN: 3.64**

D.	4	3	2	1	TOTAL:	MEAN
16	91	27	1	1	120	3.73
17	93	23	3	1	120	3.73
18	95	20	3	2	120	3.73
19	91	26	1	2	120	3.72
20	94	20	2	4	120	3.70

WEIGHTED**MEAN: 3.72****B.QUESTIONNAIRE ON EFFECTIVENESS**

A.	4	3	2	1	TOTAL:	MEAN
1	89	28	3	0	120	3.72
2	89	28	3	0	120	3.72
3	89	26	5	0	120	3.70
4	94	23	2	1	120	3.75
5	95	19	4	2	120	3.73

WEIGHTED**MEAN:****3.72**

B.	4	3	2	1	TOTAL:	MEAN
6	97	20	1	2	120	3.77
7	94	23	2	1	120	3.75
8	92	22	5	1	120	3.71
9	91	25	3	1	120	3.72
10	88	25	3	4	120	3.64

WEIGHTED**MEAN:****3.72**

C.	4	3	2	1	TOTAL:	MEAN
11	96	20	2	2	120	3.75
12	96	21	2	1	120	3.77
13	99	20	1	0	120	3.82
14	103	14	2	1	120	3.83
15	98	21	1	0	120	3.81

WEIGHTED**MEAN:****3.79****C. QUESTIONNAIRE ON SAFETY**

A.	4	3	2	1	TOTAL:	MEAN
1	100	15	2	3	120	3.77
2	98	20	2	0	120	3.80
3	99	19	2	0	120	3.81
4	97	20	3	0	120	3.78
5	97	19	4	0	120	3.78

WEIGHTED**MEAN:****3.79**

B.	4	3	2	1	TOTAL:	MEAN
6	96	24	0	0	120	3.80
7	93	23	2	2	120	3.73
8	87	29	2	2	120	3.68
9	87	30	2	1	120	3.69
10	96	22	1	1	120	3.78

WEIGHTED**MEAN:****3.73**

KINDS:	
UV Express Drivers:	30
Bus Drivers:	15
Jeepney Drivers:	10
Motorcab Drivers:	65
TOTAL:	120

APPENDIX D

TRANSMITTAL LETTER



Misamis University
Ozamiz City
College of Criminology



July 22, 2025

ATTY. SAM NORMAN FUENTES
City Mayor
Ozamiz City

Dear Mayor Fuentes;

Greetings of Peace!

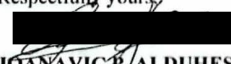
We, the Bachelor of Science in Criminology students of Misamis University, Ozamiz City are currently working on our Thesis study entitled, *"Public Utility Vehicle Drivers' Perceptions of New Traffic Lights: Satisfaction, Effectiveness, and Safety in Ozamiz City"* as a requirement for the course Criminological Research I.

Our participants are Public Utility Vehicle (PUV) drivers operating in Ozamiz City, with an expected number of at least one hundred twenty (120). We aim to gather insights from them regarding their perceptions of the newly installed traffic lights, particularly in terms of satisfaction, effectiveness, and safety. Since these drivers operate independently or are affiliated with various transport groups, there is no single coordinating agency overseeing all participants.

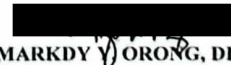
We assure you that the data collected will be handled with utmost confidentiality and will be used solely for research purposes. The privacy of the participants will be highly protected throughout the research process, and there would be no identifying information of these participants that will be revealed in any publications, presentations, or reports from this study.

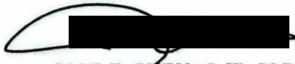
Your approval to this request will contribute to the success of our educational endeavors. God bless and more power.

Respectfully yours,


JOANAVIC P. ALDUHESA
Research Leader

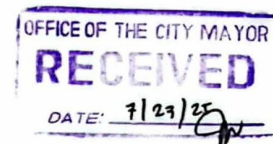
Noted:


MARKDY V. ORONG, DIT
Instructor


JOSE F. CUEVAS JR. PhD
College Dean

Approved by:


ATTY. SAM NORMAN FUENTES
City Mayor





Republic of the Philippines
CITY ADMINISTRATOR'S OFFICE
City of Ozamiz



**ASENZO
OZAMIZ**

25 July 2025

MR. JOSE F. CUERVAS JR., PhD
College Dean
College of Criminology
Misamis University, Ozamiz City

THRU: MS. JOANA VIC P. ALDUHESA
Research Leader,
College of Criminology
Misamis University, Ozamiz City

Dear Ms. Alduhesa,

Consent is hereby granted for the conduct of Thesis Study entitled, "Public Utility Vehicle Driver's Perceptions of New Traffic Lights: Satisfaction, effectiveness, and Safety in Ozamiz City" in fulfillment of the requirements for the course Criminological Research 1.

Please ensure that all necessary preparations are made for the orderly conduct of the activity with strict adherence to applicable health and safety protocols. Furthermore, all data collected shall be treated with the utmost confidentiality and used solely for academic research purposes. The privacy and anonymity of all participants must be strictly maintained throughout the research process.

Kindly furnish us with a copy of the final output for documentation and reference.

For your guidance and information.

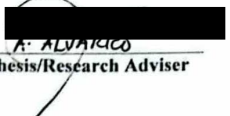
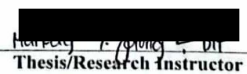
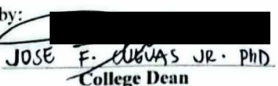
Sincerely yours,


RUTHEZA GRACE A. DUANO
City Administrator

Copies furnished:
City Mayor's Office
Ozamiz City Police Station
CTMS

APPENDIX E

THESIS DATA GATHERING APPROVAL FORM

	Misamis University <i>Ozamiz City</i>	
MISAMIS UNIVERSITY RESEARCH CENTER CERTIFIED: ISO 21001: 2018 Educational Organizations Management System by DNV ACCREDITED: Philippine Association of Colleges and Universities Commission on Accreditation (PACUCOA)		
MU-RC-042/13 November 2024		
Thesis/Research Data Gathering Approval Form		
Date: <u>September 10, 2025</u>		
Name of Authors: <u>Joanovic P. Alduhenca, Ana Hena H. Caromba, Joshua Ponce, Russel Jonn Palang</u>		
College/Department: <u>College of Criminology</u>		
Research Title: <u>Public Utility Vehicle Drivers' Perceptions of New Traffic Lights: Satisfaction, Effectiveness, and Safety in Ozamiz City.</u>		
Data Gathering Procedure:		
a. Type of Research: (Kindly check)		
☒ Quantitative	☐ Qualitative	☐ Experimental
☒ Approved Research Title & Problem/Objectives	☒ Approved Data Gathering Procedure	☒ Approved Data Gathering Instrument/Data Sheets
b. Respondents/Participants/Subject/Samples to be Collected: <u>PUV Drivers</u>		
c. Procedure:		
☒ Survey	☐ Interview	☐ Experimentation
☐ Laboratory Testing		
d. Place of Implementation/Study Area: <u>Ozamiz City</u>		
If to be conducted outside the school campus, indicate the nature of transportation to be used:		
☒ Own private vehicle	☐ public utility vehicle	☐ rental
☐ Others, please indicate _____		
e. Date/s of Implementation/Sampling: <u>July - August 2025</u>		
Attachments:		
☒	Approved Letter of Consent from the designated authority in the area/place where the study is to be conducted	
☒	Signed Parents' Consent	
The thesis proposal mentioned above is hereby recommended for the commencement of data gathering implementation.		
Recommended by:		
 A. ALVARADO Thesis/Research Adviser	 Thesis/Research Instructor	
Approved by:  JOSE F. DURVAS JR. PhD. College Dean		
CONTROLLED DOCUMENT		

APPENDIX F

INFORMED CONSENT FORM

(PORMA SA NASABTAN NGA PAGTUGOT)

Name of the Researchers/Investigators

(Nagtuon): Alduhesa, Joanavic P., Caramba, Ara Mena M., Ponce, Joshua C., Palang, Russel Jonn

Course: Bachelor of Science in Criminology

College: College of Criminology

Email / Contact Number: 09197128005

Thesis Title: “Public Utility Vehicle Drivers’ Perceptions Of New Traffic Lights: Satisfaction, Effectiveness, And Safety In Ozamiz City”

PART I. INFORMATION SHEET	
Introduction (Pasiuna)	Good day! I am _____, the principal researcher/investigator of the study entitled <u>“Public Utility Vehicle Drivers’ Perceptions Of New Traffic Lights: Satisfaction, Effectiveness, And Safety In Ozamiz City.”</u> I am a student under the <u>College of Criminology</u> at Misamis University in Ozamiz City. I am to conduct the research with <u>PUV Drivers</u> as respondents. In this vein, I am respectfully seeking your voluntary participation, being qualified to give your informed consent to take part in this study. Before you decide whether to participate or not in this study, please read the succeeding information about the study and feel free to ask questions anytime should there be anything you do not understand or want to clarify. If you agree to answer the survey, you will be asked to affix your name and signature on this form for which you will be given a copy. (Maayong adlaw! Ako si _____, ang nagpahigayon sa pagtuon kabahin sa <u>“Public Utility Vehicle Drivers’ Perceptions Of New Traffic Lights: Satisfaction, Effectiveness, And Safety In Ozamiz City.”</u> Ako usa ka estudyante sa Misamis University sa <u>College of Criminology</u>. Ako nagapili kanimo isip respondent nga maoy mutubag sa gikinahagnglang impormasyon niining gihimong pagtuon. Ako matinahurong naghangyo sa inyong bulontaryo nga pag-apil niini nga pagtuon. Gikinahanglan nga ikaw naa sa saktong edad ug naay kakayahan nga mohatag sa pagtugot aron makaapil niini nga pagtuon. Sa dili pa ka mohukom sa pag-apil niini nga survey, palihug sa pagbasa sa mga impormasyon sa ubos ug gawasnon ka nga makapangutana kon adunay wala nimo nasabtan o gusto nimong iklaro. Kung motugot ka sa pagahimoon nga interview, papirmahon ka niini nga porma ug tagaan usab ka ug imong kaugalingong kopya.

Purpose (<i>Katuyoan</i>)	The purpose of this study is <u>to determine public utility vehicle drivers satisfaction, perceived effectiveness, and feelings of safety with the new traffic lights in Ozamiz City.</u> This research <u>will provide insights into improvements in traffic lights placement and design that are directed towards enhancing efficiency and safety for PUV drivers.</u> <i>Ang katuyuan niini nga pagtuon mao aron matino ang kasatisfaksyon, panan-aw sa kaepektibo, ug pagbati sa kaluwasan sa mga drayber sa pampublikong sakyanan bahin sa bag-ong traffic lights sa Ozamiz City. Kini nga pagtuon makahatag og mga panan-aw alang sa pagpaayo sa pagbutang ug disenyo sa mga traffic lights nga gitumong aron mapaayo ang kaepektibo ug kaluwasan para sa mga drayber sa pampublikong sakyanan.</i>
Type of Research Intervention (<i>Matang sa Interbensyon sa Pagtuon</i>)	This study will be conducted through surveys. The gathering of data will be conducted in person. <i>(Kining pagtuon pagabuhaton pinaagi sa survey. Personal ang pagkuha sa datos.)</i>
Selection of Participants (<i>Pagpili sa mga Partisipant</i>)	The selection of the participants is based on the following inclusion criteria: <u>licensed public utility vehicle (PUV) drivers, who are currently operating within Ozamiz City, and voluntarily agree to participate in the study.</u> <i>(Ang mga partisipante niini nga pagtuon mao ang indibidwal nga naga-angkon sa mosunod: lisensyadong drayber sa pampublikong sakyanan (PUV), nga kasamtangang nag-operate sulod sa Ozamiz City ug boluntaryong mouyon nga moapil sa pagtuon.)</i>
Voluntary Participation (<i>Boluntaryo nga Partisipasyon</i>)	Your participation has to be voluntary and will not affect your situation or status in any way, including your relationship with the researcher. You are free to decide if you will take part or not. If you decide to participate, you are free not to answer any questions that you do not prefer to answer. <i>(Boluntaryo ang imong pag-apil ug kini dili makaapekto sa imong sitwasyon o estado apil na imong relasyon sa nagtuon. Gawasnon ka nga modesisyon kung kung moapil ka niini nga pagtoon o dili. Kung modesisyon ka nga moapil, gawasnon ka nga dili motubag sa bisan asa nga pangutana nga dili nimo gusto nga tubagon.)</i>
Procedure (<i>Pamaagi</i>)	The respondents will be given ample time when to undertake the survey. The survey will be undertaken once or several times when necessary. The information and data provided by you as a respondent will be utilized for this study alone and will be treated with the utmost confidentiality.

	<i>(Ang mga respondents pagahatagan og igong panahon sa pag-apil sa survey. Ang survey pwedeng himoon kausa nga higayon o sa makadaghan depende sa panginanghalanon. Ang mga impormasyon ug datos nga nakuha gikan kanimo isip ka respondent gamiton lamang niining research og hatagan og tumang pag-amping nga dili mabutyag.)</i>
Duration(<i>Gid ugayon</i>)	The gathering of data through the survey will last for 5-10 minutes. <i>(Ang pagkuha sa datos pinaagi sa interview mokabat ngadto sa sulod sa 5 hangtod 10 minutos)</i>
Risks and Discomforts (<i>Risgo ug Kahasol</i>)	The respondents will be protected from physical, social, or economic risks. In case the items in the survey instrument are too personal and make you feel uncomfortable, you may decline to answer any or all questions and may terminate your involvement at any time you choose. <i>(Ang mga respondents ginaprotektahan sa pisikal, sosyal o ekonomikanhong risgo. Kung pananglitan adunay mga pangutana nga personal ra kaayo o kung dili ka komportable, mamahimong dili ka motubag o mobalibad sa pagtubag sa bisan asa o sa tanang mga pangutana ug moatras sa pag-apil sa bisan unsang panahon nga imong gusto.)</i>
Benefits (<i>Kaayohan</i>)	This study will enable you to shed light or provide understanding about <u>public utility vehicle driver's satisfaction, perceived effectiveness, and safety regarding new traffic lights in Ozamiz City</u> . Thus, your responses shall be highly valued being deemed important in the field of Criminology. <i>(Kini nga pagtuon makapahimo kanimo paghatag og katin-awan o pagpasabot kabahin sa <u>kasatisfaksyon sa mga drayber sa pampublikong sakyanan, panan-aw sa kaepektibo, ug kaluwasan may kalabotan sa bag-ong traffic lights sa Ozamiz City</u>. Ang imong mga tubag hatagan og dakong bili nga giisip nga importante sa linya sa Criminology.)</i>
Reimbursements (<i>Hulip nga bayad</i>)	There will be no monetary expenses or costs on your part as a respondent, nor any monetary compensation for your participation in this study. However, personal protective equipment (PPE) like face masks, alcohol and face shields may be provided during the gathering of the research data. <i>(Wala kay magasto sa imong pag-apil niini nga pagtuon ug dili usab ka bayaran ug kwarta sa imong pag-apil niini nga pagtuon. Apan adunay nga personal protective equipment (PPE) sama sa face masks, alcohol ug face shields nga pwede nga mahatag sa panahon sa pagkuha sa mga datos)</i>
Confidentiality of Data	Only the researcher will have access to the information and responses of the participants. The personal identifying information of the respondents will only be used for research analysis and will be treated

<i>(Pag-amping sa Datos)</i>	with the utmost confidentiality. During the study, all data will be kept in a locked, secure filing cabinet, of which will be discarded 6 months after the publication of the results. <i>(Ang nagtuon lamang ang makakita sa mga impormasyon ug tubag sa respondents. Ang mga datos nga makuha i-analisa ug hatagan og tumang pag-amping aron dili ibutyag. Sa panahon sa pagtuon, ipahimutang sa usa ka selyadong filing cabinet ang tanang datos nga pagagub-on human sa 6 kabulan gikan sa pag-publish sa resulta.)</i>
Sharing of Findings <i>(Pagpaambit sa Nakaplagan)</i>	The results of this study will be presented during the thesis/dissertation final defense of the researcher. Also, the research findings may be shared through publications and conferences with the assurance that the identities of the respondents will remain confidential. A printed copy of the completed study will be provided to the respondents. <i>(Ang mga resulta niini nga pagtuon ipresenta sa panahon sa final defense sa thesis/ dissertation sa nagtuon. Ang mga nakaplagan sa pagtuon posible nga ipaambit pinaagi sa mga publications ug conferences nga adunay kapanigurohan nga dili mabutyag ang pagkatawo sa mga partisipante. Pagahatagan og isa ka giimprinta nga kopya sa kumpleto nga pagtuon ang mga respondents.)</i>
Rights to Refuse or Withdraw <i>(Katungod sa Pagpalibabang o Pag-undang)</i>	You are free to withdraw or terminate participation at any stage of the study, without the need to give any reason. You will not be penalized in case of termination of participation. <i>(Gawasnon ka nga moatras or moundang sa pag-apil sa bisan asa nga punto sa pagtuon nga dili na magkinahanglan pa ug rason. Dili ka ipamulta sa pag-atras o pag-undang.)</i>
Who to Contact <i>(Kinsa ang Kontakon)</i>	Should there be any queries as a parent, you can contact the researcher through the following details: <i>(Kung adunay mga pangutana, mamhimo nga mokontak pinaagi aning mga detalye:)</i> Name of the Researcher (Ngalan sa Nagtuon): _____ Cellphone Number/s: _____ e-mail ad: _____ STATEMENT BY THE RESEARCHER (PAGPADAYAG SA NAGTUON) I will read the Information sheet to the potential respondent. With the best of my ability, I make sure that the respondent will understand the interview questions and that possible follow-up interviews may be undertaken.

	<i>(Akong pagabasahon ang mga nasulat niining Information Sheet ngadto sa potensyal nga respondent. Kutob sa akong mahimo siguroon nako nga masabtan sa respondent ang mga pangutana sa interview ug ang possible nga follow-up nga interviews.)</i> I can assure that the respondent will be given an opportunity to ask questions about the study, and all the questions raised will be answered fully. I can likewise assure that the respondent will not be coerced into giving consent that must be free and voluntary. <i>(Gisiguro ko nga ang respondent mahatagan og panahon sa pagpangutana kabahin niining pagtuon og ang tanang pangutana nga iyang gihatag matubag sa hingpit. Siguroon ko usab ang maong respondent dili mapugos sa paghatag sa pagtugot nga kinahanglan nga gawasnon og boluntaryo.)</i> A copy of this Informed Consent Form will be provided to the respondent. <i>(Ang kopya sa niining Informed Consent Form ihatag ngadto sa respondent.)</i> Print Name of Researcher (Ngalan sa Nagtuon): _____
--	--

PART II. CERTIFICATE OF CONSENT
This research entitled “<u>Public Utility Vehicle Drivers’ Perceptions Of New Traffic Lights: Satisfaction, Effectiveness, And Safety In Ozamiz City</u>” by _____ with the aim of gathering information and data pertaining to <u>public utility vehicle driver’ s satisfaction, perceived effectiveness, and safety regarding new traffic lights in Ozamiz City</u>, has been presented and explained to me clearly. Since the study involves <u>PUV Drivers</u>, I am chosen as one of the participants. <i>(Kini nga pagtuon gititulohan, “Public Utility Vehicle Drivers’ Perceptions Of New Traffic Lights: Satisfaction, Effectiveness, And Safety In Ozamiz City ” ni _____, nga adunay tumong sa pagkuha og impormasyon ug datos kabahin sa <u>kasatisfaksyon sa mga drayber sa pampublikong sakyanan, panan-aw sa kaepektibo, ug kaluwasan may kalabotan sa bag-ong traffic lights sa Ozamiz City</u>. gipresenta ug gipasabot og klaro kanako. Tungod kay ang pagtuon kay kabahin sa <u>PUV Drivers</u> ako napilian isip usa sa mga partisipante.</i> I have read the foregoing Informed Consent Form, or it has been read to me. I had the opportunity to ask questions, which were subsequently answered fully. I consent voluntarily to be a participant of this study.

(Akong nabasa ang nauna nga Informed Consent Form, o gibasa kini kanako. Natagaan ako og higayon nga makapangutana nga natubag sa hingpit. Ako mosugot nga boluntaryo nga mahimong participant sa niining pagtuon.)

Print Name of Participant (Ngalan sa Partisipante): _____

Signature of Participant (Pirma sa Partisipante): _____

Date:

[MM/DD/YYYY] _____

If Illiterate (Kung dili makasulat ug makabasa)

If the respondent is illiterate, a witness who is literate will sign. The respondent will choose him/ her and who is without connection with the researcher or the research group to attest this undertaking. The respondent will affix his thumb print.

[Kung ang respondent kay dili makabasa o makasulat, mopirma ang usa ka makabasa ug makasulat nga testigo. Ang respondent ang mopili kaniya nga walay koneksyon sa nagtuon o sa iyang grupo para mopamatuod sa gimbuhaton. Ang respondent mobutang sa iyang tamla (thumb print)].

Name and Signature of the Witness
(Ngalan ug Firma sa Testigo)

Thumb mark

APPENDIX G

PARENT'S CONSENT



MISAMIS UNIVERSITY
Ozamiz City
 Department of Student Affairs & Services

MSJ-DSAS-006-023 June 2023

PARENT'S CONSENT

Sponsoring Group/Organization _____

I am allowing my son/daughter/ward, JOANAVIC P. ALDUHESA, to join the RESEARCH DATA GATHERING (activity) to be held on _____ at OZAMIZ CITY under the supervision of DR. MARKDY I. ORONG (Adviser/Faculty).

I understand that Misamis University exercises the necessary safety precautions in this activity.

In consideration of the benefits to be derived from the above activity, I expressly waive any and all claims against the administration or any member of the faculty and staff of the Misamis University on account of any unforeseen accident or injury that my son/daughter/ward might incur in connection with the aforementioned activity.

JOANAVIC P. ALDUHESA
 Signature over printed name of
 Parent/Guardian

JOANAVIC P. ALDUHESA
 Signature over printed name of
 Student

JAN 14 2026
 Date

JAN 14 2026
 Date

Important: This form shall be submitted to the DSAS Office at least two (2) days before the conduct of the activity.

SUBSCRIBED AND SWORN to before me, this JAN 14 2026 day of JAN 14 2026 at CITY OF OZAMIZ, Philippines, that the herein affiant personally came and appeared with his/her Valid ID Card, as evidence of his/her personal identity.

Doc. No. 39
 Page No. 105
 Book No. 11
 Series of 20 20

ATTY. RABINDRANATH S. POLITO
Notarial Commission No. 3225-02
 Notary Public for Ozamiz City and Cebu
 0945 33 00000 2024
 Roll of Attorneys No. 19975, TIN 909 222 224
 BPO No. 000 000 000 000 000 000, Ozamiz City
 PTO No. 000 000 000 000 000 000, Ozamiz City
 BACD Compliance No. 000 000 000 000 000 000
 2nd Floor, 1st Bldg., P.O. National Highway
 Brgy. Carabon, Ozamiz City
 0945 33 000 000 000 000 000
 atty.rabindranath.polito@gmail.com

Notary Public

Until _____
 PTR No. _____
 IDP No. _____
 TIN No. _____
 Roll No. _____

(For DSAS Personnel only)

Attested by:

NALPA N. CAPIO, LPT, MAEd, JD
 Director, Department of Student Affairs & Services

Date: _____

APPENDIX H

DOCUMENTATIONS



Reseracher gathering data at Agora Ozamiz, Terminal.



A PUV Driver answering the questionnaire given by the researchers.



A PUV driver completing the questionnaire prepared by the researchers.



A public utility vehicle driver participating in the survey conducted by the researchers.

APPENDIX I

CERTIFICATE OF PUBLICATION



Mediterranean Journal of Basic and Applied Sciences

| Website: www.mjbas.com | Quarterly International Journal | Email: mjbaseditor@gmail.com |
| ISSN: 2581-5059 | Impact Factor: 5.971 | Ref. No.: MJBAS/2025/79392|

Certificate of Publication

This is to certify that

Joanavic P. Alduhesa

Has published an article entitled

**Public Utility Vehicle Drivers' Perceptions of New Traffic Lights: Satisfaction,
Effectiveness, and Safety in Ozamiz City**

In

Volume 9, Issue 4, October-December 2025

Mediterranean Journal of Basic and Applied Sciences





Mediterranean Journal of Basic and Applied Sciences

| Website: www.mjbas.com | Quarterly International Journal | Email: mjbaseditor@gmail.com |
| ISSN: 2581-5059 | Impact Factor: 5.971 | Ref. No.: MJBAS/2025/79392|

Certificate of Publication

This is to certify that

Joshua C. Ponce

Has published an article entitled

**Public Utility Vehicle Drivers' Perceptions of New Traffic Lights: Satisfaction,
Effectiveness, and Safety in Ozamiz City**

In

Volume 9, Issue 4, October-December 2025

Mediterranean Journal of Basic and Applied Sciences



Certificate of Publication

This is to certify that

Ara Mena M. Caramba

Has published an article entitled

**Public Utility Vehicle Drivers' Perceptions of New Traffic Lights: Satisfaction,
Effectiveness, and Safety in Ozamiz City**

In

Volume 9, Issue 4, October-December 2025

Mediterranean Journal of Basic and Applied Sciences



Certificate of Publication

This is to certify that

Russel Jonn M. Palang

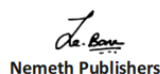
Has published an article entitled

**Public Utility Vehicle Drivers' Perceptions of New Traffic Lights: Satisfaction,
Effectiveness, and Safety in Ozamiz City**

In

Volume 9, Issue 4, October-December 2025

Mediterranean Journal of Basic and Applied Sciences



APPENDIX J

TURNITIN RESULTS

ALDUHESA, JOANAVIC P..docx

 Misamis University

Document Details

Submission ID
trn:oid::28447:135283288

Submission Date
Apr 15, 2026, 4:13 PM GMT+8

Download Date
Apr 15, 2026, 4:18 PM GMT+8

File Name
ALDUHESA, JOANAVIC P..docx

File Size
125.6 KB

61 Pages

15,123 Words

93,561 Characters

 Page 1 of 71 - Cover Page

Submission ID trn:oid::28447:135283288

 Page 2 of 71 - Integrity Overview

Submission ID trn:oid::28447:135283288

15% Overall Similarity

The combined total of all matches, including overlapping sources, for each database.

Filtered from the Report

- Bibliography

Exclusions

- 1 Excluded Source

Match Groups

-  **102 Not Cited or Quoted 10%**
Matches with neither in-text citation nor quotation marks
-  **47 Missing Quotations 5%**
Matches that are still very similar to source material
-  **2 Missing Citation 0%**
Matches that have quotation marks, but no in-text citation
-  **0 Cited and Quoted 0%**
Matches with in-text citation present, but no quotation marks

Top Sources

- 9%  Internet sources
- 3%  Publications
- 14%  Submitted works (Student Papers)

Integrity Flags

0 Integrity Flags for Review

No suspicious text manipulations found.

Our system's algorithms look deeply at a document for any inconsistencies that would set it apart from a normal submission. If we notice something strange, we flag it for you to review.

A Flag is not necessarily an indicator of a problem. However, we'd recommend you focus your attention there for further review.

CURRICULUM VITAE

PERSONAL BACKGROUND

Name : **JOANAVIC P. ALDUHESA**

Date of Birth : March 13, 2004

Parents : Jose L. Alduhesa & Leovic P. Alduhesa

Residence : P-5 Baybay San Roque, Ozamiz City

Contact Number : 09197128005

Email Add : joanavicalduhesa@gmail.com



EDUCATIONAL BACKGROUND

College : Bachelor of Science in Criminology
Misamis University
Ozamiz City
June 2026

Senior High School : Ozamiz City National High School
Mayor Fernando Bernad Ave, Ozamiz City, Mis Occ
June 2022

Junior High School : Ozamiz City National High School
Mayor Fernando Bernad Ave, Ozamiz City, Mis Occ
March 2020

Elementary: Ozamiz City Central School
Ostia Ave., Tinago, Ozamiz City, Mis Occ
March 2016

SEMINARS/TRAININGS ATTENDED

Reserved Officers Training Course
Misamis University, Ozamiz City
2022-2023

Seminar-Workshop in Dactyloscopy
Misamis University, Ozamiz City
November 18, 2023

United Nations Sustainable Development Goals
Misamis University, Ozamiz City
November 13, 2025

Water Search and Rescue Training
Misamis University, Ozamiz City
December 12-16, 2025

Effective Communication in Action: Skills and Strategies
Misamis University, Ozamiz City
February 20, 2026

Seminar on Police Report Writing
Misamis University, Ozamiz City
February 27, 2026

CURRICULUM VITAE

PERSONAL BACKGROUND

Name : ARA MENA M. CARAMBA

Date of Birth : October 30, 2003

Parents : Olegario Tiburcio C. Caramba & Vilma M. Caramba

Residence : Casilak San Agustin, Tudela, Misamis Occidental

Contact Number : 09709010326

Email Add : aramena.caramba18@gmail.com



EDUCATIONAL BACKGROUND

College : Bachelor of Science in Criminology
Misamis University
Ozamiz City
June 2026

Senior High School : Clarin National High School
Poblacion 4, Clarin, Misamis Occidental
June 2022

Junior High School : Clarin National High School
Poblacion 4, Clarin, Misamis Occidental
March 2020

Elementary : Casilak San Agustin Elementary School
Casilak San Agustin, Tudela, Misamis Occidental
March 2016

SEMINARS/TRAININGS ATTENDED

Reserved Officers Training Course
Misamis University, Ozamiz City
2022-2023

Seminar-Workshop in Dactyloscopy
Misamis University, Ozamiz City
November 18, 2023
United Nations Sustainable Development Goals

Misamis University, Ozamiz City
November 13, 2025

Water Search and Rescue Training
Misamis University, Ozamiz City
December 12-16, 2025

Effective Communication in Action: Skills and Strategies
Misamis University, Ozamiz City
February 20, 2026

Seminar on Police Report Writing
Misamis University, Ozamiz City
February 27, 2026

CURRICULUM VITAE

PERSONAL BACKGROUND

Name : JOSHUA C. PONCE
Date of Birth : January 13, 2004
Parents : Noel L. Ponce & Lady Myres C. Ponce
Residence : Tinago, Ozamiz City, Misamis Occidental
Contact Number : 09381373622
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EDUCATIONAL BACKGROUND

College : Bachelor of Science in Criminology
Misamis University
Ozamiz City
June 2026
Senior High School : Misamis University
H.T. Feliciano St, Ozamiz, Mis Occ
June 2022
Junior High School : Ozamiz City National High School
Mayor Fernando Bernad Ave, Ozamiz City, Mis. Occ
March 2020
Elementary : Ozamiz City Central School
Ostia Ave., Tinago, Ozamiz City, Mis Occ
March 2016

SEMINARS/TRAININGS ATTENDED

Reserved Officers Training Course
Misamis University, Ozamiz City
2022-2023

Seminar-Workshop in Dactyloscopy
Misamis University, Ozamiz City
November 18, 2023

United Nations Sustainable Development Goals
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November 13, 2025

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December 12-16, 2025

Effective Communication in Action: Skills and Strategies
Misamis University, Ozamiz City
February 20, 2026

Seminar on Police Report Writing
Misamis University, Ozamiz City
February 27, 2026

CURRICULUM VITAE



PERSONAL BACKGROUND

Name : RUSSEL JONN M. PALANG
Date of Birth : September 19, 2001
Parents : Calixto A. Palang III & Teresa M. Palang
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EDUCATIONAL BACKGROUND

College : Bachelor of Science in Criminology
Misamis University
Ozamiz City
June 2026
Senior High School : La Salle University Night High School
Ozamiz City, Misamis Occidental
June 2022
Junior High School : Ozamiz City National High School
Ozamiz City, Misamis Occidental
March 2020
Elementary : Ozamiz City Central School
Ostia Ave., Tinago, Ozamiz City, Mis Occ
March 2016

SEMINARS/TRAININGS ATTENDED

Reserved Officers Training Course
Misamis University, Ozamiz City
2022-2023

Seminar-Workshop in Dactyloscopy
Misamis University, Ozamiz City
November 18, 2023

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Misamis University, Ozamiz City
November 13, 2025

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Misamis University, Ozamiz City
December 12-16, 2025

Effective Communication in Action: Skills and Strategies
Misamis University, Ozamiz City
February 20, 2026

Seminar on Police Report Writing
Misamis University, Ozamiz City
February 27, 2026