BEHAVIOUR CHANGE COMMUNICATION INTERVENTIONS AND

ROAD SAFETY AMONGST *BODA-BODA* MOTORCYCLISTS IN KENYAN CITIES

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DECLARATION

Declaration by the candidate

This thesis is my original work and has not been presented for award of a degree in any other university.

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Declaration by the supervisors

We confirm that the work reported in this thesis was carried out by the candidate under our supervision and has been submitted with our approval as the university supervisors.

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DEDICATION

I dedicate this work to my family, friends and colleagues for walking this journey with me, holding my hand and urging me on.

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I thank God almighty for this far, all glory and honour belong to you. I acknowledge my supervisors Dr. Caroline Biwott and Dr. Alice Kamau for their unwavering guidance and support during my study. I acknowledge the teaching staff at the school of business, and the management staff at Karatina University for their insight, guidance and encouragement during this journey. May God bless you all.

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ABBREVIATIONS AND ACRONYMNS

BCC **–** Behaviour Change Communication

IEC – Information, Education and Communication

KI – Key Informant

KII – Key Informant Interview

WHO – World Health organization

FAO – Food and Agricultural Organization

NTSA – National Transport and Safety Authority

KNBS – Kenya national Bureau of Statistics

BAK – *Boda-boda* Association of Kenya

RSAP - Road Safety Action Plan in Kenya

UG Theory – Uses and gratification theory

ABSTRACT

Behavior change communication (BCC) interventions have been used globally to address challenges in several sectors. The successful use of interventions has been reported in the transport sector, education, health agricultural sectors amongst others. These interventions have also targeted road safety challenges among road users. Road safety has become a major concern, with over 1.3 million people losing their lives worldwide annually and over 4,000 in Kenya. Human behavior on the road causes 90 percent of deaths and injuries among road users, with Boda-boda motorcyclists contributing 58 percent of all road accidents in Kenya. Against this backdrop, this study sought to establish the influence of behavior change communication interventions on road safety among Boda-boda motorcyclists in Kenyan cities. The specific objectives of this study were to establish the influence of media campaigns on road safety among Boda-boda motorcyclists in Kenyan cities; establish the influence of participatory communication on road safety; to determine the influence of traffic visual communication on road safety; to determine the influence of information, education, and communication on road safety among Boda-boda motorcyclists. In addition, this study sought to determine the moderating influence of attitude on the relationship between behavior change communication and road safety among Boda-boda motorcyclists in Kenyan cities. The study was anchored on the Social Cognitive Theory, Safety Culture Theory, and Uses and Gratification Theory. The study used a pragmatic philosophical paradigm with a convergent parallel design of mixed-method research. The Yamane (1967) formula was employed to determine the target population of 399 *Boda-boda* motorcyclists from four cities in Kenya—Nairobi, Mombasa, Kisumu, and Nakuru—leading to a final sample of 387 respondents. Stratified sampling and simple random sampling were used to draw the sample. Interviews were conducted with nine key informants, purposively sampled from each city, drawn from the NTSA office, the Boda-boda association, and senior traffic police officers. A pilot study was carried out in Machakos to test the data collection instruments. Quantitative data was collected from the motorcyclists by use of semi-structured questionnaires, while qualitative data was gathered through key informant interviews. Descriptive and inferential statistics was used to analyze the quantitative data, while qualitative data was analyzed thematically. Findings were presented using narratives and graphics. The findings indicate that there was a positive relationship between behavior change communication and road safety. The results for each objective were as follows: mass media showed $R^2 = 0.504$, p-value = $0.000 < 0.05$; participatory communication, $R^2 = 0.609$, p-value = $0.000 < 0.05$; information, education, and communication, $R^2 = 0.586$, p-value = $0.000 < 0.05$; and traffic visual communication, $R^2 = 0.608$, p-value = $0.000 < 0.05$. Attitude as a moderator demonstrated $R^2 = 0.801$, p-value = $0.000 < 0.05$, indicating a significant impact on predicting road safety and showing a potential synergistic effect between the two factors. In conclusion, behavior change communication interventions aimed at *Boda-boda* motorcyclists significantly contribute to road safety. The study also contributes to academic discourse by highlighting the need for integrating BCC theories into practical applications in road safety initiatives. The study recommends the need for innovative multifaceted communication interventions to enhance safety and promote responsible behavior among Boda-boda motorcyclists in Kenyan cities. The findings will aid road safety stakeholders in crafting BCC interventions that elicit positive behavior among motorcyclists.

CHAPTER ONE

INTRODUCTION

1.0 Overview

The chapter lays a foundation for the entire research highlighting the important role of behaviour change communication (BCC) in addressing challenges in the field of health communication. Various BCC interventions have been used successfully to address challenges; however, this is yet to be achieved in road safety. The study background explains the relationship between BCC and road safety amongst *Boda-boda* motorcyclists, while the statement of the problem unpacks the disconnect between the behaviour change communication interventions and road safety outcome amongst *Boda-boda* motorcyclists in Kenyan cities. The objectives of the study and research questions were highlighting the target population of *Boda-boda* motorcyclists who are involved in many road accidents across the cities in Kenya. The chapter also discusses the geographical scope as well as the significance of the study and the limitations found in this study. With this foundation, an overarching flow of the review of literature and the methodology used in the study was realized.

1.1 Background of the study

1.1.1 Road safety

The World Health Organization (WHO, 2022) places road safety as a key area of interest in the transport of goods and people. Over the years however more and more fatalities occur on the roads, with 3,500 people dying daily around the world. Africa has the highest death

rate on the roads in the world with 24.1 people in every 100,000 of the population. Road traffic accidents therefore affect the quality of life amongst people.

It's against this backdrop that the World Health Organization launched the decade of action to address this phenomenon. The increase of more people and vehicles in urban areas, coupled with the poor status of roads increases the number of fatalities and injury around the world. Since most road accidents are caused by the human factor through behaviour and attitude of the road users, this is a ripe area for study.

1.1.2 Behaviour change communication

Behaviour change communication (BCC) has been applied successfully around the world (Singh et al., 2020). BCC interventions focus on eliciting positive change that empowers targeted individuals and communities in order for them to live quality lives (Nwangu et al., 2020). The interventions used include participatory, educational and information communication. Ngigi and Busolo (2018) posit that the wide range of communication interventions by the government and its partners are key to address challenges in the health sector.

Behaviour change communication is a strategy used in communication to deliver multimedia messages with an intention of modifying behaviour (Kalu, 2023). The BCC strategy has been successfully used worldwide to address various concerns in the society in the areas of health, education, agriculture amongst others. BCC occupies a key position in health communication and evidence-based BCC initiatives successfully change behaviour by use of communication (Adewuyi and Adeyemi, 2016). BCC uses a wide range of tools to effect change and they including media campaigns, Information Education

and Communication (IEC), participatory communication, and visual communication all with an aim of changing behaviour, skills and attitude (Osire, 2018).

In East Africa the transport ministers agreed to implement the African Road safety charter adopted in 2016 with an aim of reducing road fatalities (WHO, 2018). In terms of road fatalities, Kenya has an annual average of 27.8 percent; Uganda has a high of 29 percent while Tanzania has 29.7 percent while Burundi has an all-time high of 34.7 percent in every 100,000 persons in the population (WHO, 2018). This clearly indicates the serious prevalence of road accidents and road safety concerns in East Africa. Indeed, the reviewed studies on the behaviour of road users is an area of interest not only in the road usage, but also the great need for behaviour change communication interventions, as a critical measure to address road safety concerns particularly among *Boda-boda* motorcyclists.

In Kenya Ndungu (2022) undertook a study on BCC strategies and cancer screening amongst men. The study noted that mass media was not adequately used for information dissemination, and messages were poorly framed and ineffective. Culture was also highlighted as a great influence on men's attitude and behaviour. This study recommended the use of BCC strategies in the mitigation of health problems in the society (Ndungu, 2022). BCC interventions have been used to moderate success in many instances around the world and thus there is need to analyse BCC interventions that address the safety challenges found on Kenyan roads amongst road users and specifically, the *Boda-boda* motorcycle riders in the cities.

1.1.3 Behaviour change communication interventions

Several behaviour change interventions (BCC) have been formulated and implemented using various communication tools in order to address public issues. Araújo-Soares et al. (2019) posits that a good BCC intervention should have impact and one should be able to evaluate it.

Global perspective

Studies on BCC interventions have been conducted worldwide. In Indonesia for instance, Rochimah *e*t al. (2021) studied the use of behaviour change communication interventions to assist in fighting cancers that only affect women. The behaviour change communication interventions explored in the study included promoting early screening, counselling and offering assistance to women using communal and family support structures. The findings showed that behaviour change communication was effective in encouraging Indonesian women to seek early screening of cancer especially when there was high family support on treatment. This BCC intervention elicited positive health outcomes.

Awasthi and Awasthi (2019) also undertook a BCC study in Nepal on the importance of behaviour change communication and social marketing in the prevention of HIV. The use of mass media campaigns, social marketing, peer communication, and health teaching in creating awareness and positive change was highlighted amongst large populations in a limited time frame. The researchers posited that BCC interventions played an important part in successful HIV campaigns by decreasing HIV prevalence rates and improving the

quality of life amongst the population. In addition, the researchers proposed that a multiple stakeholder approach would elicit more success and sustainability.

Furthermore, a 2020 community-based road safety initiative in Australia applied BCC strategies, including regular stakeholder engagement and community consultations, to address road safety issues. The study involved key stakeholders in creating a road safety campaign that humanized road users, particularly cyclists, and used visual and emotional cues to influence road behavior (Journal of Road Safety, 2020). This approach underscored the importance of community involvement in designing behavior change interventions, ensuring that they reflect local contexts and address specific community concerns.

Nagi et al (2020) conducted a study on the different types of behaviour change interventions used by communication health workers and the study findings revealed that BCC strategies have emerged as successful strategies to promote health behaviour and reduce unhealthy behaviour. This study demonstrates the confidence found in the use of BCC strategies to address public health concerns.

In Mozambique the Food and Agricultural Organization (FAO) implemented a five-year (2013-2019) BCC campaign to address malnutrition amongst children in seven districts. The program used education, training, mentorship and community engagement towards mothers as the behavioural change interventions. The program posted positive behaviour change in dietary engagement because mothers were now able to prepare nutritious porridge with locally available foodstuffs for their children and household members. The FAO training thus brought an increase in knowledge and in turn a change of behaviour

(FAO, 2019). Mothers were taught how to develop and maintain gardens, in an effort to access high quality food and live healthy lives (Cooper, 2019).

A behaviour change communication campaign was launched in 2010 to fight malaria in Tanzania dubbed "*Zinduka*! Malaria *haikubaliki*" (Wake up! Malaria is not accepted). It had renowned public figures such as the former president Jakaya Kikwete and then first lady participated together with other goodwill ambassadors and celebrities. Music and dance, education, radio and TV programmes were used to pass messages and similarly training was done in the *Zinduka* youth clubs on how to fight malaria. The BCC interventions were highly successful a year down the line with over 94 percent of the children sleeping under mosquito nets and 100 percent visiting health facilities when they exhibited malaria symptoms. This campaign elicited behavioural change amongst the Tanzanians (Kahenga et al. 2020).

In Uganda malaria prevention by use of long-lasting insecticidal mosquito nets elicited a study by Helinski et al. (2015), to find out the impact of BCC programmes on net durability. This study embraced community engagement, training and radio programmes to disseminate messages. The study concluded that respondents had an increase in knowledge on how to take care of mosquito nets.

Local perspective

In Kenya, several Behavior Change Communication (BCC) interventions have been successfully applied in various sectors. For example, Machira (2017) explored the effectiveness of BCC in reducing HIV/AIDS infection rates in the workplace. The study found that BCC messages were particularly effective in raising awareness about HIV/AIDS

and promoting safer practices among employees. This underscores the power of BCC in health campaigns to foster positive behavioral change through targeted communication strategies.

Beyond health, BCC has also been applied in other areas, such as environmental conservation. Kinyua et al. (2020) studied BCC interventions in promoting environmental sustainability, particularly focusing on plastic waste management in Nairobi. The research showed that community-based campaigns, including mass media and educational workshops, led to an increased awareness of proper waste disposal and recycling practices among residents. These interventions were instrumental in improving local waste management behaviors.

Additionally, Kimani (2019) investigated the role of BCC in family planning initiatives in rural Kenyan communities. The study emphasized the importance of using culturally relevant communication approaches, such as local language radio shows and community meetings, to inform residents about family planning options. As a result, there was a notable increase in the uptake of modern contraceptives in areas where these interventions were implemented, demonstrating the effectiveness of tailored BCC strategies in health promotion.

Another example is a study by Otieno (2021) on BCC interventions in promoting road safety awareness among Kenyan drivers. The research highlighted the use of mass media campaigns and peer education to reduce road accidents, particularly in urban areas like Nairobi and Mombasa. The study showed that when drivers are engaged with consistent

and relatable safety messages, it leads to improved road behaviors, such as adherence to traffic rules and reduced speeding.

In the context of road safety, BCC interventions have proved to be effective. Odongo (2024) explored health communication campaigns and their impact on public health behavior through desktop research. The study revealed that the interventions played a crucial role in shaping behaviour and improving health outcomes through strategic communication. This study highlights the importance of tailoring messages that resonate emotionally with the target audience to change risky driving behaviors.

1.1.4 Situating Behaviour Change Communication Interventions in Road Safety

In Kenya and around the world, road users have been found to present negative behaviours like jaywalking, not wearing helmets, tailgating and even speeding (Bonnet et al, 2018; Jima, 2019; Esse, 2021). These behaviours call for address through BCC interventions. Fisa (2022) posits that behaviour-based interventions are very effective in reducing road traffic accidents. Public and private stakeholders in Kenya have mitigated road safety concerns by implementing interventions. These include information education and communication, media initiatives, adherence to traffic law enforcement, traffic visual communication, attitude and participatory communication.

Several researchers have identified motorists' attitude and behaviour as a contributing factor of 90 to 95 percent of road traffic accidents around the world (Elvik, 2016; Muguro et al., 2020). Environmental factors (like status of road, weather) and status of the vehicle contribute to the remaining 5 percentage. By recognizing the significance of attitudes and

implementing targeted interventions, policy-makers and road safety advocates can promote positive attitudes that will foster a culture of responsible road usage.

1.1.5 *Boda-boda* motorcyclists and road safety in Kenya.

Boda-boda motorcycle riding in Kenya has grown tremendously over the years, according to the National Transport Safety Authority (NTSA) of Kenya, by 2018, there were an estimated 1.4 million *Boda-bodas* operating in Kenya (NTSA, 2018, cited in National Crime Research Centre (NCRC), 2018, p x). Currently there are 3.962 million registered riders (BAK, 2023), which reveals a tremendous increase over the years. This mode of transport has proved to be an important player in the transport business and cannot be ignored (NCRC, 2018).

There are several roles that *Boda-boda* motorcyclists play, they act as an alternative public transport in Kenya ferrying people and goods across the country as well as complementing the convectional buses and *matatus*. Luvinga and Kilasara (2020) highlight that *Boda-boda* businesses are financially beneficial to the government as well as the motorcyclists and consequently the government needs to support and regulate the sector. In another study, Muluya et al. (2021) amplified the important role of trained *Boda-boda* motorcycle ambulances that are used to transport pregnant mothers to health facilities for delivery especially in the rural areas. This has impacted greatly on the community based maternal referrals by making transporting of such mothers better and available.

Mitumba et al. (2020) underscored the pivotal role played by the motorcyclists in transporting agricultural produce from farms to designated locations in Uganda. This has bridged the transport gap and reduced post-harvest losses amongst the farmers of

Busembatia Eastern Uganda. In addition to the above advantages, many people are indirectly employed in the *Boda-boda* sector from where they earn a living. *Boda-boda* facilitate the transportation of people and goods even where the road networks are very poor which adds value to communities' lives (Nyachieo, 2020). The advantages of the *Boda-boda* sector notwithstanding, they contribute enormously to the death and injury amongst road users.

1.1.5 Road safety attitude

Attitude is a very important component in human communication, (Irawati 2020) states that it helps people to interact effectively with their environment. Attitude indirectly and directly influences behaviour in all social interactions (Adzen, 2005) quoted in Mohataz (2020). The attitude of motorcyclists towards road safety is an essential factor that directly impacts their own safety, as well as that of other road users. In the context of road safety, attitudes encompass beliefs, knowledge, values, and emotions that shape a road users' perceptions, intentions, and behaviours. Attitude serves as a mental framework through which individuals interpret road situations and determine their actions.

Several challenges can contribute to the development of a negative attitude among motorcyclists regarding road safety. Firstly, some motorcyclists may view road rules as inhibiting their freedom and enjoyment, leading to a disregard for regulations. Additionally, inadequate driver education and licensing requirements, coupled with a lack of enforcement, may contribute to a lax attitude towards road safety. To foster a positive attitude among motorcyclists, a comprehensive approach that combines education, enforcement, infrastructure improvements, and community involvement is necessary.

1.2 Statement of the Problem

Boda-boda motorcycle business in Kenya has become an attractive nationwide engagement especially among the youth. There has been a rise in the purchase of motorcycles, spare parts and fuel by the youth (Nyachieo 2020). This has spurred the purchase of household responsibilities, licences and other engagements. In short, this sector has become very vibrant economically, socially and even culturally. In respect to the spiralling momentous unemployment crisis among the youth, *Boda-boda* incorporation has provided a superficially easy, exciting and socializing career. Ever since the *Boda-boda* trade became customary, youth from across the country have elected to vacate formal education as well as other previously traditional patterns of livelihood to engage in this business which promises instantaneous financial recompense (Mc'Opiyo 2019).

This exponential growth in the sector happens even without prior institutionalized training in proper road attitudes, information, etiquette and other critical considerations among the operators, a trend gravely detrimental to road safety. The National Transport and Safety Authority (NTSA) in its annual reports admits that *Boda-boda* transport, despite its rising uptake, continues to be a major cause of road fatalities surpassing that caused by other forms of transport by a wide margin. Despite several intentional government interventions including strategic, regulatory, and behavioural responses towards road usage designed to structure accidents caused by *Boda-boda* cyclists, accidents remain on an upward trajectory. A notable one is the Road Safety Action Plan in Kenya (RSAP), which aims at reducing fatalities and injury as per the World Health Organization guidelines. Other interventions rolled out on road safety include media campaigns, information education and communication, traffic visual communication and participatory communication.

However, there appears to be little evidence that these existing interventions though laudable, have focused on behavioural predispositions among the riders. The interventions have been instructive in imparting knowledge, which mostly revolves around traffic regulations and signs. It was the view of this study that knowledge in traffic regulations alone cannot be a solution to road mishaps caused by *Boda-boda* motorcyclists. A more comprehensive approach that combines these written regulations with an intentional focus on behaviour change required a robust empirical investigation. Having all forms of written traffic regulations and illustrated signs without a corresponding behavioural shift might not be sufficient.

KNBS (2021) established that motorcyclists have increased road accidents in Kenya by 58.4 per cent. *Boda-boda* motorcyclists cause death and injury on Kenyan roads through their behaviour which contributes to 90 percent of accidents by flouting traffic rules, carrying excess pillion, over-speeding and majority do not wear helmets (Nyachieo, 2020). An NTSA report (2021) observed that failure to wear reflective jackets to boost visibility, speeding, drunkenness and distracted riding all contributed to an increase of 17.5 percent of road accidents. It is revealing that benefits of behaviour change communication interventions amongst road users including an increase in knowledge, change in attitude and improvement in skill acquisition still appears to be an area overlooked by road transport policy-makers as well as the available literature on road safety among operators of different forms of road transport. It was on this basis that this study purposed to fill this gap by establishing the influence of behaviour change communication interventions and road safety amongst *Boda-boda* motorcyclists in Kenyan cities.

1.3 Objectives

This study was guided by the following objectives.

1.3.1 Main objective

The main objective of this study was to establish the influence of behaviour change communication interventions and road safety amongst *Boda-boda* motorcyclists in Kenyan cities.

1.3.2 Specific Objectives

The specific objectives of this study were to:

i. Establish the influence of media campaign on road safety amongst *Boda-boda* motorcyclists in Kenyan cities.

ii. Establish the effect of participatory communication on road safety amongst *Boda-boda* motorcyclists in Kenyan cities.

iii. Determine the influence of traffic visual communication on road safety amongst *Boda -boda* motorcyclist*s* in Kenyan cities.

iv. Determine the influence of information, education and communication on road safety amongst *Boda-boda* motorcyclists in Kenyan cities.

v. Determine the moderating influence of attitude on the relationship between behaviour change communication interventions and road safety amongst *Boda-boda* motorcyclists in Kenyan cities.

1.4 Research Questions

The study was guided by the following research questions:

i. How do media campaigns influence road safety amongst *Boda-boda* motorcyclists in Kenyan cities?
ii. What is the influence of participatory communication on road safety amongst *Boda-boda* motorcyclists in Kenyan cities?
iii. How does traffic visual communication influence road safety amongst *Boda-boda* motorcyclists in Kenyan cities?
iv. What is the influence of information, education and communication on road safety amongst *Boda-boda* motorcyclists in Kenyan cities?
v. What is the moderating influence of attitude on the relationship between behaviour change communication interventions and road safety amongst *Boda-boda* motorcyclists in Kenyan cities?

1.5 Significance of the study

This study will benefit stakeholders across multiple platforms. *Boda-boda* motorcyclists will benefit by acquiring positive behaviour through the BCC interventions. This will ensure that there is safe road usage with reduced fatalities and injury associated with *Boda-boda* motorcyclists.

The government through the National Transport and Safety Authority (NTSA) and other road safety partners may have to embrace behaviour change communication as an approach to craft evidence-based road safety interventions. The findings will inform the government, through NTSA and the ministry of transport, on improvements that may help to enhance road safety for motorcyclists and other road users. The findings will also inform the formulation and implementation of a road safety policy.

The study is likely to add new knowledge in health communication and road safety which may be used locally and internationally by researchers, academicians, health workers and others who are mandated to oversee and implement road safety interventions.

By applying the findings of this study, there is likely to be less road mortality and injury amongst the motorcyclists and other road users in Kenya. This is according to the decade for action projections of reducing road fatalities worldwide by 2030.

1.6 Scope of the study

Scope refers to the boundaries of a study, content and geographical scope. It defines the specific aspects or outlines of what will be included and excluded. The scope of a research study helps researchers to establish the parameters within which they will conduct their investigation and answer their research questions or objectives.

Geographically the study was conducted in the Republic of Kenya in all the four cities, namely Nairobi, Mombasa, Kisumu, and Nakuru. All these cities have a vibrant public service transport with an ever-expanding *Boda-boda* motorcycle sub-sector. The choice of Nairobi, Kisumu, Mombasa and Nakuru was informed by the fact that these cities have high populations with lots of movement, highest number of *Boda-boda* motorcyclists (BAK, 2022), and they also have the busiest road network and most road traffic accidents in Kenya (NTSA, 2022). Each city had a unique history of *Boda-boda* motorcycle transport and each is in a different geographical location.

The overarching objective was to establish the influence of behaviour change communication interventions and road safety amongst *Boda-boda* motorcyclists in Kenyan

cities. The independent variable of the study was behaviour change communication (BCC) whose indicators studied were media campaigns, participatory communication, traffic visual communication and Information education and communication. The moderating variable of attitude was used to determine the moderating influence on the relationship between behaviour change communication interventions and road safety amongst *Boda-boda* motorcyclists in Kenyan cities. The dependent variable used was road safety, its indicators include accidents, death and injury. This study was limited to *Boda-boda* motorcyclist in Kenyan cities but for further research other vulnerable road users in rural areas of Kenya could be used as the focus of a study.

1.7 Limitations of the study

Limitations in a study are the factors encountered by the researcher that may influence the findings of the study, and which are not within the control of the researcher. During the data collection period, the target population of motorcyclists were usually very busy and on call, having to leave when a customer arrived. This was mitigated by having to patiently wait for the rider to come back and hence finalise on the interview. In addition, some of the *Boda-boda* motorcyclists did not understand English and hence the researcher had to use Kiswahili in order to get the responses. It became important for the researcher to facilitate the translation of questionnaire items into Kiswahili in order to increase comprehension and elicit the desired response amongst the respondents.

Fear to volunteer certain critical information among the *Boda-boda* operators was also another limitation. Information particularly touching on their weakness, or exposing the sector in a negative way for example the case of some motorcyclists lacking a riding

license, or having been involved in a road accident was considered sensitive and the respondents tended to withhold information or share with extreme caution. This sensitivity could trigger the withholding of important information. To mitigate this circumstance, the researcher created awareness among the respondents, by sensitising them on the principle of informed consent and confidentiality in order to allow them to freely share relevant information. Time was another major constraint during data collection amongst the key informants, the police officers for instance had to abruptly leave when duty called, this was mitigated by scheduling interviews during their off-duty hours.

1.8 Operational definition of key terms

For the purposes of this study, the following terms are defined as follows:

Attitudes are the ways in which individuals perceive or react to situations or information. They encompass cognitive, affective, and behavioural components. Cognitive attitudes involve beliefs or thoughts about a particular issue; affective attitudes involve emotional responses, and behavioural attitudes refer to the actions or reactions based on one's perceptions.

Behaviour Change Communication (BCC) is an intervention process that involves working with communities to develop customized messages and approaches, using multiple communication channels to promote positive behaviours, sustain individual and societal behaviour change, and maintain appropriate actions over time. In this study, BCC is applied in the context of promoting road safety among *Boda-boda* motorcyclists.

Behaviour refers to the way individuals conduct themselves, especially in a manner that promotes public good and safety, particularly on public roads. It emphasizes actions taken in public spaces to ensure the well-being of others.

Boda-boda Motorcycle refers to a two-wheeled motorcycle commonly used in Kenya for the transport of goods and passengers. These motorcycles play a crucial role in informal

transport services, connecting people from one point to another, especially in urban and peri-urban areas.

Change is defined as the transformation of human behavior from a negative or harmful state to a positive or improved state. In the context of this study, it relates to adopting safer practices and positive habits on the road.

Communication is understood as the process of delivering messages designed to influence behavior. The goal of such communication is to promote behavior change for the better, often through various channels and methods.

Information, Education, and Communication (IEC) refers to the approach of using educational and informational materials to inform the public and influence behavior change. This includes training programs for motorcyclists on safe driving practices, mentorship initiatives where experienced riders guide others, and publicity materials such as posters, fliers, and handbooks that carry road safety messages.

Intervention refers to a structured set of actions or strategies designed to bring about positive behavioural changes. In the study, interventions relate to efforts aimed at influencing road safety practices among motorcyclists.

Media Campaigns are organized communication efforts using various forms of media to disseminate road safety messages aimed at influencing behavior among motorcyclists. Media campaigns in this study include social media platforms such as Facebook and Twitter, print media like newspapers and brochures, and electronic media, including television and radio, all used to promote road safety.

Participatory Communication refers to the active involvement of individuals and communities in the process of communication, allowing them to take part in decision-making and message creation. It includes interpersonal communication, where people engage in direct conversations, community engagement, which involves the participation of community members in promoting road safety, and public awareness efforts that involve the dissemination of information through various means.

Road Safety involves efforts to prevent road accidents and promote the safe use of roads. It includes reducing the occurrence of accidents, preventing fatalities that result from road incidents, and minimizing injuries sustained in road accidents.

Traffic Visual Communication is the use of visual elements to communicate road safety rules and guidelines. This includes road signs, symbols, and markings that provide guidance to road users; the visible presence of police officers managing traffic; and roadside advertisements that feature safety messages aimed at influencing behavior on the road.

CHAPTER TWO

LITERATURE REVIEW

2.0 Overview

This chapter discusses the theoretical framework, literature review and the conceptual framework of the study. Literature on behaviour change communication interventions and road safety amongst *Boda-boda* motorcyclist in Kenyan cities was reviewed in line with the objectives.

The variables include road safety, media campaigns, IEC, traffic visual communication and participatory communication. A review was also conducted on the influence of attitude as a moderating factor.

Three theories were used to address the spectrum of objectives because one theory would not have been adequate. These theories are the social cognitive theory which addresses the study objectives on participatory communication, Information, education and communication, traffic visual communication and also the objective on the moderating variable of attitude. The safety culture theory addressed the dependent variable of road safety while the uses and gratification theory adequately explained the objective on media campaigns. These theories provided a framework for understanding the study. In addition, a conceptual framework showing the relationship between variables is presented in this chapter.

2.1 Theoretical Review.

Theory provides a framework for guiding the research design through formulating research questions, identifying variables, and designing studies (Devi 2022). It helps researchers define the scope and focus of their investigations, ensuring that the research is structured and systematic. By utilizing existing theories or developing new ones, researchers can establish a clear roadmap for their research endeavours. Theories also aid in conceptualizing phenomena, generating hypotheses, interpreting findings, advancing knowledge, and facilitating communication among researchers. It plays a fundamental role in structuring and organizing research efforts, leading to meaningful and impactful contributions to a particular field of study. This study is anchored on the Social Cognitive Theory, the Safety Culture Theory and the Uses and Gratification Theory.

2.1.1 Social Cognitive Theory

The social cognitive theory (SCT) was developed by a psychologist Albert Bandura in 1986 (Bandura, 2006). This theory occurs at the interpersonal level of communication and addresses the study objectives on participatory communication, IEC, traffic visual communication and also the moderating objective on attitude. The SCT metamorphosed from the social learning theory by Albert Bandura which postulated that an individual learns through observing others in the environment (Bandura, 1997). The SCT theory was an improvement and it continues to postulate that an individual exists within a social environment where attitude, thoughts and behaviour of others around influence the individual immensely. Similarly, the individual influences the social space which comprises of friends, family, colleagues and others. This entire interaction affects the

attitude and behaviour of the individual. People are viewed as products of their environment and behaviour is seen as a result of a continuous interaction between the individual, the environment and social factors which exert influence and change upon each other (Stajkovic and Stajkovic 2019).

In the social cognitive theory, a person's perception of the environment is referred to as a "situation" because the environment can be physical, social, cultural, economic or even political in nature. The principal concept around this theory is known as reciprocal determinism (Devi, 2022). In this concept a person is considered as an agent of change and equally a respondent of change. The use of the role models to reinforce behaviour is said to elicit healthier behaviours. Bandura (2006) continues to explain that, the person is cognitive in nature and there are personal characteristics such as demographics (age, gender, race, education), motivation, personality and cognitive factors like thoughts, attitudes, beliefs, knowledge and skills, all which contribute to an individuals' behavioural outcome.

The emotional arousal or coping ability of an individual influences behaviour because people are not only learning from the environment but are key players and respondents. According to this theory, if an individual has control over their behaviour, they are considered to have self-efficacy. Other constructs found in this theory include, observational learning whereby an individual learns behaviour by observing others in the society (Devi, 2022). Similarly, environmental determinants mean that observing others isn't enough but a behaviour change can only occur if the social and physical environment supports the new behaviour. The construct of self-regulation depends on the individuals' acquisition of profound skills from the environment to manage themselves. Finally, moral

disengagement is the idea that learnt moral standards help individuals to avoid negative behaviour.

Bandura (1997) postulates that STC provides a good foundation for developing intervention strategies which can thereon be evaluated. Indeed, SCT therefore provides a good framework for designing implementing and evaluating programs. In this theory surveys, experiments and quasi-experiment methods of research are common. The triadic causation amongst environment, person and behaviour influences behaviour (Stojkovic and Stajkovic 2019).

The tenets of the Social Cognitive Theory (SCT) are highly relevant to this study, especially in understanding the behavior of *Boda-boda* motorcyclists towards road safety. One of the central elements of SCT is observational learning, which plays a crucial role in influencing behavior within a social environment. In the context of *Boda-boda* riders, observing the actions of their peers, particularly those perceived as successful or experienced, can shape their road safety practices. For instance, riders who witness others following traffic rules and benefitting from safety measures are more likely to adopt similar behaviors. Additionally, the concept of reciprocal determinism—whereby the environment, the person, and behavior continuously influence each other—is evident as *Boda-boda* riders engage with their environment. Their social and physical surroundings, including peer influences, traffic conditions, and enforcement by authorities, contribute to shaping their safety attitudes and behaviors (Bandura, 2006; Devi, 2022).

Self-efficacy, another key construct of SCT, is crucial in promoting road safety behaviors. When *Boda-boda* motorcyclists feel confident in their ability to control their actions, such

as wearing helmets or adhering to speed limits, they are more likely to engage in safe practices. This theory also highlights the role of environmental determinants, which are particularly relevant in this study. Even if a motorcyclist understands the importance of safety measures, behavior change is more likely to occur when the physical and social environment supports these actions. For example, road signs, police presence, and community awareness campaigns can create a conducive environment that encourages safer riding practices. In this way, SCT helps to explain how various factors, including participatory communication, IEC, and traffic visual communication, are instrumental in shaping the road safety behaviors of *Boda-boda* motorcyclists (Stajkovic and Stajkovic, 2019; Bandura, 2006).

The social cognitive theory provides a valuable framework for understanding behavioural patterns as learnt by the individual in the environment. Applying this theory allows for the development of effective participatory, IEC and traffic visual communication interventions that address the underlying psychological and social factors influencing *Boda-boda* motorcyclists' behaviour towards road safety.

2.1.2 Safety Culture Theory

According to Thompson et al. (1996) safety culture is the beliefs, attitudes and values regarding the pursuit of safety in an organization where practices, control and policy enhance safety. This theory addresses the area of road safety which is not adequately addressed by the social cognitive theory and the uses and gratification theory. The safety culture construct purposes to emphasize safety failings in organizations and also to improve occupational safety. This concept was first introduced after the Bhopal disaster in 1984 in

India, where an industrial gas leak was one of the worst accidents in history, it killed over twenty thousand with many more sustaining injuries.

The safety concerns were brought to the fore in order to understand the safety culture of our environment and propose best practices. Benoit et al., (2018) continues the argument that culture though complex carries values, norms, beliefs and practices which greatly influence behaviour and interpretation of others. Hence embracing safe practices can become the norm in the long run.

Hudson (2000) elaborates on the characteristics of safety culture theory which he views as having an informal culture where knowledge is available. The second characteristic is having a reporting culture where people are willing to report errors. Another key characteristic is having a just culture where the accepted and unaccepted behaviour is well demarcated. The need for a flexible and learning culture is also desirable and so is an information system desirable. Safety culture is not only found in the health sector but it has been used extensively in other sectors. Several tools for measuring safety culture have been developed in order to understand and improve safety in an organization. These tools include safety attitude questionnaires (cdc.gov 2022), safety climate scale, patient safety culture amongst others. All these tools have their strength and weaknesses.

Communication is a key construct in the achievement of positive safety culture. An effective communication of shared beliefs enhances understanding and adoption of positive outcome. The types of communication could be face to face or written across all media. All in all, the communication process needs to be two way with the feedback received as appropriate. Safety audits are equally desirable in order to inform and understand the status

of the organizational culture. The Safety Culture Theory recognizes that safety culture is not static but rather requires continuous improvement and monitoring. Behaviour change communication can amplify the importance of ongoing education, awareness, and evaluation of road safety practices.

By encouraging individuals and organizations to constantly strive for better safety outcomes, behaviour change communication can be embraced as part of improving behaviours. One of the key activities to acquire a safety culture is to develop the required knowledge base for reference within the individual or organizational environment. Accidents happen and there is need to address them before hand by putting in place sound safety measures, evidently an environment with a poor safety culture has many incidences of non-compliance.

One of the criticisms to this theory is that individuals can change culture depending on their surroundings, and similarly culture is said to be about a group not an individual. Hudson (2000) postulates that many studies on safety culture forget to measure behaviour and equally important he further adds that at times it is difficult to operationalize the concept of safety culture theory more so because culture has a wide scope. Safety culture theory is relevant in the interpersonal level of interaction of road users, more specifically can be applied to the behaviour of *Boda-boda* motorcyclists.

Safety Culture Theory emphasizes the importance of attitude, norms and behaviour and can therefore be applied to interventions within the *Boda-boda* community to promote safety. It suggests that a strong safety culture can significantly reduce accidents and enhance overall safety by fostering a collective commitment to safety practices.

Implementing comprehensive training programs that emphasize the importance of a safety culture can help motorcyclists develop better riding skills and adopt safer practices. Engaging the motorcycling community in safety initiatives can foster a sense of responsibility and collective effort towards reducing accidents. This can include awareness campaigns, safety workshops, and community-led safety checks. The choice of communication platforms in the dissemination of safety information will determine message reception and response. These responses can be improved through understanding the psycho-social patterns of the *Boda-boda* motorcyclists in Kenya. The National Transport and Safety Authority (NTSA) which is mandated to disseminate road safety messages can use the Safety Culture theory in crafting messages in behaviour change communication for road safety study focussing on the shared values, beliefs, attitudes, and behaviours related to safety within the Boda-boda motorcycling community. The *Boda-boda* Associations can equally embrace the same knowledge when communicating about safety to the motorcyclists.

By integrating the principles of the Safety Culture Theory into a behaviour change communication and road safety study, researchers and practitioners can focus on shaping values, promoting engagement, addressing organizational factors, encouraging continuous improvement, and emphasizing individual and collective responsibility. This holistic approach can contribute to creating a safer road culture and reducing accidents and injuries on the road.

2.1.3 Uses and Gratification Theory

Wimmer and Dominic (1994) posits that the Uses and Gratification Theory is valuable for understanding how people use media and how they get gratification. This theory was coined by Katz and Bloomer in 1974 and it explains how audiences select, use and interpret media messages based on their motivation (Hossain, 2019). This means that the attention is on what people do with the media unlike previous studies which looked at how media affected the audiences, this places the audience in an active role. According to Sichach (2023) the Uses and Gratification (UG) Theory identifies the needs of the media audiences as cognitive, affective, personal integrative and tension relief.

Kasirye (2022) states that the Uses and Gratification study has expanded and the researcher continues to posit that media influences behaviour and is goal oriented. There is also the underlying notion that it would gratify the user. Audiences have a wide selection of media amongst the traditional and new media platforms. The search for information, entertainment and interaction are the driving factors of media choice and usage. The UG theory stipulates that audiences have media competence and are able to select media according to their needs and interests. Similarly, the audiences use media as a coping mechanism in their everyday life (Parveen, 2017).

Understanding how road users choose and use media, road safety interventions can be structured to fit the audiences through media platforms of their choice. This will enhance road safety awareness and trigger behaviour change. Due to the great importance of road safety, leveraging the psychological aspects of individual motivations can prompt a culture of responsible road usage amongst motorcyclists. Motorcyclists often seek information on safe riding practices, traffic regulations, and road conditions. Media campaigns tailored to

meeting these needs can effectively disseminate crucial safety information. For instance, media campaigns on the use of helmet, interpretation of road signs and symbols and customer care can be disseminated in desirable media platforms. Cognitive gratification can be enhanced through information and understanding of media messages according to Sichach (2023), cognitive gratification can be in the area of traffic rules and regulation, safety equipment and road safety. Indeed, interactive content such as videos, audio, online training and games on social media can attract motorcyclists' attention and make learning about road safety more enjoyable in the midst of entertainment. Affective gratification can be accomplished through mentorship and community engagement. This theory has been criticised because of its assumption that audiences know the media they need to use, the theory does not engage in highlighting the power of media.

2.2 Empirical literature review

An empirical literature review focuses on summarizing and critically analysing the existing research studies and empirical evidence related to a specific research topic or question. It specifically examines studies that have collected and analysed data to draw conclusions and make empirical claims. The empirical studies reviewed below under the variables of the study hold significance therein.

2.2.1 Behaviour Change Communication Interventions and Road Safety

Behaviour change communication is a sub area in development communication and has been used widely to make interventions in various challenges facing the society including road safety. According to Nguzo (2017), Behaviour Change Communication (BCC) is used to improve and sustain new positive behaviour. De Mooij (2014) amplifies this by positing

that BCC promotes positive behaviours amongst individuals and communities through strategic communication interventions. These interventions have been used across all sectors of the society.

Fosdick (2019) studied the effectiveness of UK road safety behaviour change intervention, through an online survey and focus group discussions. The study target population was drawn from road users, designers, implementers and also academia. The study focused on educational behaviour change interventions. There were several findings in this study, amongst such findings, it was highlighted that some interventions lacked a theoretical base at the design stage given that several interventions were internally evaluated while majority were not subjected to external evaluation by practitioners. There was need to adapt behaviour change models in the design of road safety interventions. There was also need for evidence-based approach and evaluation of interventions before implementation. It was recommended that academicians and Practitioners work together to tailor effective interventions on road safety (Fosdick, 2019). The choice of designers for Fosdick was instructive to the current study in terms of how communication is designed to target certain sensory impulses that influence behaviour. It provided the study with capital in terms of analysing not just the influence of various media but also whether their design is effective for behaviour change.

In South East Iran, Setoodehzadeh et al. (2021), studied self-reported motorcycle riding behaviour. The issue of riders evidently flouting rules despite having knowledge of them was an area of concern. The researcher concluded that in spite of the riding behaviour being desirable, there was a great need to conduct training intervention on certification and the use of safety equipment.

Babafemi et al. (2019) studied motorcyclists' behaviour in the area of passenger safety. This study examined the use of safety helmets in an effort to establish helmet wearing and compliance to safety regulations. It was concluded that majority of motorcyclists did not comply with traffic rules and there was need for education and training more so in traffic regulation compliance.

WHO (2017) postulated that behaviour change interventions have promising results in addressing risky road behaviours and eventually this leads to reduced death and injury. Esse (2021) postulates that for positive results, it is important to combine several modes of intervention for instance training, education, interpersonal communication, awareness and media campaigns towards various road users. Foroutan et al. (2019) states that even short periods of BCC interventions impact motorcyclists' behaviour positively.

2.3 Media campaigns and road safety

The concept of media in this study is used to refer to the various channels of generating content through technologies for human speech (Paul et al. 2021). Media is a key tool in BCC and it has been used worldwide to create awareness, to inform, educate, persuade and call for action. A media campaign in road safety uses a wide variety of channels including broadcast (Radio and television), print media and social media which encompasses WhatsApp, Facebook, X, TikTok and even videos with the idea of reaching a wider and diverse audience on road safety issues.

The primary objective of media campaigns is to influence behaviour change and encourage individuals to adopt safer road behaviours (De mooij 2014). This is achieved by promoting positive attitudes, norms, and social expectations related to road safety. Campaign

messages often emphasize the benefits of responsible driving, such as protecting oneself, family and friends, as well as other road users. To maximize the impact of media campaigns, they often incorporate persuasive techniques, compelling visuals, and engaging storytelling to capture the audience's attention and evoke an emotional response.

Road safety has been a major concern worldwide due to the high injury and fatality rate (WHO, 2017). These campaigns from public and private entities are involved communicating messages (Zatoński and Herbeć 2016). On the same note Gupta (2021) argues that the media has great potential in influencing health related behaviour, perceptions and responses for both road users and decision makers while Paul et al (2021) underscores that media creates an impact by playing the role of a change agent in the society.

For instance, in Ecuador, a study carried out by Raminez (2020) on promoting road safety education in young adults in this case using social networks. In the study, the target population comprised of 25 students pursuing engineering course aged between 21 and 27 years. Two daily Facebook posts on road safety were published and the researchers assessed whether road safety knowledge had increased. The findings showed that Facebook increased road safety knowledge by 22 percent through the posters shared on Facebook, noted as a good platform for sharing knowledge widely. Although the Raminez study is significant, restriction to only one geographical area and a youthful age-group might pose a challenge in representing of a global phenomenon such as road safety. The current study therefore expanded its analysis to different mutually exclusive geographical areas and targeted all *Boda-boda* riders in order to generate a comprehensive mosaic of the problem.

In Indonesia Putranto et al. (2016) studied four motorcycle rider campaigns. The awareness campaigns were carried out through posters, audio, video and testimonial video. The study concluded that video is an effective tool to transform behaviours and change attitudes for the better. The study recommended that there was need to develop new themes in line with the current trends of motorcyclist behaviour. An example of a behaviour of interest is identified in the current study with regard to motorcyclists riding on pedestrian sidewalks and what it pertains to pedestrian safety.

Vingilis et al. (2018) studied young male drivers' perception and experience with YouTube videos of risky driving behaviour. The aim of the study was to determine the effect on young men watching and sharing you-tube video. The study findings were that YouTube videos had replaced watching of television and these you-tube videos provided edutainment. The young men indicated that they would avoid the risky driving behaviour. The conclusion of the study was that videos could influence behaviours of viewers in this case young males. Vingilis's study relied on behaviour influence on young people through mediated channels of You tube. The current study set out to determine what other forms of media influenced behaviour among *Boda-boda* riders in Kenya. It sought to expand the discussion not only to focus on how media influenced certain behaviours but also on how the same media could be used to correct deviant behaviour.

The World Health Organization produced a book called 'Road Safety Mass Media Campaigns: A Toolkit' (WHO 2016). The aim of this resource was to prescribe the ten steps in developing road safety mass media campaigns. The book discusses the phases of project design and research, the production, dissemination and evaluation of mass media campaigns. The methodology uses international best practice and theory. The aim of this

toolkit is to produce and implement media campaigns in order to alleviate road traffic accidents. Although not all *Boda-boda* riders might ever get a chance to familiarize themselves with the ten steps of road safety found in the WHO book, the current study found the availability of such a toolkit useful especially in recommending to bodies such as NTSA relevant literature that could be useful in their campaigns for road safety.

In 2021, Ngene conducted a study in Nigeria dubbed the "Don't drink and drive" campaign. The aim of this study was to examine motorists' exposure and compliance levels. The conclusion of the study was that the campaigns might be more effective if the focus was the demographic characteristics of motorists. This study was useful in establishing whether, in the Boda-boda sector any form of branded campaigns complete with slogans aimed at road safety sensitization existed, and if they did, how effective they were. This enriched the final findings on forms of behaviour change communication.

Lagos, a megacity in Nigeria is an extremely busy economic and commercial hub, with high traffic flow which lasts for several hours. It is under this backdrop that Atakiti et al. (2016) undertook a study with the aim of finding out the role of radio in educating road users on traffic management. The study findings were that 63.4 percent listened to the state-owned Lagos traffic radio daily for traffic updates to avoid high traffic areas of the city. The study concluded that the radio successfully informed and educated its audiences on traffic flow every day. The study recommended that similar programmes aired in the indigenous languages of Pidgin, Yoruba and others. The use of communication experts in the panel discussions was also highly recommended. The current study, while appreciating the focus of media and especially the easily accessible radio to inform people of traffic status, it found that the same radio as falling short of the most fundamental component of

road usage, which is safety of both machines and people. It is from this foundation that this study decided to explore how media in its different forms could be useful in many purposes but maintaining road safety was viewed as the overriding mandate.

Due to the high traffic accident rate in Ethiopia, Zewude (2020) purposed to undertake a study on the Ethiopian road safety TV programmes. The researcher used 31 programme episodes from *Guzo* and eleven from *Kehiwet Seleda*. The study concluded that the time used for coverage of road safety content was too short. It was also highlighted that *Kehiwot Saleda* TV programmes had a human-interest angle in their content but they lacked a pre-preventive storyline, on the other hand *Gaza* TV had an educative advocacy angle. Zewude (2020), recommended that the road safety stories needed to be designed according to different road user age groups and they needed to be more interesting and with a pre-preventive message. Studying aspects of timing of media messages for any particular cause is important. However, equally important as well was to study the nature of the messages, how they are packaged and the target audience. It is this aspect that Zewude could have addressed comprehensibly. The current study moved to address that limitation in its study on various media and how they communicate to a diverse age-group.

In 2021, the Ugandan Ministry of Works and Transport (TLB department) in conjunction with GK media investment published a Road Safety Magazine (Road Safety Magazine, 2021). The purpose of this magazine was to encourage and sensitize good road safety practice amongst road users. The magazine is rich in content covering the status of road safety in Uganda, for instance, an article on the launch of the smart travel campaign in Uganda is highlighted. Similarly, the winner of the global fleet championship award is featured in the proceeding page. The Road plan for the 2021-2030 period on the busy city

of Kampala is expounded for the benefit of the road users. Expert advice from a police officer in the proceeding column informs the readers on the penalties and methods of traffic enforcement with sensitization on traffic sign types and uses. This is followed by important information on first aid and also policy touching on road safety and finally, there is also important road safety stakeholders contact details shared. This rich resource however does not expressively handle the area of behaviour change communication which this current study intends to address.

In order to highlight the burden of road traffic injuries, Sawe et al. (2021) conducted a study of thirteen health facilities in Tanzania. Amongst other findings the researchers posited that motorcyclists were the most affected road users causing with 68 per cent of accidents while amongst the accident victims on a paltry 37 per cent wore safety helmets at the time of the accident. Interestingly 49 per cent of road accident victims were transported by two wheelers (Motorcycles and bicycles) to the health facilities for treatment. This study concluded that road traffic accidents in Tanzania were a public health concern and there was need for specific interventions and especially amongst motorcyclists. This study was of the opinion that simply reporting fatality statistics was not sufficient. Going further to determine whether these fatalities were as a result of lack of information or carelessness remained an important direction for research. It is on that basis that communication and education towards behaviour change was a priority in this study in the context of road safety.

In Uganda several studies have been conducted on road safety and road traffic accidents amongst road users. Siya et al. (2019) studied the causes of *Boda-boda* accidents in Uganda. The study findings were that there was a high competition amongst the public

transport providers, 78 per cent of the study group neglected road safety rules, while 62 per cent did not wear safety helmets. The researchers concluded that behavioural factors were the main cause of digital interventions and training of all transport providers was needed. Siya et al. (2019) also amplified the need for infrastructural improvement by constructing lanes for motorcycles.

In Kenya, Kabue (2018) conducted a study to on road user awareness of road safety projects. The aspects of safety included safety belt usage, responsible alcohol consumption, speeding campaign, road signage adherence, and black spot awareness. Kabue (2018) recommended that the Government of Kenya needs to undertake safety awareness efforts amongst the road users. Muguro et al. (2020) also reiterated similar conclusions in their study. Since one of the locations of the current study was Nakuru, it was significant in terms of comparing the prevailing situation on attitudes among *Boda-boda* riders with the time Kabue conducted the study on awareness. The findings were important in establishing areas that needed further improvement for better results.

Odhiambo et al. (2017) had a study in Naivasha town with an aim of checking road safety regulation amongst motorcyclists. Helmet use compliance stood at 31 per cent. The study concluded that compliance amongst motorcycle users remain low and especially amongst passengers and it was noted that it was even lower among female passengers. Borrowing from the study by Odhiambo and others, this study sought to find explanations of whether any form of non-compliance with traffic regulations was a result of lack of or poor communication or whether it was a behavioural complex.

2.4 Participatory communication and road safety

Participatory communication emphasizes the active involvement, empowerment and engagement of individuals and communities to find solutions to their problems. Odoom (2020) posits that participatory communication is based on the principles of inclusiveness, collaboration, and shared decision-making, whereby communication channels and techniques are used to increase people's participation at grassroot level. There is a lot of consultation and exchange of ideas amongst stakeholders, this nurtures a sense of ownership and collective responsibility in the community. Melkote (1991) stresses that participation is a basic human right not a privilege while Mefalopulos (2009) adds that the output is open ended exploring issues and then generating new knowledge and solutions towards a common goal. Participatory communication is important in road safety because individual motorcyclists gain knowledge, skill and experiences that can contribute to better road usage.

Community engagement and capacity building amongst road users aids in identifying road safety challenges, setting of strategies and interventions. Community members use workshops, consultation and meetings to brainstorm these issues. Tingaa (2018) further posits that the views of stakeholders should always be sought and incorporated in programs and in addition that interpersonal communication, a key tenet in participatory communication, is influenced by the environment in which the individual dwells. Participatory communication is equally enhanced by well-structured messages which use different communication channels and platforms for impact (Melkote 1991). This will aid in triggering community conversations that provide solutions on alleviating injury and fatality amongst *Boda-boda* motorcyclists in Kenya. Participatory communication is

therefore very important for sustainable road usage amongst stakeholders and indeed several researchers have highlighted the benefits of participatory communication.

A study in Indonesia by Amina (2016) on participatory communication amongst farmers. A low participatory communication was in the program stages of planning, implementation, monitoring and evaluation which caused inadequate knowledge and information amongst the farmers. The study recommended that participatory communication was necessary for farmers to share their experiences. The recommendation in this study is valid in the current study and can be borrowed, by sharing experiences in road safety to increase participation amongst road users in this case Boda-boda motorcyclists. Increase in knowledge would aid in a change in behaviour and in turn fatalities and injury on the roads would be reduced.

One of the key tenets of participatory communication is community engagement and public awareness, this is the area that Mazlan et al. (2020) undertook to study in Malaysia. The aim of the study was to evaluate public awareness safety program implementation. The findings were that there was a strong awareness of the safe city initiative. The study concluded that successful initiatives depended on an effective process and active participation amongst authorities and the community. While this Malaysian study amplifies the importance of a safe city trajectory however the key area of road safety is not addressed and this is what the current study seeks to explore.

In Karnataka India, road traffic accidents caused a lot of burden to the health care system and it is this fact that led to Shetty et al. (2017), to study the knowledge and practice about road safety amongst road users. The study found that there was inadequate knowledge and

poor practice on the roads. Indeed, it was recommended that community-based awareness campaigns on road safety and legislative measures were needed in order to alleviate road traffic accidents. In this study, the behavioural characteristics and attitude of the target population were not highlighted and therefore the current study delved into these gaps amongst Boda-boda motorcyclists in Kenyan cities.

In Muskat Oman, Alriyami (2015), undertook a study to find out the barriers of interpersonal communication amongst students. The findings were that there were several communication barriers in the areas of listening and speaking. The study recommendation was that students needed to be taught effective interpersonal communication skills. This recommendation is valid in the current study.

In south Africa, Hobololo et al. (2017), carried out a study on mobile phones usage in public participation. The study recommended that older citizens needed further support in mobile phone usage and further it was noted that the influence of family and friends was significantly high. Gender did not play a significant role as a moderator, but age played a significant role as a study moderator. This study highlights the interplay between technology and community awareness and participation. Highlighting the need for technological navigation support among the older population. This can equally be adopted in any study on motorcyclists as part of enhancing their ability to navigate road safety content through their mobile phones.

Kigbu et al. (2018) undertook a study on participatory communication amongst farmers. The findings and key conclusions were that participatory communication was perceived as important for two-way communication and knowledge sharing amongst farmers and

agricultural development agencies and this was the key conclusion. Knowledge sharing is a key tenet which can equally be embraced amongst the Boda-boda motorcyclists in Kenyan cities and the relevant authorities can package important information for purposes of addressing road safety amongst road users.

In Dodoma Tanzania, a study carried out by Makota & Kibusi (2019), to evaluate training amongst motorcyclists in the area of road safety and the study revealed that the respondents had limited knowledge and skill on basic life support. Majority however had assisted road accident victims. The conclusion of the study was that participatory training was an effective and relevant intervention for motorcyclists. This current study therefore will explore the moderating factor of attitude in the area of road safety.

In Kenya, Sammy (2023) explored participatory communication in the area of poverty reduction. The study highlighted the importance of communication strategies and community engagement of farmers through participatory communication techniques, noting that this was key insight to consider in road safety initiative.

Participatory communication is of utmost importance in road safety as it empowers communities, ensuring context-specific interventions. In addition, it enhances knowledge and awareness, builds trust in relationships, facilitates behaviour change, and promotes advocacy and policy influence. By actively involving individuals and communities through participatory communication one creates a sense of ownership, fosters collaboration, and leads to more sustainable road safety outcomes. These outcomes thus may significantly contribute to reducing accidents.

The studies on participatory communication cited, endeavoured to assess whether there were any forums where government through its agencies ever engaged *Boda-boda* riders in sensitization workshops or seminars. This was with a view to determining whether any fatalities that occurred on our roads was a result of exclusion in communication and sensitization in the community or was simply a case of negligence. In anchoring its background, this current study held that communication remained a two-way transaction which in the context of *Boda-boda* sector was vital in mitigating road safety problems.

2.5 Traffic visual communication and road safety

Traffic visual communication according to Imoh (2021) is the use of visual elements, such as signs, colours, symbols, roadside advertisements and police presence. These elements are used to convey warnings, information and further instructions concerning traffic and road safety. The overarching aim is to ensure that there is efficient and safe movement of motor vehicles, pedestrians, and cyclists on the road networks.

Visual communication is one of the tools used in Behaviour Change Communication (Sakyiama 2021) to enhance road safety. Ninety percent of the traffic communication for drivers is received visually between authorities and road users (Utoyo et al. 2020). Traffic visual communication was the area of interest in the 1968 Vienna International convection on traffic communication hosted by the United Nations. The convection was to create worldwide uniformity on road signage for increased road safety outcome (Babic, 2022). The convection identified, discussed and gave guidance on traffic warning signs, mandatory, regulatory, restrictive signs, road markings and also traffic light signs.

Traffic signs are one of the most common and recognizable forms of visual communication for road safety. They provide important information to road users, including regulatory signs (such as stop signs, speed limits, and no-entry signs), warning signs (such as curve ahead), and informational and service signs (Fernandez, 2020). Traffic signs use standardized shapes, colours, and symbols to convey messages quickly and universally (Utoyo et al. 2020). Another type of visual communication is the use of roadside advertising signs which are known to draw the driver's attention, at times causing distraction (Trespalocious et al. 2019).

Road markings are visual traffic elements painted or marked on road surfaces to guide and direct drivers (Adedeji 2021). They include, lane markings, centre-lines, cross-walks, arrows, and symbols. Road markings help drivers maintain lane discipline, indicate permitted manoeuvres, identification of designated parking areas, and they also aid road users at night and during challenging weather conditions in order to ensure that there is safety on the roads (Chengula, 2018).

The police presence on the roads also impacts the behaviour of road users. Baek (2022) stresses the importance of hand signal by the police. Comprehension of road signs and signals is paramount and Maulina (2022) points out the significance of understanding traffic signs quickly and accurately with drivers being familiar with and comprehending road signs. Another very important traffic communication is the use of traffic signals, which are also referred to as traffic lights. These devices are used to control the movement of traffic especially at intersections. These traffic lights have three colours namely; red, yellow, and green. They signal when drivers should stop, proceed with caution, or give way. Traffic signals provide clear and standardized visual cues to regulate traffic

movements and minimize conflicts between different streams of traffic hence enhancing road safety (Maulina 2022). Visual communication elements help promote awareness and compliance with traffic rules, positive behaviour and road safety among road users.

In Thailand, Choorarukul and Sriroongvikrai (2016) conducted a study on awareness and comprehension of road signs amongst tourists. The study findings were that comprehension was poor amongst respondents. It was noted that this group of international travellers needed to be included in road safety communication.

Roadside advertising around the world has increased over the years and those evidently tend to draw the attention of road users away from the task of safe road use. Trespalacious et al. (2019) conducted a study on road advertising amongst drivers to find out the behaviour of drivers in connection to road safety. The findings revealed that roadside advertising signs are viewed as an environmental pollutant which gives the driver more tasks to handle their impact on driving behaviour depended on individual drivers. However, there was no clear correlation between driver behaviour and road accidents. The researchers pointed out that emerging studies suggest that roadside advertisements such as billboards can increase accidents.

In Jakarta, Utoyo et al. (2020) studied traffic signs and colours to find out the perception of danger amongst drivers. An analysis of the perception of colour green, red and yellow concluded that the shape of signs and colour carried a psychological meaning that can either make people comfortable or otherwise.

Qatar is on record as eliciting a great concern for road safety more than other countries in the region. Shaaban (2017) conducted a study with a purpose of ascertaining the driver's

perception on police enforcement, and indeed included cameras and a demerit point system. The study determined that the red-light running cameras were highly rated and thus one of the proposed strategies highlighted by the drivers as rewarding. These proposals amongst others, would improve traffic enforcement in the future.

In Czech Republic, Sucha et al. (2017) undertook a study to understand communication at marked crossings between drivers and pedestrians in towns. The study found out that behaviour of respondents was dependent on the density of car traffic, pedestrian flow and car speed and signs made by the driver. It was noted that 36 per cent of drivers did not yield to pedestrians at marked crossings. The study concluded that speed reduction measures, training and education of drivers to make them more appreciative of pedestrians was necessary.

In Nigeria, Imoh et al. (2021) purposed to find out the challenges facing traffic signs and symbols recognition to Lagos state road users. The study recommended that need for more training and sensitization on traffic signs and symbols, this could be conducted by the body that issues licenses to the drivers. The conclusion of the study was that road safety knowledge was poor and so was the understanding of traffic signs and symbols.

In Ghana, Sakyiama (2021) studied the road safety communication strategy employed by the National Road Safety Authority for behaviour change. The study findings were that knowledge on informatory signs was high, however knowledge on warning and regulatory signs and their meaning was poor. The study recommended that education on road signs and road safety carried out at school level and integrated in the basic school curricula.

In Lesotho and South Africa Adedeji et al. (2018) studied road markings a key area in traffic communication. This was informed by the increase of road mortality regardless of traffic control measures. The findings of the study were that 67.7 per cent of the drivers were psychologically affected by the lack of enough road markings. The conclusion of the study was that it was necessary to have road markings in order to reduce fatalities and psychological effect amongst drivers especially where roads markings were unavailable on roads.

In Rwanda, Nkurunziza et al. (2020) assessed pedestrian mobility with the aim of outlining the major challenges and to provide solutions to improve pedestrian mobility and safety. The study findings revealed that there were inadequate footpaths, lack of enough road signs, malfunctioning traffic signals and lack of information on pedestrian road engagement. It was also highlighted that zebra crossing facilities were not provided. The conclusion of the study was that vehicles were still driven at high speed and pedestrians therefore were unable to move freely. There was also need for pedestrian overpass bridges and shelter at bus stop areas in Kigali.

In Tanzania, Chengula (2018) conducted a study on road signs and markings. The study findings showed that there was need to remove obstructing tree branches and foliage on the road for clearer visibility. Road markings on the other hand had poor reflexivity, missing road marks, faint edges and centre pavement lines. The study recommended regular cleaning of the sign boards and improvement of the visibility of marking. It was also pointed out that night time visibility of signs needed to be improved.

In Uganda, Vaca et al. (2020) evaluated traffic injury amongst *Boda-boda* motorcyclists over a span of eight years. The findings were that the contribution of motorcycles to road accidents increased from 24.5 per cent to 33.9 per cent. The Road traffic accident (RTA) victims also increased in 2018 as compared to 2015. The conclusion of the study was that though RTI decreased in Uganda, motorcycle involvement in accidents increased. There was thus need for enhanced patient care and prevention of road traffic accidents in Uganda.

Mc'Opiyo et al (2019) conducted a study on traffic information and road safety in Kisumu. The study reported road safety awareness was higher in the urban areas than in the rural setup. In the rural areas. Similarly, traffic signs were inadequate while in the urban area they were fairly sufficient. There were also inconsistencies in traffic guidelines and thus the study recommended that all key state departments needed to bolster traffic information as per the road safety policy.

This current study found that all these reviewed studies on traffic visual communication were significantly useful in determining the various factors that were set. The studies canvassed on a variety of traffic visual communication aids ranging from human to mechanical or technologically- driven. The issues of response to certain colours were also a major finding in some of these studies. The effects of these road signs in their variety have also been provided presenting differently from one country to the other however, what appears to have been less engaged with, was a connection between these signs and behavioural factors among motorized transport users.

Indeed, the studies evidently focused on the actual changes on traffic rules and regulations conformity from the perspectives of the law. They however did not consider what behavioural dynamics could have caused the conformity, compliance or lack of compliance amongst motorized transport. This current study thus proceeded to address that gap.

2.6 Information Education and Communication (IEC) and road safety

Information, Education, and Communication (IEC) is a strategic approach used in various fields, including public health, social development, and behaviour change campaigns. Its aim is to disseminate accurate and appropriate information, educate individuals and communities, and facilitate effective communication through relevant media. The overarching goal of IEC is to empower people by bringing about positive behavioural and social changes (Sachdeva *et al.* 2015).

IEC initiatives are used to empower communities in various aspects of the life of society. These initiatives address concerns of interest in health, agriculture, education, development amongst others. Several strategies are used to accomplish the various objectives of the projects initiated.

Information is the first component of IEC and it involves the gathering, organizing, and disseminating of information. This includes collecting data, conducting research, and compiling knowledge on a particular issue or topic. The information should be accurate, evidence-based, and tailored to the target audience. It may include facts, statistics, case studies, and other relevant data to support the messages conveyed (Sachdeva et al. 2017).

The education component of IEC focuses on increasing knowledge and understanding among individuals and communities. It aims to enhance awareness, build skills, and

promote critical thinking. Education can be delivered through various channels, such as workshops, training sessions, seminars, or educational materials like brochures, pamphlets, or online resources. The educational content should be accessible, easy to understand, and culturally appropriate for the target audience.

The communication component of IEC involves the exchange of information, ideas, and messages between different stakeholders. It aims at creating a dialogue, engage the target audience, and to facilitate behaviour change. Communication strategies may include mass media campaigns, interpersonal communication, community engagement activities, social media outreach, or interactive platforms. Effective communication techniques such as storytelling, visual aids, and engaging narratives are often utilized to capture attention and resonate with the audience.

By engaging and empowering road users as the target audience, IEC messages can be crafted to address specific road safety issues such as, adherence to road signs and symbols, speeding, drunk driving, or distracted driving. IEC approaches can influence knowledge, skills, attitudes, beliefs, and practices in road safety, leading to positive social and behavioural changes. Through the use of IEC materials, road users are encouraged to adopt safer practices and make responsible choices, creating a culture of road safety and reducing the devastating impact of road accidents worldwide.

Among the many studies conducted on IEC, In the United Kingdom includes one by Knight (2018), who conducted a study in London on road safety education, training and publicity by the local authorities. The study findings showed that lack of adequate staff training and limited resources for road safety officers was prevalent and this had a negative impact in

the local authorities. The recommendations of the Knight study were that there was need for training and increase in resources. This study resonates with the current study which posits that in order for the trainers to have impact, they need to be well trained in the areas of road safety. This study also highlights the challenge of limited resources to conduct road safety initiatives, which too is a major concern in Kenyan cities.

The national highway traffic safety administration, an agency of the US government undertook a study on training of motorcyclists, this is an area that hitherto had not been studied comprehensively. It was assumed that the trained motorcyclists were only trained at Maryland. Data on the trained and untrained motorcyclists was compared and the findings were that 97 per cent of the trained and unlicensed motorcyclists used helmets. On the other hand, the untrained but licensed motorcyclists had a helmet use of 77 per cent. Similarly, 29 per cent of trained and unlicensed motorcyclists were involved in accidents before their training period as compared to 22 per cent of trained and licensed motorcyclists. The trained and licensed had lower incidences of impaired driving accidents while on the other hand the trained and unlicensed group had the highest incidence. The researchers postulate that it is important to collect and analyse data to provide a more robust analysis. In the Kenyan situation the accident data system is under development hence, connecting the accidents and license holders would be an uphill task. There is need for compiling all the relevant data from the hospitals, police stations and also the courts.

Due to the increase in two wheelers in the Philippines Ningal and Onos (2021), were compelled to study education, publicity and training amongst motorcyclists in the area of road safety. The study findings were that the respondents received examination on road safety from the lands board. They also received understood of traffic signs and symbols

through social media and personal observation. The conclusion and recommendations were that there was need to re-evaluate and enhance safety education.

In Malaysia, Rusli (2020) postulated that motorcyclists are significantly involved in fatalities in road accidents. This study's aim was to investigate the risky riding behaviour at designated areas through observation at intersections from in the behaviours that were observed, it was recommended that educational programs and road policing may solve problematic behaviour. Rusli observed the negative behaviour however the study did not delve into interrogating the measures and interventions taken to address this behaviour. Topolšek et al. (2019) conducted a study on education and training in the area of road safety. The findings were that those who participated in the program had a significantly difference in the number of errors and violation of road safety rules.

A renowned scholar in the area of road safety Elvik (2016) wrote a paper proposing a theoretical perspective on how to structure road safety communication effectively. Elvik suggested that the use of persuasive messages in campaigns would have no effect on behaviour or accidents, and instead he stated that if bounded rationality was used in the campaigns, then road users could change their behaviour, this argument was supported by the theory of rationale behaviour.

Elvik analysed several communication campaigns and their effectiveness and identified variables that contributed to the failures of rationality including unconscious errors, choice, thought, knowledge, and coordination. Regardless of the many drawbacks in evaluating road safety communication campaigns, he concluded by stating that road users are rational and only in the promise of benefit from travel would road users change their behaviour.

In Nigeria, Akinpelu (2019), published a report on road safety education and training. The report noted that the data on education and training was limited and thus most studies relied on perception. The study recommendations were that there was need for more attentiveness from concerned road safety stakeholders in Nigeria in order to attain a good road safety culture. In the two evaluated studies, it was noted that there was need to amongst other things to start a road safety education and training in the school system. The study recommendations were that there was need for more attentiveness from concerned road safety stakeholders in Nigeria in order to attain a good road safety culture.

Very many people injured and killed on the roads every day in Egypt, this prompted Elkaluby et al (2020) to conduct a study on the level of first aid knowledge amongst drivers. The study found out that there was poor knowledge in first aid and road safety measures and the study recommended increased legislation and training.

Wakene (2016) undertook a study in Ethiopia on the critical analysis of stakeholder discourse on road safety using the case study design. Wakene posited that communication amongst stakeholders was very important. The conclusion of the study was that there was lack of an official comprehensive way of understanding road safety. There was also an exclusion of vulnerable road users in the road safety forums. The researcher recommended that making available current data would aid in further research.

Olumide et al. (2016) studied road safety education and interventions. The study looked at knowledge as a variable amongst university drivers in Ibadan Nigeria, the drivers were trained and then a post intervention was administered at intervals of two days and four months. The conclusion of this study was that the increase in road safety knowledge

amongst drivers was reported and in turn a reduction of road accidents. Albeit this reduction was not sustained. The recommendations of this study were that refresher trainings were needed for sustainable road safety knowledge amongst drivers. This study amplifies road safety knowledge, which can be adopted by the *Boda-boda* motorcyclists in the current study.

Rettie and Barber (2018) undertook a study on driver training in East Africa. This driver training curriculum was developed after an intensive literature review and getting input from the stakeholders. The trans aid revised driver training curriculum was adopted by the East African community countries member states. In Tanzania a *Boda-boda* training curriculum was also prepared and adopted for use. The study concluded that development, adoption and implementation of the new curriculum would alleviate death and injury on the roads. The adaption of this strategy in the other East African countries was also viewed as critical in alleviating road accidents.

In Uganda, Okaka and Rwothumio (2018) studied road traffic accidents in Kampala-Uganda. The findings indicated that road traffic accidents were a disaster and there was need to address this phenomenon locally. The Ugandan police attributed all these accidents to human factors. The study concluded that public national awareness communication campaigns on road traffic accidents was necessary in order to impact road traffic accidents and similarly public campaigns on road safety were also critical.

Kemei et al. (2022), conducted a study on rider training and the extent of safety knowledge amongst motorcyclists. The recommendation of the study that a minimum age and education regulation would be desirable coupled with distinction of public and private

motorcyclists by use of colour code. The study stressed the importance of insurance cover and observing the use of the astride sitting position for pillion passengers. Finally, traffic law enforcement by police officers was to be upheld. A study on rider training by an equally renowned transport sector researcher Nyachieo (2020) also studied rider training. The findings revealed inadequate rider training and recommended subsidized training to the motorcyclists. A further recommendation was the adoption and implementation of a standardized training manual that would be periodically audited.

All the studies cited have very insightful information with regard to IEC. They expound in remarkable detail the different facets of information on communicating and educating motorized transport operators on the important aspects of road safety. These include importance of helmets, observation of road signs, ensuring insurance coverage and formal education and training on road safety dynamics. The studies also included a broad variety of respondents which made the results quite comprehensive and credible. However, modalities of informing, educating and communicating in terms of who disseminated it, the structures and institutionalization were not clearly captured. In addition, the net effect of these trainings described was not quantified in terms of whether they had yielded any tangible positive results in curbing road safety improvement. Those are the gaps that this current study sought to address focusing specifically on *Boda-boda* motorcyclists.

2.7 Attitude and road safety

Attitude can be unpacked as an individual's predisposition or evaluation of a particular object or situation and it significantly influences road user’s behaviour. Positive attitudes towards road safety are associated with responsible behaviours, adherence to traffic rules,

and a heightened sense of responsibility for oneself and others. Conversely, negative attitudes, such as aggression, recklessness, and a disregard for traffic regulations, contribute to unsafe practices and an increased risk of accidents. Factors that shape attitude include personal factors demographics, experience, and personality traits. Social norms, peer influence, and cultural beliefs are also other factors. Finally, the cognitive concerns a person's beliefs or knowledge. In this case feelings, behaviour and knowledge on road safety amongst Boda-boda motorcyclists.

The aim of interventions is to promote positive attitude on the roads. Road user behaviour is the greatest contributor in road traffic accidents. It is under this backdrop that Sucha (2016), based in Austria undertook a study on the attitude towards road traffic safety culture worldwide. The researcher's findings were that there were two different attitudes and approaches to road traffic culture around the world. On one hand it was taken as an objective reality while on the other hand it was seen as a matter of life and death. The attitude of the respondents determined how they behaved towards safety on the roads. The study concluded that there was need to improve the attitude on traffic safety.

Indonesia has witnessed a high growth of motorcycles use especially because of their affordability, flexibility and manoeuvrability. This growth elicited Prasetyanto et al. (2020) to delve into research on attitude and behaviour among road users. The conclusion was that a good infrastructure, promotion and monitoring of road users' behaviour can lower traffic violation and in turn uphold positive road safety practices.

In Iran human factors contribute the highest causes of road accidents compared to environment and road factors. It was under this backdrop that Moradi et al. (2015),

conducted a study on knowledge, attitude and practice of motorcyclists. The findings were that the respondents had suitable knowledge, attitude and practice at 57.8 percent, 56.1 percent and 44.4 percent respectively. Moradi et al. (2015) concluded that the practice of motorcyclists was towards traffic laws and there was need to conduct an intervention on the same in order to elicit positive behavioural responses to traffic laws. Riaz et al. (2018) carried out a similar study in Pakistan and found that drivers had inadequate knowledge, less positive attitude and risky practices towards traffic safety rules and traffic regulations. The recommendation was that there was need for an effective awareness programme on road traffic safety rules and regulation. In addition, determination of the effectiveness of law enforcement was desirable in order to control the traffic rules violation, and in order to increase drivers' knowledge and positive attitude towards safe traffic practices and traffic regulation.

In Zambia, Biemba *et al.* (2016) conducted a study on documenting drivers' behaviour vis a vis road safety intervention. A driver survey was adopted from the Manchester driver behaviour survey. Several risky behaviours were identified including disregarding speed limits and mobile phone use while driving. The study concluded that advance driver behaviour was prevalent in Zambia and strategies for intervention were necessary.

Due to the growing public health concern of head injury amongst motorcycle users, Okpoko (2015), undertook a study on the attitude of motorcyclists towards helmets. The study indicated that despite the necessity for helmet use, majority of motorcyclists were lethargic towards wearing helmet.

Head injuries amongst motorcyclists contribute highly to injuries and mortality, Tumusiime (2019) carried out a study to assess the KAP related to use of helmet amongst motorcycle passengers in Mbarara Uganda. Majority of the respondents were aware that helmets are important and stated that enforcement was enhanced the passengers would wear helmets. The study recommended community sensitization on helmet use in order to increase knowledge and change attitude and practice. A similar study conducted by Hassan et al. (2022). It was found that majority of motorcyclists did not wear helmets and had a poor attitude towards wearing them. Yodollahi et al. (2019) equally recommended training to improve the attitude of motorcyclist and enhance a positive road traffic culture.

Negi et al. (2020) undertook a study in Ethiopia aimed at examining a drink and drive initiative amongst drivers. It was noted that there was increase of knowledge and change of attitude after exposure to the initiative this in turn reduced risky road behaviour in Addis Ababa. Nzuchi (2020) posited that poor practice was associated with inadequate knowledge and argued that campaigns would aid in ensuring commercial motorcyclists purposed to attend driving schools. Ogombe (2017) conducted a study with attitude as a moderating factor, the area of interest was enforcement of traffic laws and implementation of pedestrian safety rules. The study recommended that future studies should interrogate the interventions proposed for all road users.

2.8 Conceptual Framework

A conceptual framework is a theoretical or analytical scheme that provides a structure and foundation for understanding and analysing a particular phenomenon. The independent variable in this study was behaviour change communication which had media campaigns,

participatory communication, traffic visual communication, information, education and communication as indicators. The dependent variable road safety had accidents, injuries and fatalities as indicators. The moderating variable in the study was attitude. Figure two below shows the conceptual framework.

Fig. 2**:** Behaviour Change Communication and Road Safety Framework.

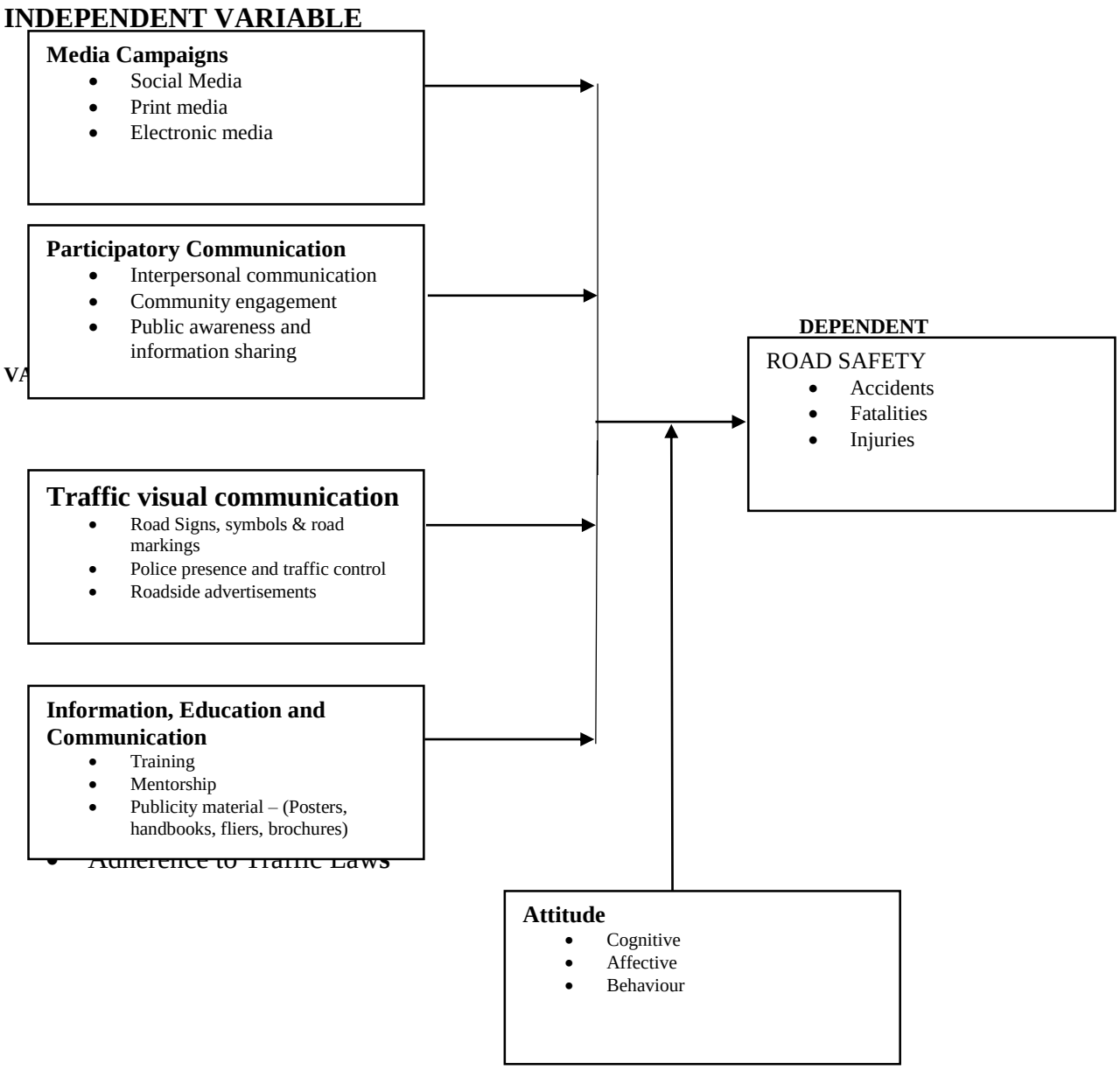


FIGURE 2: Conceptual framework (Source Author 2024)

The independent variable of behaviour change communication was measured using the parameters of participatory communication which had interpersonal communication, community participation, public awareness and social mobilisation as sub-variables. Media campaigns comprised of social media, print media and electronic media as sub-variables. Traffic visual communication had road Signs and symbols, road markings, police presence and traffic control and Roadside advertisements as sub-variables.

Information Education and communication had training, publicity material and mentorship as sub-variables. These variables influenced the dependent variable of road safety which is determined by fatalities, injuries and number of accidents. This study had a moderating variable of attitude amongst the *Boda-boda* motorcycle riders.

2.9 Summary of the literature review and research gaps

Research gap

The literature was reviewed according to the objectives of the study. Gaps were identified and the most glaring gap was that none of the studies reviewed engaged in researching the influence of Behaviour change communication interventions on road safety among *Boda-boda* motorcyclists in Kenyan cities. However, behavioural variables like knowledge, awareness and attitude have been studied widely, especially amongst motorcyclists both locally and internationally (Nzuchi, 2020; Sucha, 2016; Ogombe, 2017). There were very few studies on communication and road safety especially in, and specifically on road safety amongst *Boda-boda* motorcyclists.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

The research methodology is discussed in this chapter. The areas covered include research philosophy, research design, study area, study population, sample size, data collection and the relevant techniques for data analysis and presentation and also the ethical considerations.

3.1 Research Philosophy

This study was anchored on the pragmatic philosophical paradigm, which focuses on the importance of understanding and addressing real-world problems through multiple lens (Dawadi, 2019). According to this philosophy, researchers recognize that there are multiple strategies of conducting research in our world (Creswell, 2018). Pragmatists postulate that a solo Lense cannot wholistically represent all angles of a problem therefore, they look at the world with multiple realities of research methods to answer the research question. Pragmatists look at 'what works' Takashorri, *et al.* (2008) in order to bring about positive consequences within a value system. Pragmatism suited this study more because of its complexity, whereby an objective and interpretivist approach were needed to answer the research questions. Hence the fluidity of pragmatism allowed the use of a mixed method study.

The study of the interaction and behaviour of *Boda-boda* motorists enabled the researcher to form explanations and draw inferences. On the other hand, the flexibility of pragmatism acknowledges the usefulness of integrating study methods (Kaushik, 2017). According to pragmatists, the research question is the biggest determinant of the choice of the philosophy (Dudovskiy, 2022). In this study, using pragmatism elicited a richer understanding of the objectives through numerical and narrative data on BCC and road safety.

3.2 Research Design

A research design is the overall strategy chosen to logically integrate the different components of the study in order to answer the research questions (Thakur, 2021). This is the compass that shows the path of the researcher from the beginning to the end (Jilcha, 2019).

This study adopted the mixed method research design, whereby both qualitative and quantitative data was collected for purposes of answering the research questions (Cresswell, 2018). This design allowed an interrogation into the lived experiences and contextual factors involved, hence giving the study a wide scope (Poth, 2020). This design was in line with the pragmatic philosophy which embraces multiple view of realities.

In a mixed method design, there are four common approaches used; they include explanatory sequential, embedded design, convergent parallel design and exploratory sequential design. These approaches are informed by the timings of collection of data and mixing of results.

This study adopted the convergent parallel design, which involves conducting qualitative and quantitative components concurrently and bringing the findings together during the analysis stage Takashori et al. (1998). This design was desirable because it embraces the strength of each method and controls the weakness of the other hence enriching the research results. In this design through the convergence of methods there is cross validation of the findings and complementarity. Parallel collection of data enables the researcher to collect quantitative and qualitative data simultaneously.

This design allowed researchers to compare and contrast data from different sources, hence giving in-depth insights from the direct perspectives of the respondents (Clark and Ivankova, 2016). Hence increases the validity and credibility of the research (Bans-Akutey and Timuub 2021). The convergent parallel design offered a powerful and insightful approach to understand the complexities of road safety behaviours.

3.3 Study area

The study was conducted in the four cities of Kenya which are Nairobi, Kisumu, Mombasa and Nakuru. Each of these cities have very busy road network, a high population of over one million and a high number of *Boda-boda* motorcyclists as compared to other towns and urban centres across the country, and have recorded the highest number of road accidents, injuries and death amongst road users (NTSA 2023).

Nairobi is the capital city and it is located in the southern part of Kenya. It is a vibrant and bustling metropolis with a rich history and a significant impact on the country's social, economic, and political landscape. One of the defining features of Nairobi is its diverse population, people migrate to the city in search of opportunities and a better life. *Boda-*

boda motorcyclists have become an integral part of Nairobi's transportation system, providing a convenient, flexible, and affordable mode of transport. Nairobi County has 11 sub-counties namely Dagoretti, Embakasi, Kamukunji, Kasarani, Kibra, Langata, Makadara, Mathare, Njiru, Starehe and Westlands. The population of Nairobi County according to the 2019 census is 4,397,073 (KNBS 2019).

Mombasa is the second-largest city in Kenya, it is a vibrant and historic coastal port city that holds significant cultural, economic, and touristic importance. Located on the southeastern coast of Kenya, Mombasa has a long and diverse history that has shaped its unique identity and contributed to its prominence as a major urban centre in East Africa. *Boda- Boda* motorcyclists in Mombasa offer a valuable service to residents and visitors. Mombasa has six sub-counties, namely Likoni, Mvita, Nyali, Kisauni, Changamwe, and Jomvu. Mombasa has a population of about 1,208,333 people according to the 2019 census (KNBS 2019).

The city of Kisumu is the third largest city in Kenya, it lies in the western part of Kenya and it is located on the shores of Lake Victoria serving as the main commercial and transport hub for the Western part of Kenya and the East African region (Kisumu County Plan 2018- 2022). Kisumu also has a long history of *Boda-boda* motorcyclists and a prevailing influx of population as skilled, and unskilled people move in search of a livelihood. Kisumu city has seven sub counties namely, Kisumu west, Seme, Kisumu East, Kisumu central, Nyando, Nyakach, and Muhoroni. Kisumu has a population of 1,155,574 according to the 2019 national census (KNBS 2019).

Nakuru is the youngest city in Kenya. It is located in the Great Rift Valley region of Kenya; it has a rich history having grown over the years, from a small trading centre to a vibrant city with a diverse population and significant economic importance.

It serves as an important commercial and agricultural centre in Kenya, contributing significantly to the country's overall development. The city's rich history, cultural diversity, and natural attractions make it a fascinating destination for both locals and tourists alike. Nakuru has 11 sub- counties namely, Naivasha, Gilgil, Kuresoi south, Kuresoi North, Molo, Subukia, Nakuru North, Njoro, Nakuru East, Nakuru West and Rongai. Nakuru has a population of 2,162,202 residents according to the 2019 national census (KNBS 2019).

3.4 Study Population

The study population consisted of *Boda-boda* motorcyclists who carry pillion passengers for commercial purposes in four selected cities: Nairobi, Nakuru, Kisumu, and Mombasa. In Nairobi City, there are 121,078 registered *Boda-boda* motorcyclists, while Nakuru City has 64,866. Kisumu City is home to 46,524 motorcyclists, and Mombasa City has 48,365. This brings the total population of *Boda-boda* motorcyclists, encompassing both male and female riders, in these four cities to 280,833. The research specifically targets *Boda-boda* motorcyclists operating in these urban areas, which aligns with the main focus of the study.

3.5 Sampling Techniques

The following section discusses the sample size and the sampling frame:

3.5.1 Sample size

The sample size was determined according to the formula by Taro Yamane (1967) which has a 95 percent confidence level. The element of representativeness is quite critical in the determination of sample size. The formula is represented and worked out as follows:

$$n = \frac{N}{1 + Ne^2}$$

Where: n= Sample size required

N= Number of people in the population

e= Desired Margin of error

$$n = \frac{N}{1 + Ne^2} = \frac{280{,}833}{1 + 280{,}833(0.05)^2} = \mathbf{399}\ riders$$

3.5.2 Sampling frame

This study used both probability and non-probability sampling. The four cities were purposively sampled because they have the highest number of *Boda-boda* motorcyclists, very high population, more accidents are recorded therein (NTSA 2023) and the road networks are busier than roads in the rural areas. The cities were then divided into strata according to the number of sub-counties, hence proportional stratified sampling was used, in this technique the size of the sample in each stratum (Sub- County) is proportional to the size of stratum in the overall population. In addition, stratified sampling allows generalization of results, increases accuracy and also reduces bias (Taherdoost, 2016). The simple random method was used to select 399 *Boda-boda* motorcyclists in the stratified sub-counties in order to answer the research questions.

The study sampled out 399 *Boda-boda* motorcyclists from the four cities. This was achieved by proportionately allocating each of the sub county a sample based on the population of *Boda-boda* motorcyclists in that particular locality (proportionate sampling). The sample proportion relative to the population was calculated as follows:

$$Sample\ proportion\ (p) = \frac{Sample\ Size}{Population} = \frac{399}{280833} = 0.00142$$

This is shown in the following table.

Table 3.1 sampling frame

CITY	**TOTAL MOTORCYCLISTS**	**SAMPLE PROPORTION**	**SAMPLE**
NAIROBI	121,048	0.001422306	172
NAKURU	64,866	0.001422306	92
KISUMU	46,254	0.001422306	66
MOMBASA	48,365	0.001422306	69
TOTAL	280,833	0.001422306	**399**

Source: Author 2024

In addition, twelve key informants were purposively picked based on their expert knowledge in the area of BCC and road safety. The key informants were selected as a set of three respondents from each city drawn from the NTSA communication office, senior traffic police officers and officials from the *Boda-boda* motorcyclists association. The total number of respondents was 411.

3.6 Data collection methods

In the study, quantitative data was collected through semi-structured questionnaires developed by the researcher and administered face to face to the *Boda-boda* motorcyclists. The questionnaire captured the demographic information and also sought responses on the items posed in line with the research questions. The study targeted 399 *Boda-boda* motorcyclists, however due to certain constraints feedback was collected from 387 respondents. Research assistants were engaged and trained, to administer the questionnaires amongst the respondents in the four cities of Kenya concurrently, according to the guidelines in a mixed method study with a parallel convergent method.

In-depth interview schedules were used to collect the qualitative data from the twelve key informants purposively sampled in the study. A total of nine responses were received from the four cities.

3.6.1 Questionnaires

Semi-structured questionnaires were administered to *Boda-boda* motorcyclists in the Kenyan cities. The first section of the questionnaire contained demographics of the respondents while the second part had a section on items dealing with BCC indicators and road safety. The questionnaire had a mix of closed-ended and open-ended questions. The open-ended questions allowed respondents to express their thoughts, opinions, or provide detailed explanations on road safety, giving the researcher a deeper understanding of the subject matter. On the other hand, close ended questions were used to ensure that certain information was gathered consistently across respondents, enabling comparisons and quantitative analysis.

3.6.2 Interviews

Qualitative data was collected by use of a interview guide that aligned to the research objectives. The guide captured the relevant information from the key informants. A total of nine key informants were interviewed for the study. This method enabled the researcher to get expert insight on the research questions.

3.7 Measurement of variables

The independent variables in the study were participatory communication, media campaigns, traffic visual communication and information, education and communication. The dependent variable was road safety while the moderating variable was attitude. Below is a summary of the measure of variables in the study.

Table 3.2 operationalization of variables

Objective	***Variable***	***Type***	***Operationalization***	***Operational definition of variable***	***Measurement***
1.	Participatory communication	Independent variable	Influence on road safety	Interpersonal communication, Community engagement, information sharing and social mobilisation	Direct measure
2.	Media Campaign	Independent variable	Influence on road safety	Social media (X, what's-App, Facebook), Print media (newspapers, magazines), Electronic media (Radio, television)	Direct measure
3.	Information Education Communication	Independent variable	Influence on road safety	Training, mentorship and Publicity material like handbooks, fliers, posters	Direct measure
4.	Traffic visual communication	Independent variable	Influence on road safety	Road signage, symbols and road markings, Police presence and traffic control, Roadside advertisements	Direct measure
5.	Attitude	Moderating variable	Influence on road safety	Cognitive, affective and behavioral	Direct measure

3.8 Pilot study

The research instruments were pre-tested in a pilot study to evaluate the validity and reliability of the questionnaires administered to Boda-boda motorcyclists. The primary aim of the pilot study was to identify inconsistencies and ambiguities in the study instruments which ensures accuracy in measurement (Creswell, 2018). the pilot population and the data collected during this phase was not included in the actual study (Dawadi, 2019).

piloting was conducted in Machakos Town, which has a population of approximately 1,414,022 (KNBS, 2019). This town features a busy road network and is home to over 20,000 Boda-boda motorcyclists, fourty of whom were selected for the pilot study.

Machakos was chosen due to its characteristics that closely resemble those of the four cities targeted in the main study. Notably, Machakos is ranked among the top five areas in Kenya with the highest number of road accidents, according to the National Transport and Safety Authority (NTSA, 2021). The areas with the highest accident rates include Nairobi, Nakuru, Kiambu, Machakos, and Meru. The prevalence of Boda-boda use and the associated road safety challenges in Machakos make it a relevant location for piloting the research instruments. The high volume of motorcyclists, coupled with significant traffic-related fatalities and injuries, further underscores the necessity of evaluating the research tools in this context.

The research tools employed in the pilot study demonstrated a commendable effort in ensuring both validity and reliability. Content validity was rigorously addressed through expert opinions, resulting in refinements to the survey tools to enhance clarity and relevance. This process reflected a conscientious approach to ensuring that the instruments effectively capture the intended constructs related to road safety awareness among *Boda-boda* motorcyclists in Kenyan cities. The high Cronbach's Alpha values obtained in the reliability analysis further underscore the internal consistency of the survey items within each dimension. These strong reliability coefficients, exceeding the commonly accepted threshold, indicate that the research tools yield consistent and dependable results. Such high reliability enhanced the overall credibility of the study, bolstering the confidence in

the accuracy of the data collected. Therefore, the amended questionnaire was used as a tool in data collection for the current study.

3.9 Validity

Validity addresses how the research design is structured to effectively answer the research questions and deliver meaningful results (Creswell, 2018). In this study, validity was attained through several key strategies that ensured accurately reflects the constructs being examined. Construct validity focuses on the accuracy of measurement for the variables involved. It ensures that the operationalization of concepts aligns with their theoretical definitions and relevant literature, capturing the true essence of the constructs being studied (Creswell, 2018). This alignment is crucial, and in this study, it guaranteed the validity of the research findings being relevant and applicable to the theoretical frameworks in place.

Content validity evaluates the extent to which the questions in the research instrument cover all relevant aspects of the construct being assessed (Mc'Opiyo, 2019). To enhance content validity, the research instruments were developed based on a thorough literature review and expert input, ensuring that they comprehensively addressed all pertinent dimensions of the constructs. The inclusion of diverse perspectives during the development phase strengthened the content validity of the instruments.

Additionally, the use of a pilot study with trained research assistants significantly increased the validity of the research. This pilot study helped to identify inconsistencies and ambiguities in the questionnaire, allowing for adjustments before the main study (Dawadi, 2019). By pre-testing the instruments in a similar environment, the researcher gathered

feedback on the clarity and relevance of the questions, which enhanced the overall robustness of the study.

3.10 Reliability

Reliability refers to the consistency, stability, and repeatability of the measurements or findings (Heale and Twycross, 2015). In this study, reliability was achieved through carefully designed study and the testing of the research instruments in Machakos town, this ensured that the same results could be obtained across different contexts and timeframes. The pilot study played a critical role in identifying potential issues that could affect reliability, allowing for revisions and refinements as needed to enhance the instruments' performance.

To quantitatively assess reliability, the study computed the Cronbach's Alpha for each construct. This statistic evaluates the internal consistency of the questionnaire items, providing a numerical value that reflects how closely related the items are as a group. Scores were interpreted as follows: values ranging from 0.5 to 0.6 indicate poor internal consistency, 0.6 to 0.7 indicate questionable consistency, 0.7 to 0.8 suggest acceptable consistency, and 0.8 to 0.9 reflect good consistency. Scores above 0.9 indicate excellent internal consistency, while scores below 0.5 suggested that significant revisions were necessary to enhance the instrument's reliability.

Moreover, the wording and instructions in the research questionnaire were meticulously crafted to enhance clarity and reduce the risk of misinterpretation. This careful attention to detail is essential, as it helped to ensure that respondents fully understand the questions being posed, thereby contributing to the overall reliability and validity of the study

findings. By prioritizing clear communication, the research aimed at mitigating the influence of extraneous variables that could lead to inconsistent responses.

3.11 Data analysis and presentation

The mixed method approach was used whereby qualitative and quantitative data was analysed and presented for interpretation. The two strands aided in collecting data that was complimentary.

3.11.1 Qualitative data

Data collected from the key informants was transcribed into similar themes for analysis. Data was transcribed before coding; irrelevant data was discarded and then the remaining data was organized into themes. This made the data comprehensible. The choice of thematic analysis was informed by the ability to categorize and analyse the data (Ndungu, 2022). The final step was interpretation and presentation of findings in line with the research questions.

3.11.2 Quantitative data

Descriptive and inferential statistical techniques were used to analyse the quantitative data. The descriptive statistics included the use of frequencies, percentages and standard deviations. On the other hand, inferential statistics was handled through use of a regression model in order to explore relationships or differences between variables (Anderson 2011). A multivariate regression model was applied to determine the relative importance of each of the four variables in road safety practices; while a statistical software for social science (SPSS Version 26) was used for data analysis.

This being a convergent parallel approach, qualitative and quantitative data was analysed separately, but will converge at the interpretation stage. Tables, charts and graphs, and statistical measures were used to present the findings then integrate them.

The multiple regression model is shown below:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + e$$

Where:

$Y =$ Dependent variable (road safety)

$\alpha =$ Constant

$X_1, X_2, X_3, X_4 =$ Explanatory variables which include media campaign, participatory communication, traffic visual communication, and information, education and communication respectively

$\beta_1, \beta_2, \beta_3, \beta_4 =$ Regression coefficient for media campaign, participatory communication, traffic visual communication, and information, education and communication respectively

$e =$ Error term

3.12 Diagnostic Tests

The researcher carried out diagnostic tests to ensure compliance with the classical linear regression model (CLRM). This was done prior to conducting the regression analysis. The diagnostic tests in this study include autocorrelation homoscedasticity, linearity and multi-collinearity and normality.

3.12.1 Homoscedasticity

Homoscedasticity is the presence of equal variance of the error term for all the observations. It highlights an occurrence whereby the error term is similar in all values of the independent variable. The violation of homoscedasticity is called heteroscedasticity, which means the variation in the error term amongst all the values of an independent variable. The heteroscedasticity was tested using Breush-Pagan test as recommended by Warner (2008) by setting the assumption that the error term has constant variance as a null hypothesis versus the alternative hypothesis assumption of error term variance as not constant. P-value of less than or equal to 0.05 imply the existence of heteroscedasticity (no constant variance in error term) and leads to rejection of null hypothesis at 5 percent level of significance.

3.12.2 Multicollinearity

The lack of a non-linear relationship among explanatory variables of the regression model creates multicollinearity. Such relationship brings a challenge of separation in the independent effect of each explanatory variable. Multicollinearity can be assessed using two ways; the variance inflation factor (VIF) and the tolerance (TOL) methods. In this study the existence of multicollinearity was tested through the use of the variance inflation factor (VIF), where VIF of the variables more than 10, indicates a high multicollinearity. The problem of multicollinearity was addressed by dropping the highly collinear variable in order to make the other variable statistically significant (Gujarati et al, 2013).

3.12.3 Normality

The main assumption of normality is related to the distribution of the error term. If the error term in normally distributed with mean of zero and a constant variance, it is concluded that normality exists. Normality is a necessary condition for data analysis; therefore, the study used the Jarque-Bera statistics. This test utilizes the skewness and kurtosis to check for normality of variables. The tilt in the distribution is called skewness and should fall between -2 and +2 for data to be normally distributed. On the other hand, the degree of peakedness is measured by kurtosis and it falls between -3 and +3. The null hypothesis states that the data is normally distributed and the Jarque-Bera statistics should be greater than the level of significance (Brooks, 2008).

3.12.4 Autocorrelation

The cross correlation of a signal with itself at a different point in time is called autocorrelation. For the purpose of this study Durbin-Watson test was used as an autocorrelation test. Durbin-Watson test gives a result in the range of 0 and 4, where values close to 2 suggest less autocorrelation and values close to 0 or 4 indicate greater positive or negative autocorrelation respectively.

3.12.5 Linearity

As a tool to test the linearity of the relationship between the variables, the study used Pearson's correlation coefficient. The Pearson's correlation coefficient indicates the direction and strength of the linear relationship. It can take a negative and positive values. Negative coefficient indicates an inverse relationship where an increase in one variable

causes a decrease in the other variable while the positive coefficient indicates a positive relationship (Field, 2009).

3.13 Ethical considerations

Attention to ethical consideration is paramount with the researcher expected to maintain great adherence to set guidelines and regulations (BERA, 2018). The use of humans as respondents calls for acquisition of approvals from the relevant authorities. These considerations amongst others protect the research validity and maintain scientific integrity. As a key ethical concern this study selected an appropriate methodology to collect the data, analyse and present findings, this is very important as posited in (Akaranga and Makau 2016).

This study was guided by the ethical principle of respect of all stakeholders in line with Bera (2018) who stipulates that there should be maximum benefit and minimum harm to the respondents in every research. All respondents regardless of their age, sex, religion or location were treated with utmost respect and equality (BERA, 2018). In line with this, informed consent was sought from each participant, a clear explanation on the nature of research, timeline and benefits were provided. In addition, transparency was enhanced by outlining the respondents' freedom to withdraw anytime from the study without penalties. Hence all the respondents who took part voluntarily participated. The researcher stipulated the research process clearly to the respondents and also explained to them their role (Akaranga and Makau 2016).

The confidentiality and privacy of respondents was highly observed by conducting research at the place and time of the respondent's choice. Further to this, confidentiality was enhanced by not including the name and contacts of the respondents during field work. Anonymity of respondents increased the trustworthiness of the research, further to this data was stored securely (Creswell, 2018).

Permission was secured internally from the School of Business at Karatina University, followed by approval from the National Commission of Science, Technology and Innovation (NACOSTI) which is the authorised provider of research licences. The researcher and assistants upheld the highest degree of professionalism and the results of the study were shared amongst relevant stakeholders as part of validation.

3.14 Chapter Summary

Research methodology details and philosophical underpinning of this study are captured in this chapter. The study used the mixed method approach with questionnaires and key informant interview as research tools. *Boda-boda* motorcyclists were the target population who gave the qualitative data. The key informants that gave the qualitative data were drawn from the police, NTSA and *Boda-boda* association. A pilot study was conducted in Machakos town and ethical considerations were upheld. The sample size from each city was drawn using the Yamane 1967 formulae. The data collection and analysis, procedure was clearly stipulated.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

This chapter discusses data analysis, findings, presentation and interpretation. The aim of the study was to investigate behaviour change communication interventions on road safety amongst *Boda-boda* motorcyclists in Kenyan cities. Different sections discuss the objectives of the study. The chapter thus encompasses descriptive and inferential findings, as well as thematic analyses derived from interviews and surveys.

4.2 Response Rate

Table 4.1 provides an overview of the response rate for questionnaires filled in each city (stratum) studied, detailing the sample size, the number of responses received, and the corresponding response rate.

Table 4.1: Response Rate

City (Stratum)	**Sample Size**	**Responses**	**Response Rate** %
Nairobi	172	171	98.8%
Nakuru	92	86	93.5%
Kisumu	66	64	97.0%
Mombasa	69	66	95.7%
Total	399	387	97.0%

Source: Author 2024

In Nairobi, out of the 172 sampled *Boda-boda* motorcyclists, 171 provided responses, resulting in a response rate of 98.8 per cent. Similarly, in Nakuru, 86 out of 92 sampled motorcyclists participated, posting a response rate of 93.5 per cent. In Kisumu, 64 out of 66 sampled individuals responded, accounting for a response rate of 97.0 per cent. Lastly, in Mombasa, 66 out of 69 sampled motorcyclists provided responses, resulting in a response rate of 95.7 per cent. Overall, across all cities, 387 responses were collected out of the targeted sample size of 399, resulting in an aggregated response rate of 97.0 per cent.

The response rates indicate a high level of participation from the sampled *Boda-boda* motorcyclists across the four cities, with rates ranging from 93.5 per cent to 98.8 per cent. The slightly lower response rate in Nakuru compared to other cities was attributed to specific contextual factors and logistical challenges encountered during data collection. Nonetheless, the overall response rate of 97.0 per cent indicates a strong representation respondent, enhancing the validity and reliability of the findings.

The response rates obtained in this study, ranging from 93.5 percent to 98.8 percent across Nairobi, Nakuru, Kisumu, and Mombasa, exceed the generally accepted threshold for adequacy in survey research. These high response rates indicate a strong engagement and willingness of *Boda-boda* motorcyclists to participate in the study, enhancing the validity and reliability of the data. With an aggregated response rate of 97.0 per cent across all cities, the study ensures a comprehensive representation of the target population, aligning with recommendations by for obtaining high-quality survey data (Creswell, 2018). Overall, the achieved response rates affirm the adequacy of the sample size and support the credibility of the study's findings on road safety and behaviour change communication interventions among *Boda-boda* motorcyclists in Kenyan cities.

4.3 Data Analysis Approach

The analysis approach adopted in this study involved a merging of qualitative thematic analysis and quantitative statistical techniques to comprehensively explore the influence of behaviour change communication interventions on road safety among *Boda-boda* motorcyclists in Kenyan cities. Qualitative data obtained from in-depth interviews with key informants underwent thematic analysis, following the method as outlined by Ndungu (2022). This approach involved transcribing the data, identifying relevant themes, and organizing them for better comprehension of road safety phenomenon.

Interviews were conducted with key stakeholders involved in road safety initiatives targeting *Boda-boda* motorcyclists in Kenyan cities. The purpose was to gain insights into the dynamics of behaviour change communication interventions and attitudes towards road safety among this demographic. Key stakeholders included representatives from the National Transport and Safety Authority (NTSA), traffic police officers, and the officials from the *Boda-boda* Association of Kenya (BAK). The interviews explored various aspects such as the importance of road safety among *Boda-boda* motorcyclists, the effectiveness of media campaigns and participatory communication, IEC, awareness of road signs, and the impact of behaviour change communication interventions.

Concurrently, quantitative data collected through semi-structured questionnaires underwent descriptive and inferential statistical analyses using SPSS Version 26. Descriptive statistics such as frequencies, percentages, and standard deviations provided a summary of the quantitative data, while inferential statistics, particularly multiple regression analysis, examined the relationships between behaviour change communication

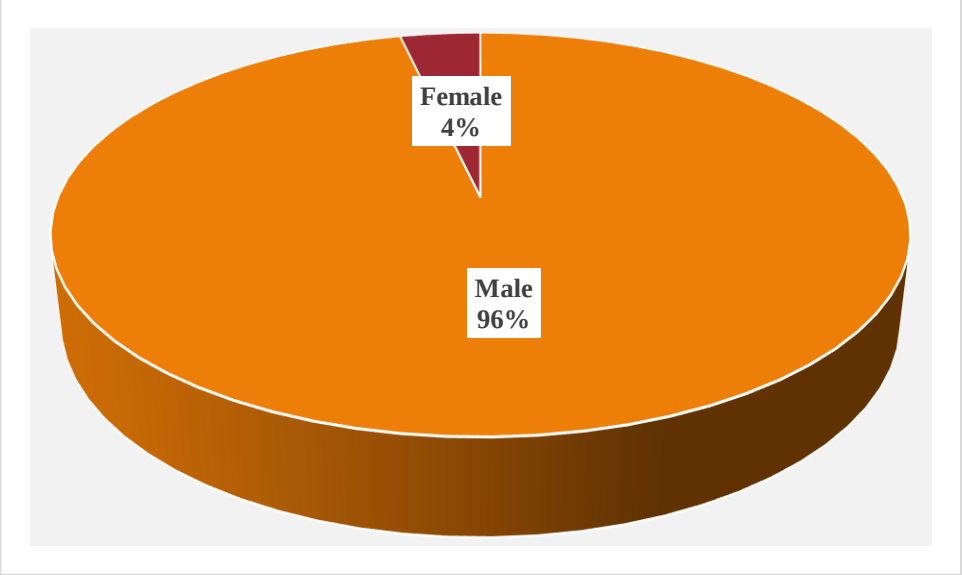
interventions (independent variables) and road safety practices (dependent variable). This approach aligned with the study's mixed-methods design, allowing for the integration of qualitative and quantitative findings during the interpretation stage.

By employing both qualitative and quantitative analysis techniques in a convergent parallel design, this study ensured a comprehensive examination of the research question, enabling researchers to triangulate findings, enhance validity, and gain a deeper understanding of the complexities surrounding road safety behaviours among *Boda-boda* motorcyclists. This integrative approach was essential for generating meaningful insights and informing evidence-based interventions aimed at improving road safety outcomes in Kenyan cities.

4.4 Demographic Information

This section presents demographic characteristics of the respondents, shedding light on their gender distribution, educational background, years of experience as *Boda-boda* motorcyclists, and their participation in road safety training programs. These demographic details offer a context for understanding the profile of *Boda-boda* motorcyclists involved in the study and provide a foundation for analysing their attitudes and behaviour towards road safety initiatives.

Figure 4.1: Respondents Gender



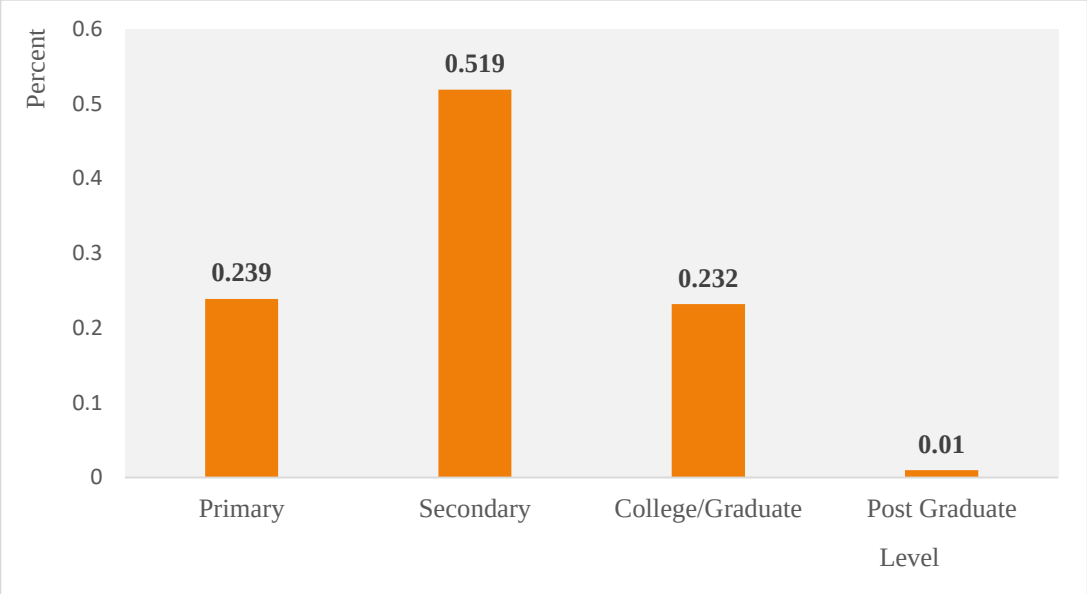
Source: Author 2024

Figure 4.1 presents the demographic distribution of respondents by gender, showing that the majority were male, comprising 96.4 per cent of the sample (N = 373), while only a small proportion were female, accounting for 3.6 per cent (N = 14) of the total respondents. This gender imbalance is consistent with the predominance of male *Boda-boda* motorcyclists in the transportation industry, which is a common trend observed in many countries, including Kenya (Smith et al., 2017).

The overwhelming majority of male respondents in the study suggests a potential gender disparity in road safety perceptions, attitudes, and behaviors among *Boda-boda* motorcyclists. Previous research has indicated that male motorcyclists often exhibit riskier behaviors, such as speeding and disregard for traffic rules, compared to their female counterparts (Cafiso et al., 2018). Moreover, it is essential to consider that men and women communicate differently, which underscores the need for gendered communication strategies in road safety campaigns. Scholars Gamble and Gamble (2014) highlight that gender differences can influence how individuals receive and interpret messages, suggesting that tailored communication approaches are necessary for effective outreach.

By employing gender-appropriate messages that resonate with both male and female riders, policymakers and stakeholders can develop more targeted and inclusive strategies that promote safer riding practices among *Boda-boda* motorcyclists in Kenyan cities, ultimately addressing the unique challenges each gender faces in this context.

Figure 4.2: Respondent's Highest Level of Education



Source: Author 2024

Figure 4.2 illustrates the distribution of respondents' highest level of education, indicating that the majority of respondents had completed secondary school education, accounting for 51.9 per cent (N = 201) of the sample. This is followed by respondents with primary school education, comprising 23.9 per cent (N = 92) of the total. A smaller proportion of respondents reported having attained college or graduate-level education, representing 23.2 per cent (N = 90) of the sample. Additionally, a minimal percentage of respondents reported post-graduate education, constituting only 1 per cent (N = 4) of the total sample.

The predominant representation of respondents with secondary school education aligns with broader trends in educational attainment among *Boda-boda* motorcyclists in Kenya, where individuals often pursue secondary school education as a minimum requirement for employment in various sectors, including transportation (Ouma et al., 2015). However, the significant proportion of respondents with primary school education underscores the diverse educational backgrounds within the *Boda-boda* rider community, reflecting the accessibility of informal employment opportunities in the transportation sector for individuals with varying levels of educational attainment.

The relatively low percentage of respondents with college or graduate-level education suggests that higher education attainment among *Boda-boda* motorcyclists is less common. This finding underscores the need for targeted educational and vocational training programs for *Boda-boda* motorcyclists, including initiatives focused on road safety awareness, entrepreneurial skills development, and financial literacy (Ondiek et al., 2018). By addressing educational disparities and providing opportunities for skill enhancement, policymakers and stakeholders can empower *Boda-boda* motorcyclists to adopt safer riding practices and pursue alternative livelihood opportunities.

The relationship between the level of education among Boda-boda motorcyclists and communication strategies for promoting road safety is significant. Higher levels of education typically enable individuals to process complex information and engage with detailed training materials more effectively. For those with secondary education, communication strategies can involve structured workshops and educational resources that focus on in-depth traffic laws, safe riding practices, and accident prevention measures. Conversely, motorcyclists with only primary education may require simpler messaging that

utilizes visual aids and interactive demonstrations to convey essential safety concepts, ensuring comprehension regardless of literacy levels (Ondiek et al., 2018).

Furthermore, the choice of communication channels should reflect the educational backgrounds of the riders. Educated individuals may respond better to digital platforms such as mobile apps and online training modules, while those with lower educational attainment might benefit more from community meetings and radio outreach programs that foster direct engagement (Ouma et al., 2015). Tailoring communication strategies to align with these educational profiles not only enhances the effectiveness of road safety campaigns but also empowers all riders regardless of their educational background to adopt safer riding practices and contribute to the overall improvement of road safety within their communities.

Figure 4.3: Respondent's Experience as a *Boda-boda* Motorcycle Rider

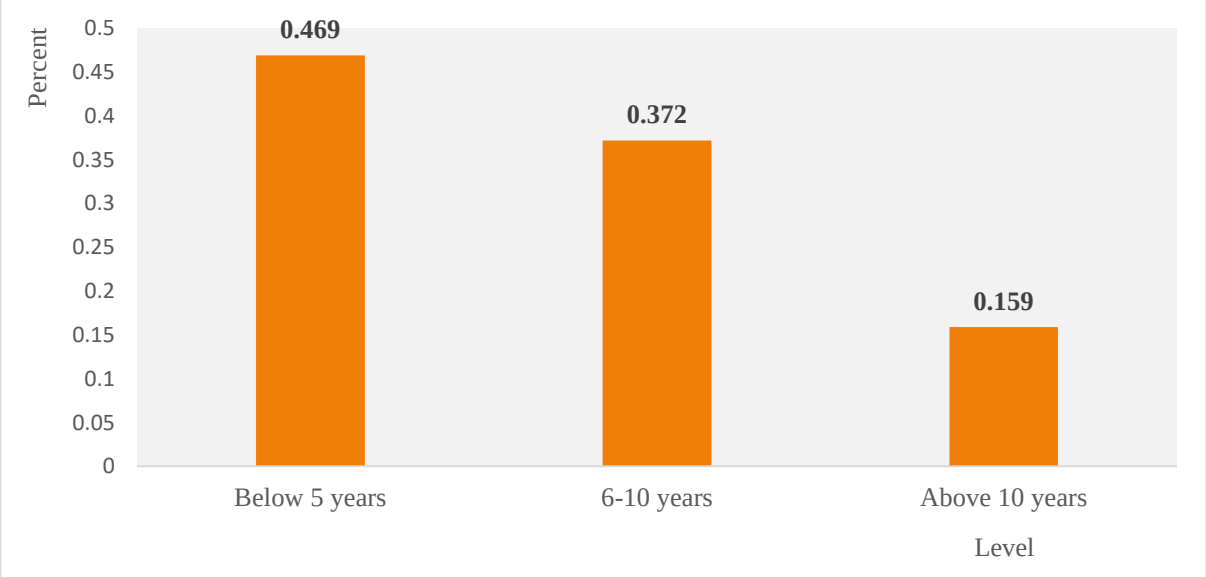


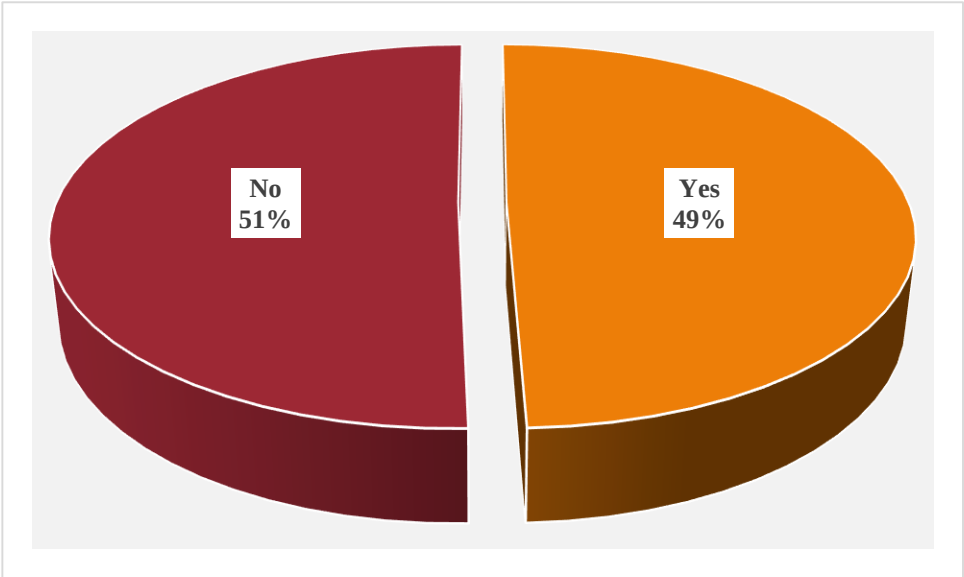
Figure 4.3 depicts the distribution of respondents' experience levels as *Boda-boda* motorcyclists. The majority of respondents reported having less than 5 years of experience, comprising 46.9 per cent (N = 182) of the sample. Following this, a significant proportion of respondents indicated 6-10 years of experience, accounting for 37.2 per cent (N = 143) of the total. Lastly, a smaller percentage of respondents reported having more than 10 years of experience, constituting 15.9 per cent (N = 62) of the sample. The prevalence of respondents with less than 5 years of experience suggests a considerable influx of new entrants into the *Boda-boda* motorcycle riding profession. This finding is consistent with trends observed in rapidly urbanizing areas, where the demand for transportation services, including motorcycle taxis, continues to grow, attracting individuals seeking employment opportunities in the informal sector (Ondiek et al.., 2018). The high representation of novice motorcyclists underscores the importance of targeted road safety interventions and training programs to equip new riders with the skills and knowledge to navigate road hazards and minimize accident risks.

Moreover, the substantial proportion of respondents with 6-10 years of experience indicates a significant cohort of seasoned motorcyclists within the *Boda-boda* motorcycling community. These motorcyclists likely possess a wealth of practical knowledge and on-the-road experience, which could influence their attitudes and behaviours towards road safety.

Engaging experienced motorcyclists as mentors and role models in road safety awareness campaigns and training initiatives could leverage their expertise to promote safer riding practices and mentorship opportunities for newer motorcyclists, contributing to overall improvements in road safety outcomes. The presence of respondents with more than 10

years of experience highlights the longevity of some individuals' careers in the *Boda-boda* motorcycle riding profession. These motorcyclists may serve as valuable resources for insights into long-term challenges and solutions related to road safety and the evolving dynamics of the transportation industry.

Figure 4.4: Whether Respondent's Had Ever-Attended Any Road Safety Training



Source: Author 2024

Figure 4.4 presents whether respondents had ever attended any road safety training. The data indicates that nearly half of the respondents, constituting 49.5 per cent (N = 192) of the sample, reported having attended road safety training sessions. Conversely, the remaining respondents, accounting for 50.5 per cent (N = 195) of the total, indicated that they had not participated in any road safety training programs.

The prevalence of respondents who had attended road safety training reflects a proactive approach among a significant portion of *Boda-boda* motorcyclists towards acquiring

knowledge and skills to enhance their safety and that of their passengers on the roads. Road safety training programs play a vital role (Nyachieo, 2020) in equipping motorcyclists with essential information on traffic regulations, hazard awareness, defensive driving techniques, and emergency response protocols. By actively engaging in such training initiatives, motorcyclists demonstrate a commitment to improving their road safety practices and reducing the incidence of accidents and injuries.

However, results also highlight a substantial proportion of respondents who had not participated in road safety training programmes. They were not awareness of training opportunities among certain segments of the *Boda-boda* motorcycling community. Efforts to expand the reach and effectiveness of road safety training initiatives should prioritize addressing barriers such as accessibility, affordability, and relevance to the needs of motorcyclists across diverse socio-economic backgrounds and geographical locations.

Results also illustrate the locations where respondents attended road safety training sessions and the duration of these training programs. Respondents reported attending training sessions at various venues, including driving schools, social halls, police stations, and institutions such as NTSA and NYS, across different cities and towns in Kenya. Additionally, respondents cited attending training sessions organized by specific organizations, such as Safe Boda, Uber, and Bolt.

The duration of the road safety training varied widely among respondents, with training periods ranging from as short as one hour to as long as six months. The most commonly reported durations were one day, one week, and two weeks. However, there were also instances of longer training periods, such as three weeks, one month, and even three

months. It is noteworthy that some respondents mentioned being unable to recall the duration of their training, indicating potential variability or inconsistency in the format or structure of the training programmes. The diverse range of training durations underscores the flexibility and adaptability of road safety training initiatives to accommodate the needs and schedules of *Boda-boda* motorcyclists across different contexts and locations.

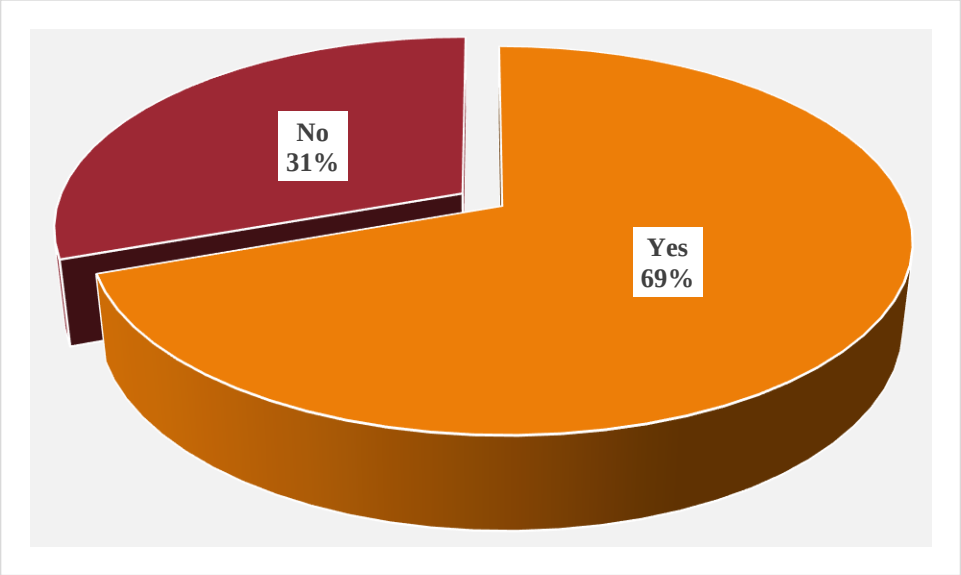
The data on training locations and durations highlights the decentralized nature of road safety training efforts targeting *Boda-boda* motorcyclists in Kenya, with training sessions being conducted at various accessible venues and over variable timeframes. This decentralized approach facilitates broader participation and accessibility, enabling motorcyclists from diverse backgrounds and geographical locations to benefit from road safety education and skills development opportunities. However, ensuring the quality, consistency, and effectiveness of training programs remains crucial to maximize their impact on improving road safety practices and reducing accidents among *Boda-boda* motorcyclists in Kenya.

Moreover, a wide array of organizers were mentioned by the respondents highlighting the multi-sectoral approach taken to address road safety concerns and provide training opportunities for *Boda-boda* motorcyclists in Kenya. Government agencies like the National Transport and Safety Authority (NTSA) play a crucial role in setting standards, regulations, and implementing road safety initiatives and highlighting the importance of grassroots efforts and community engagement in promoting safer practices among *Boda-boda* motorcyclists. Furthermore, the participation private organizations like Uber and Bolt, driving schools, and other organizations reflects the recognition of road safety as a

shared responsibility that requires collaboration between public, private, and civil society sectors.

The diverse range of road safety initiatives indicates that the unique challenges and needs of *Boda-boda* motorcyclists in different regions is recognized. Through the community-based organizations and local leaders, the training programs are tailored to address specific contexts and requirements of road users. This localized approach not only enhances the effectiveness of road safety interventions but also fosters a sense of ownership and empowerment among *Boda-boda* motorcyclists, as they receive training and support from familiar and trusted sources within their communities.

Figure 4.5: Whether Respondent had a Riding License



Source: Author 2024

Figure 4.5 depicted the ownership status of riding licenses among the respondents. It was observed that approximately 69.5 per cent of the respondents reported possessing a riding license, while the remaining 30.5 per cent stated that they did not own one. This distribution of responses highlights the varying levels of compliance with licensing regulations within

the *Boda-boda* motorcycle riding community. The ownership of a riding license is essential as it signifies that motorcyclists have undergone the necessary training and assessment to operate their motorcycles safely on public roads (Maddox, 2018).

The relatively high percentage of respondents with riding licenses suggests a considerable degree of adherence to licensing requirements among *Boda-boda* motorcyclists. This adherence is crucial for promoting road safety and minimizing the risk of accidents and injuries associated with unlicensed riding. Licensing ensures that motorcyclists possess the requisite skills and knowledge to navigate traffic effectively, adhere to road rules and regulations, and respond appropriately to different road conditions (Mugo et al.., 2019). Therefore, the majority of respondents riding licenses reflects a positive trend towards regulatory compliance and responsible riding behaviour among *Boda-boda* operators in Kenya.

However, the data also indicates that a significant portion (31 per cent) of the respondents do not possess a riding license. This finding underscores the need for enhanced efforts to promote licensing compliance within the *Boda-boda* sector. Strengthening awareness campaigns, providing accessible and affordable training programs, and streamlining the licensing process could encourage more motorcyclists to obtain licenses, thereby contributing to improved road safety outcomes and reduced road traffic incidents involving *Boda-boda* motorcycles (Mutisya et al., 2020).

4.5 Road Safety amongst *Boda-boda* Motorcyclists

This section focuses on examination of road safety within the context of Boda- boda motorcyclists. This section presents various aspects of road safety, encompassing

diagnostic tests, descriptive findings, and a comprehensive exploration of the perceptions and suggestions put forth by respondents regarding road safety practices among *Boda-boda* motorcyclists. Through an in-depth analysis, this section aims to illuminate the challenges, perceptions, and potential solutions pertaining to road safety within this specific demographic, shedding light on critical areas for intervention and improvement.

4.5.1 Diagnostic Tests

In Section 4.5.1, diagnostic tests were conducted to assess the assumptions underlying the regression analysis conducted in this study. These diagnostic tests serve to evaluate the suitability of the statistical model and ensure that the data meet the necessary criteria for valid inference. The tests include examinations for normality, homoscedasticity, and multicollinearity, which are fundamental assumptions in regression analysis. By examining these diagnostic indicators, researchers can identify any potential issues that may affect the validity and reliability of the regression results. Thus, this section provides an essential evaluation of the robustness of the regression model and the reliability of its findings.

4.5.1.1 Normality Test

In Section 4.5.1.1, a Normality Test was conducted to assess the distribution of Road Safety scores among *Boda-boda* motorcyclists in the study. The Normality Test is a fundamental diagnostic procedure used to determine whether a dataset follows a normal distribution. This test is crucial for ensuring the validity of subsequent statistical analyses, particularly parametric tests, which assume that the data are normally distributed. In this section, the results of the Normality Test are presented and interpreted to evaluate the appropriateness of applying parametric statistical methods to analyse the Road Safety data.

Table 4.2: One-Sample Kolmogorov-Smirnov Test

One-Sample Kolmogorov-Smirnov Test			
			Road Safety
N			387
Normal Parameters a,b	Mean		3.8333
	Std. Deviation		0.77727
Most Extreme Differences	Absolute		0.133
	Positive		0.074
	Negative		-0.133
Test Statistic			0.133
Asymp. Sig. (2-tailed) a			0.124
Monte Carlo Sig. (2-tailed) d	Sig.		0.267
	99% Confidence Interval	Lower Bound	0.000
		Upper Bound	0.000

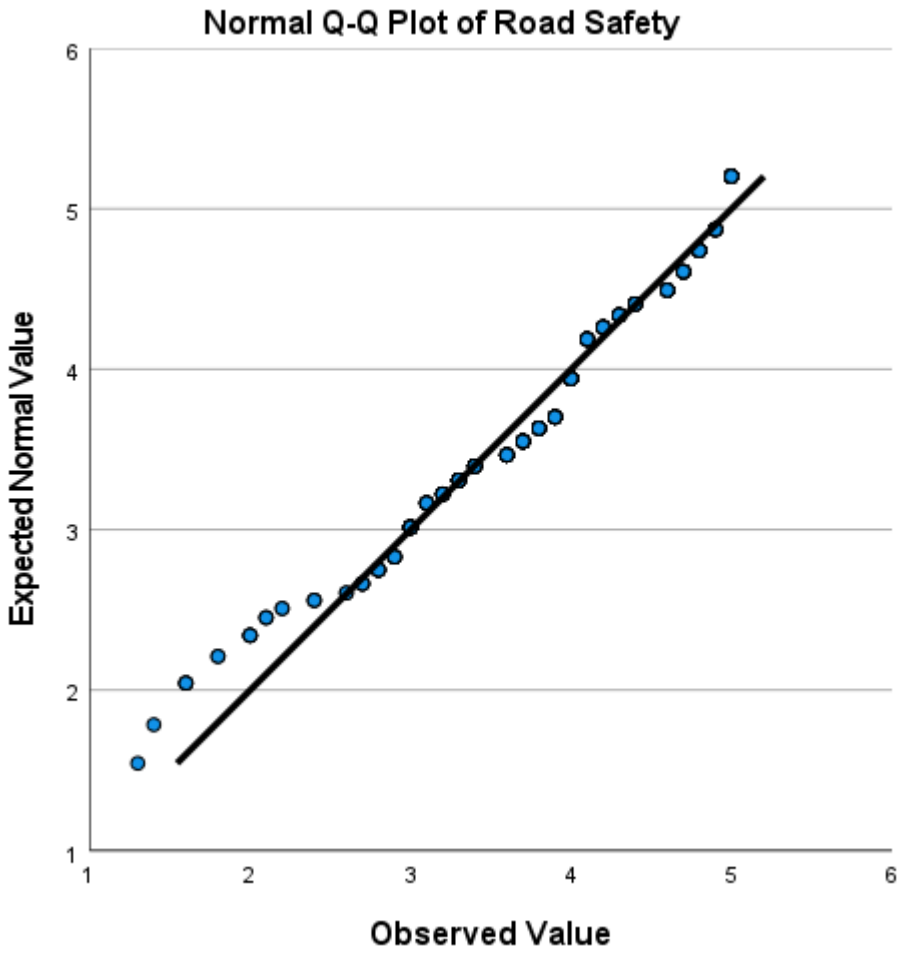
a Test distribution is Normal.
b Calculated from data.
c Lilliefors Significance Correction.
d Lilliefors' method based on 10000 Monte Carlo samples with starting seed 2000000.

Source: Author 2024

The results of the one-sample Kolmogorov-Smirnov test, as presented in Table 4.2, aimed to assess the normality of the distribution of road safety scores among the surveyed *Boda-boda* motorcyclists. The test was conducted on a sample size of 387 respondents. The mean road safety score was found to be 3.8333, with a standard deviation of 0.77727, suggesting a relatively consistent spread of scores around the mean. The test statistics revealed the most extreme differences between the observed and expected cumulative distribution functions, with an absolute difference of 0.133, a positive difference of 0.074, and a negative difference of -0.133.

The significance level, as indicated by the asymptotic two-tailed significance (Sig.) value, was computed to be 0.124, exceeding the conventional threshold of 0.05. This suggests that the null hypothesis, which posits that the distribution of road safety scores follows a normal distribution, cannot be rejected at the 5 per cent significance level. Furthermore, the Monte Carlo significance value of 0.267 corroborates this finding, indicating a lack of statistical evidence to refute the assumption of normality. However, it's important to note that the Lilliefors Significance Correction was applied in this analysis, implying that the results may be adjusted to account for potential violations of normality assumptions.

Figure 4.6: Normal Q-Q Curve of Road Safety



Source: Author 2024

The Normal Q-Q curve of Road Safety illustrates the distribution of Road Safety scores among *Boda-boda* motorcyclists in the study. A Normal Q-Q (Quantile-Quantile) plot is a graphical tool used to assess whether a set of data follows a normal distribution. In this context, the plot compares the observed distribution of Road Safety scores against the expected distribution under a normal distribution assumption. Ideally, if the data were normally distributed, the points on the plot would fall along a straight diagonal line. Deviations from this diagonal line suggest departures from normality. Interpretation of the plot allows researchers to evaluate the assumption of normality for further statistical analyses, such as parametric tests.

4.5.1.2 Test for Homoscedasticity

In Section 4.5.1.2, the study conducted a test for homoscedasticity to examine whether the variance of Road Safety scores among *Boda-boda* motorcyclists was consistent across the dataset. Homoscedasticity, or the homogeneity of variance, is an essential assumption for many statistical analyses, as it simplifies mathematical and computational treatments. The Breusch-Pagan test, named after Trevor Breusch and Adrian Pagan, was employed for this purpose.

Table 4.3: Breusch - Pagan Test for Homoscedasticity

Breusch -Pagan Test Statistic	Degrees of Freedom	p-Value
0.562	1	0.755

For Breusch-Pagan test the null hypothesis assumes homoscedasticity which is stated as follows:

Null Hypothesis (H_0): The data (residuals) is homoscedastic

Alternative Hypothesis (H_1): The data is heteroscedastic

The decision rule is: If p-Value < α; then null hypothesis is rejected.

If p-Value > α; then we fail to reject the null hypothesis.

Where α is the level of significance (alpha)

Test for homoscedasticity in this study generated a p-Value of 0.755 (Table 4.3) and therefore we fail to reject the null hypothesis and conclude that the data (residuals) is homoscedastic.

4.5.1.3 Multicollinearity Test

Table 4.4 presents the results of the multicollinearity test conducted to assess the extent of collinearity among the predictor variables included in the regression model. Collinearity statistics such as Tolerance and Variance Inflation Factor (VIF) were computed for each variable to gauge the degree of multicollinearity. Tolerance values indicate the proportion of variance in a predictor variable that is not explained by other predictors in the model.

Table 4.4: Multicollinearity Test

	Collinearity Statistics	
Variables	Tolerance	VIF
Participatory Communication	0.426	2.35
Information Education and Communication and Road Safety	0.438	2.282
Media Campaigns	0.511	1.955
Traffic Visual Communication	0.471	2.121

Source: Author 2024

In this analysis, Participatory Communication exhibited the lowest tolerance value of 0.426, suggesting that approximately 42.6 per cent of its variance is not accounted for by the other predictor variables. Similarly, the variable Information Education and Communication and Road Safety showed a tolerance of 0.438, indicating a comparable level of multicollinearity. Conversely, Media Campaigns demonstrated a higher tolerance value of 0.511, implying a relatively lower degree of collinearity compared to the other predictors.

Furthermore, the VIF values provide insight into the inflation of variance due to multicollinearity, with higher VIF values indicating greater collinearity. In this context, all variables exhibited VIF values below the threshold of 5, indicating that multicollinearity is not severe. Specifically, Media Campaigns had the lowest VIF of 1.955, followed by Traffic Visual Communication with a VIF of 2.121. While Participatory Communication and Information Education and Communication and Road Safety displayed slightly higher VIF values of 2.35 and 2.282, respectively, they still remained within an acceptable range. These findings suggest that although some degree of collinearity exists among the predictor variables, it is not severe enough to undermine the integrity of the regression model. Therefore, the multicollinearity test indicates that the predictor variables are sufficiently independent from each other.

Table 4.5: Level of Agreement on Aspects Describing Road Safety amongst *Boda-boda* Motorcyclists

Statement	Distribution of Responses (%)					Mean Statistic	Std. Deviation Statistic	Skewness Statistic	Kurtosis Statistic
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree				
Accidents:									
I believe there has been a decrease in accidents caused by Boda-boda motorcyclists.	2.3	7.5	21.4	42.9	25.8	3.824	0.976	-0.732	0.228
Efforts to promote road safety have resulted in a reduced number of accidents involving *Boda-boda* motorcyclists.	2.1	5.9	20.7	46.5	24.8	3.861	0.928	-0.794	0.584
Road safety measures implemented have contributed to a reduction in accidents caused by *Boda-boda* motorcyclists.	3.1	5.2	22.0	43.9	25.8	3.842	0.970	-0.843	0.647
Aggregate	***2.5***	***6.2***	***21.4***	***44.4***	***25.5***	***3.842***	***0.958***	***-0.790***	***0.486***
Fatalities:									
I believe the number of fatalities caused by motorcycle accidents has reduced.	4.1	5.4	18.6	46.3	25.6	3.837	1.004	-0.983	0.848
Focus on road safety has led to a decline in fatal accidents involving *Boda-boda* motorcyclists.	4.1	5.4	18.9	46.3	25.3	3.832	1.003	-0.975	0.838
Road safety campaigns have contributed to a decrease in fatalities resulting from motorcycle accidents.	2.8	5.9	21.4	40.3	29.5	3.876	0.995	-0.812	0.383
Aggregate	***3.7***	***5.6***	***19.6***	***44.3***	***26.8***	***3.848***	***1.000***	***-0.923***	***0.690***
Injuries:									
I believe the number of injuries caused by motorcycle accidents has reduced.	4.4	5.9	25.6	38.2	25.8	3.752	1.043	-0.742	0.233
Emphasis on road safety behaviour practices has led to a decrease in injuries among Boda-boda motorcyclists.	2.8	6.2	24.5	40.1	26.4	3.809	0.989	-0.706	0.238
Road safety awareness campaigns have contributed to a reduction in injuries resulting from motorcycle accidents.	3.4	5.9	23.3	37.7	29.7	3.845	1.024	-0.777	0.253
Aggregate	***3.5***	***6.0***	***24.5***	***38.7***	***27.3***	***3.802***	***1.019***	***-0.742***	***0.241***

Source: Author 2024

4.5.2 Descriptive Findings for Road Safety amongst *Boda-boda* Motorcyclists

Table 4.5 presents the level of agreement among respondents regarding various aspects describing road safety among *Boda-boda* motorcyclists. Each statement is accompanied by the distribution of responses in percentages, the mean, standard deviation, skewness, and kurtosis statistics. For the aspect of accidents, the majority of respondents expressed agreement that there has been a decrease in accidents caused by *Boda-boda* motorcyclists, with approximately 68.7 per cent agreeing or strongly agreeing across all three statements. The mean scores for these statements range from 3.824 to 3.861, indicating a generally positive perception of the effectiveness of efforts to reduce accidents.

Regarding fatalities, respondents also showed a positive perception, with over 70 per cent agreeing or strongly agreeing across all three statements. The mean scores range from 3.832 to 3.876, suggesting a high level of agreement that focus on road safety has contributed to a decline in fatal accidents involving *Boda-boda* motorcyclists. Similarly, for injuries, there is a consensus among respondents, with approximately 66 per cent agreeing or strongly agreeing across all three statements. The mean scores range from 3.752 to 3.845, indicating a prevailing belief that road safety measures have led to a reduction in injuries caused by motorcycle accidents.

Examining the distribution of responses, it's notable that for each statement, there is a higher proportion of respondents who agree or strongly agree compared to those who disagree or strongly disagree. This suggests a generally positive perception of the effectiveness of road safety initiatives among *Boda-boda* motorcyclists. Additionally, the standard deviation values, which measure the dispersion of responses around the mean, are relatively moderate, indicating a moderate level of agreement among respondents.

The skewness and kurtosis statistics provide insights into the distributional characteristics of the responses. The skewness values, which measure the symmetry of the distribution, are negative for all statements, indicating a slight left-skewed distribution where more respondents tend to agree or strongly agree than disagree or strongly disagree. The kurtosis values, which measure the peakiness of the distribution, are within acceptable ranges, suggesting that the distribution of responses is relatively normal.

Respondents also expressed a multifaceted approach to enhancing road safety among *Boda-boda* motorcyclists. Throughout the responses, a clear consensus emerged regarding the imperative for comprehensive training programs tailored to both seasoned motorcyclists and newcomers alike. These training initiatives were viewed as essential avenues for instilling not only the requisite riding skills but also a deep understanding of and commitment to road safety practices.

Moreover, respondents underscored the importance of individual agency and responsibility in fostering safer road behaviours among *Boda-boda* motorcyclists. There was a palpable call for motorcyclists to proactively engage in educational opportunities and take ownership of their role in promoting and upholding road safety standards. This sentiment reflected a growing recognition of the pivotal role that each rider plays in contributing to overall road safety outcomes.

Additionally, there was a resounding plea for heightened public awareness campaigns and robust governmental support to bolster road safety initiatives on a national scale. The emphasis on these broader, systemic interventions underscored a collective understanding of the need for multifaceted strategies to address the complex challenges inherent in

ensuring road safety for *Boda-boda* motorcyclists and all road users alike. Furthermore, the voices of respondents echoed a call for tangible improvements in infrastructure and more effective law enforcement practices to complement educational efforts. This highlighted a recognition of the interconnected nature of various factors that influence road safety outcomes, emphasizing the need for holistic approaches that address both behavioural and structural aspects of road safety.

Lastly, there was a pervasive call for greater affordability and accessibility of road safety training programs, reflecting concerns about equity and inclusivity within current initiatives. This resonated with broader discussions around the importance of tailoring interventions to meet the diverse needs of *Boda-boda* motorcyclists, particularly those from marginalized communities, and ensuring that barriers to participation are minimized. Overall, the descriptive findings suggest a positive perception among respondents regarding the effectiveness of road safety measures in reducing accidents, fatalities, and injuries among *Boda-boda* motorcyclists. These findings provide valuable insights into the attitudes and beliefs of *Boda-boda* motorcyclists towards road safety, which can inform the development of targeted interventions to further enhance road safety practices within this demographic.

4.6 Influence of Media Campaign on Road Safety amongst *Boda-boda* Motorcyclists

In section 4.6, the influence of media campaigns on road safety among *Boda-boda* motorcyclists is examined. The section sought to address the first objective by investigating the influence of media campaigns on road safety among *Boda-boda* motorcyclists.

This investigation focuses on the effectiveness of various media strategies in promoting safer practices within this demographic. Through an analysis of the impact of media campaigns on road safety outcomes, valuable insights into the relationship between media exposure and road safety practices are gained, shedding light on potential avenues for improving safety initiatives tailored to this crucial segment of road users.

4.6.1 Descriptive Findings for Media Campaign

This section presents descriptive findings on the effectiveness of various media campaigns aimed at promoting road safety among *Boda-boda* motorcyclists in Kenyan cities. The analysis evaluates the levels of agreement and interest in different media forms, including print, electronic, and social media, as perceived by the respondents. The data provides insights into which media channels are most effective in delivering road safety messages and engaging the target audience, thereby informing future strategies for enhancing road safety awareness and behaviour among *Boda-boda* motorcyclists. The responses are quantified using percentages, mean scores, standard deviations, skewness, and kurtosis to provide a comprehensive understanding of the impact and reach of these media campaigns.

Table 4.6: Level of Agreement on Aspects Describing Media Campaign

	Distribution of Responses (%)					Mean	Std. Deviation	Skewness	Kurtosis
Statement	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**	**Statistic**	**Statistic**	**Statistic**	**Statistic**
Print Media:									
a) Newspapers serve as important promoters of road safety.	4.4	5.9	16.5	42.6	30.5	3.889	1.046	-1.019	0.708

Statement	Distribution of Responses (%)					Mean	Std. Deviation	Skewness	Kurtosis
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Statistic	Statistic	Statistic	Statistic
b) Road safety magazines offer valuable insights into road safety practices.	3.6	6.2	14.7	40.3	35.1	3.972	1.036	-1.066	0.755
c) Engagement with newspapers and magazines enhances awareness of road safety issues.	3.6	3.9	12.9	41.9	37.7	4.062	0.993	-1.258	1.521
Aggregate	***3.9***	***5.3***	***14.7***	***41.6***	***34.5***	***3.974***	***1.025***	***-1.114***	***0.995***
Electronic Media:									
d) Radio and television effectively deliver road safety messages to the public.	5.7	4.9	20.7	37.5	31.3	3.837	1.097	-0.939	0.430
e) Informative radio programs and television shows engage audiences in road safety topics.	3.9	5.2	12.7	43.4	34.9	4.003	1.017	-1.195	1.222
f) Road safety advertisements on electronic media positively influence road safety behaviour.	2.1	5.2	10.1	40.8	41.9	4.153	0.944	-1.274	1.521
Aggregate	***3.9***	***5.1***	***14.5***	***40.6***	***36.0***	***3.997***	***1.019***	***-1.136***	***1.058***
Social media:									
g) Eye-catching designs on social media platforms attract interest in riding safety information.	4.9	7.2	22.2	35.9	29.7	3.783	1.098	-0.787	0.062
h) Interactive social media platforms facilitate two-way communication on road safety.	4.1	9.0	26.6	36.2	24.0	3.669	1.065	-0.590	-0.162
i) Mainstream and social media campaigns significantly impact road safety awareness and behaviour.	3.9	3.9	19.1	37.2	35.9	3.974	1.028	-1.028	0.802
Aggregate	***4.3***	***6.7***	***22.7***	***36.4***	***29.9***	***3.809***	***1.064***	***-0.802***	***0.234***

The respondents generally agreed that print media, such as newspapers and magazines, are significant in promoting road safety. A considerable majority (73.1 per cent) agreed or strongly agreed that newspapers play an important role in promoting road safety, with a mean response of 3.889 and a standard deviation of 1.046. Similarly, 75.4 per cent of the respondents felt that road safety magazines offer valuable insights, reflected in a mean of 3.972 and a standard deviation of 1.036. Furthermore, a higher percentage (79.6 per cent) agreed or strongly agreed that engagement with newspapers and magazines enhances awareness of road safety issues, leading to a mean response of 4.062 and a standard deviation of 0.993. Overall, the aggregate mean for print media was 3.974 with a standard deviation of 1.025, indicating a positive skew towards agreement on the effectiveness of print media in promoting road safety, despite the noted skewness of -1.114 and kurtosis of 0.995.

Responses indicated strong support for the effectiveness of electronic media in delivering road safety messages. A combined 68.8% of respondents agreed or strongly agreed that radio and television are effective in this regard, resulting in a mean of 3.837 and a standard deviation of 1.097. Informative programs on these platforms were also highly regarded, with 78.3% agreement and a mean response of 4.003 (standard deviation of 1.017). Road safety advertisements on electronic media were perceived very positively, with 82.7 per cent agreeing or strongly agreeing that they positively influence road safety behaviour, leading to a mean of 4.153 and a standard deviation of 0.944. The aggregate mean for electronic media stood at 3.997 with a standard deviation of 1.019, reflecting a strong consensus on its impact, as indicated by the skewness of -1.136 and kurtosis of 1.058.

The impact of social media on road safety awareness and behaviour received mixed reactions. While 65.6 per cent of respondents agreed or strongly agreed that eye-catching designs on social

media platforms attract interest in riding safety information (mean of 3.783, standard deviation of 1.098), the effectiveness of interactive social media platforms in facilitating two-way communication on road safety received lower agreement (60.2 per cent), resulting in a mean of 3.669 and a standard deviation of 1.065. Overall, mainstream and social media campaigns were seen to significantly impact road safety awareness and behaviour, with 73.1 per cent agreement, a mean response of 3.974, and a standard deviation of 1.028. The aggregate mean for social media was 3.809 with a standard deviation of 1.064, showing a more neutral stance compared to print and electronic media, reflected by a skewness of -0.802 and kurtosis of 0.234.

Table 4.7: Extent to which road safety campaign media are interesting to respondents

Campaign Media	Not Interesting	Less Interesting	Neutral	Interesting	Very Interesting	Mean	Std. Dev
TikTok	26.0	14.5	15.1	16.0	28.4	3.063	1.574
WhatsApp	19.2	12.3	11.1	23.1	34.3	3.410	1.525
Facebook	13.3	6.6	13.8	31.1	35.2	3.683	1.360
Twitter	50.3	15.8	12.3	14.8	6.8	2.120	1.347
Instagram	48.3	20.9	13.4	9.2	8.2	2.081	1.310
YouTube	23.3	8.7	8.9	27.5	31.6	3.354	1.560
Others	50.0	0.0	20.0	20.0	10.0	2.400	1.497

Source: Author 2024

Table 4.7 provides insights into the extent to which various road safety campaign media platforms are perceived as interesting by respondents. The results are segmented across different platforms, including TikTok, WhatsApp, Facebook, Twitter, Instagram, YouTube, and others. Among the platforms assessed, Facebook emerged as the most engaging platform, with a mean score of 3.683.

This suggests that a significant proportion of respondents found road safety campaigns on Facebook to be interesting or very interesting. Similarly, WhatsApp also garnered substantial interest, with a mean score of 3.410, indicating that it serves as an effective medium for disseminating road safety information and engaging *Boda-boda* motorcyclists. YouTube followed closely behind, with a mean score of 3.354, indicating a notable level of interest in road safety campaigns presented through video content on this platform.

Conversely, Twitter and Instagram received lower mean scores of 2.120 and 2.081, respectively, indicating that these platforms were perceived as less interesting by respondents. This suggests that road safety campaigns on Twitter and Instagram may not be as effective in capturing the attention and engagement of *Boda-boda* motorcyclists compared to other platforms. Interestingly, TikTok, despite its rising popularity among younger demographics, received a mixed response from respondents. While a notable proportion found road safety campaigns on TikTok to be interesting or very interesting, there was also a significant proportion who found them to be not interesting or less interesting. This suggests that TikTok may have potential as a road safety campaign platform but may require tailored content to resonate effectively with *Boda-boda* motorcyclists.

Results also highlight the presence of other platforms not specifically listed, with a mean score of 2.400. While these platforms garnered some interest, they received mixed responses overall, indicating a need for further exploration and understanding of their effectiveness in delivering road safety messages to *Boda-boda* motorcyclists.

Generally, the findings underscore the importance of selecting appropriate media platforms for road safety campaigns targeted at *Boda-boda* motorcyclists. Platforms like Facebook, WhatsApp,

and YouTube appear to be effective channels for engaging this demographic, while platforms like Twitter and Instagram may require more targeted strategies to enhance their effectiveness in delivering road safety messages. Additionally, the mixed response to TikTok and other platforms suggests the need for ongoing evaluation and adaptation of road safety campaign strategies to effectively reach and resonate with *Boda-boda* motorcyclists.

To conduct effective social media campaigns on road safety targeted at *Boda-boda* motorcyclists, several recommendations emerge from the responses provided. Firstly, consistency is key, as reiterated by multiple respondents. Campaigns should be regular and frequent to maintain engagement and avoid forgetfulness among motorcyclists. Moreover, these campaigns should not only be limited to social media but should also incorporate face-to-face trainings, radio, and television broadcasts to ensure broader reach, especially to those who may not have access to smartphones or social media platforms.

Secondly, the content of these campaigns should be tailored to the preferences and interests of the target audience. Short, scripted videos and relatable content are favoured, with an emphasis on using platforms like TikTok, WhatsApp, Facebook, and YouTube. Additionally, the use of local languages, such as Kiswahili, is recommended to ensure better understanding among all motorcyclists, including those who may be less proficient in English.

Thirdly, the involvement of various stakeholders and influencers can enhance the effectiveness of these campaigns. Collaborating with celebrities, peer educators, and community leaders can help amplify the messages and increase their impact. Moreover, campaigns should avoid painting Boda-boda motorcyclists negatively and instead focus on highlighting positive aspects, such as their contributions to the economy and their commitment to road safety.

Fourthly, efforts should be made to make the campaigns accessible to all *Boda-boda* motorcyclists, regardless of their socioeconomic status or access to technology. This could involve providing free platforms for internet access, sending information via SMS, or organizing face-to-face workshops and roadshows in local communities.

Lastly, there should be a concerted effort to encourage active participation from all stakeholders, including *Boda-boda* motorcyclists themselves, motorists, and the general public. Creating active groups and forums for discussion, as well as seeking feedback and suggestions from the target audience, can foster a sense of ownership and collaboration in promoting road safety. By implementing these recommendations, social media campaigns on road safety can become more effective tools in promoting safer practices among *Boda-boda* motorcyclists.

4.6.2 Inferential Findings for Media Campaign and Road Safety amongst *Boda-boda* Motorcyclists

In section 4.6.2, the inferential findings regarding the correlation between media campaigns and road safety among *Boda-boda* motorcyclists are scrutinized. This analysis aims to uncover significant insights into how media campaigns influence the road safety practices of *Boda-boda* motorcyclists. Through statistical analysis, such as ANOVA and regression, the section explores the extent to which media campaigns contribute to enhancing road safety awareness and behaviours among *Boda-boda* motorcyclists, providing importance guidance for policymakers, road safety advocates, and stakeholders in the transportation sector.

Table 4.8: R^2 for Media Campaign and Road Safety amongst *Boda-boda* Motorcyclists

R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
.710a	0.504	0.503	0.548	1.568

a Predictors: (Constant), Media Campaigns on Road Safety
b Dependent Variable: Road Safety

Source: Author 2024

Table 4.8 presents the R-squared value for the relationship between media campaigns and road safety among *Boda-boda* motorcyclists. The R-squared value, also known as the coefficient of determination, indicates the proportion of the variance in the dependent variable (road safety) that is explained by the independent variable (media campaigns). In this case, the R-squared value is 0.504, meaning that approximately 50.4 per cent of the variability in road safety among *Boda-boda* motorcyclists can be accounted for by media campaigns focused on promoting road safety awareness. This suggests a moderate-to-strong relationship between media campaigns and road safety behaviour among *Boda-boda* motorcyclists.

The adjusted R-squared value, which considers the number of predictors in the model, is 0.503. This adjusted value is slightly lower than the R-squared value but still reflects a significant proportion of variance explained by the media campaigns. The standard error of the estimate is 0.548, indicating the average distance between the actual road safety scores and the predicted scores based on the media campaign variable. The Durbin-Watson statistic tests for autocorrelation in the residuals, with a value of 1.568 suggesting minimal autocorrelation, which is desirable for the validity of the regression model.

Overall, the R-squared value of 0.504 suggests that media campaigns play a substantial role in influencing road safety behaviour among *Boda-boda* motorcyclists. This finding underscores the importance of effective media strategies in promoting awareness and adherence to road safety practices within this specific demographic.

Table 4.9: ANOVA for Media Campaign and Road Safety amongst *Boda-boda* Motorcyclists

	Sum of Squares	df	Mean Square	F	Sig.
Regression	117.643	1	117.643	391.953	.000b
Residual	115.557	385	0.300		
Total	233.2	386			

a Dependent Variable: Road Safety
b Predictors: (Constant), Media Campaigns

Source: Author 2024

Table 4.9 provides crucial insights into the relationship between media campaigns and road safety among *Boda-boda* motorcyclists through an analysis of variance (ANOVA). ANOVA is a statistical technique that assesses whether there are significant differences in the mean road safety scores across various levels of exposure to media campaigns.

The table's components offer a comprehensive understanding of the statistical significance of this relationship. Firstly, the "Regression" section outlines the sum of squares, degrees of freedom, mean square, F-statistic, and significance level associated with the regression model. Here, the sum of squares regression (117.643) represents the variance in road safety scores attributable to the media campaign variable. The highly significant F-statistic (391.953) with a p-value of less than 0.001 indicates that the model is a robust fit for the data, suggesting that the media campaign variable significantly influences road safety outcomes.

Secondly, the "Residual" section delineates the sum of squares and degrees of freedom for the residuals, which denote the unexplained variability in road safety scores after factoring in the effects of the media campaign variable. Finally, the "Total" section summarizes the overall sum of squares and degrees of freedom for the entire model, providing a holistic view of the variance in road safety scores.

Therefore, the ANOVA results underscore the substantive impact of media campaigns on road safety behaviours among *Boda-boda* motorcyclists. The exceedingly low p-value associated with the F-statistic indicates that the observed relationship is highly unlikely to occur by chance alone, bolstering the assertion that media campaigns play a pivotal role in shaping road safety practices within this demographic.

Table 4.10: Model Coefficients for Media Campaign and Road Safety amongst *Boda-boda* Motorcyclists

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.598	0.116		13.737	0.000
Media Campaigns	0.654	0.033	0.710	19.798	0.000
a Dependent Variable: Road Safety					

Source: Author 2024

Table 4.10 presents the model coefficients derived from the regression analysis, providing detailed information on the relationship between media campaigns and road safety among *Boda-boda* motorcyclists. These coefficients offer insights into the magnitude and direction of the impact that media campaigns have on road safety outcomes within this specific demographic.

The table includes two main sets of coefficients: the unstandardized coefficients and the standardized coefficients. The unstandardized coefficients, represented by the "B" column, indicate the change in the dependent variable (road safety) for every one-unit change in the independent variable (media campaigns). In this context, the unstandardized coefficient for media campaigns is 0.654, indicating that for every additional unit increase in exposure to media campaigns, road safety scores are expected to increase by 0.654 units. This suggests a positive relationship between media campaign intensity and road safety outcomes among *Boda-boda* motorcyclists.

The standardized coefficients, denoted by the "Beta" column, offer a standardized measure of the strength and direction of the relationship between the independent and dependent variables. The standardized coefficient for media campaigns is 0.710, indicating a strong positive relationship between media campaign exposure and road safety outcomes. This standardized coefficient allows for a comparison of the relative importance of different predictors in the model, suggesting that media campaigns have a substantial impact on road safety practices among *Boda-boda* motorcyclists compared to other factors included in the analysis.

Additionally, the table provides information on the statistical significance of the coefficients, as indicated by the "t" and "Sig." columns. The "t" statistic assesses the significance of each coefficient, with higher absolute t-values suggesting greater significance. In this case, both the unstandardized coefficient ($t = 19.798$) and the standardized coefficient ($t = 13.737$) for media campaigns are associated with extremely low p-values ($p < 0.001$), indicating a highly significant relationship between media campaign exposure and road safety outcomes among *Boda-boda* motorcyclists.

4.6.3 Qualitative Findings for Media Campaign and Road Safety

Qualitative findings on media campaigns and road safety shed light on the experiences and perceptions of stakeholders concerning the effectiveness of various communication strategies aimed at promoting road safety among *Boda-boda* motorcyclists in Kenyan cities. Interviews with representatives from organizations such as the National Transport and Safety Authority (NTSA), traffic police, and *Boda-boda* associations provided valuable insights into the role of media campaigns in raising awareness and fostering safer road behaviours.

Stakeholders generally acknowledged the importance of media campaigns as effective tools for disseminating road safety messages to *Boda-boda* motorcyclists. One key informant noted that: *"They are good and effective, however few and far in between due to limited resources".* They highlighted the reach and accessibility of media platforms, including radio talk shows, TV programs, and social media channels, in engaging with a wide audience of motorcyclists. One informant submitted that successful examples of media campaigns as: *"Dere smart" for PSV drivers and "Boda ni life" for Boda-boda motorcyclists"* These were cited as impactful initiatives that contributed to raising awareness and promoting safer road behaviours. *Inooro* TV programs such as *"Nduthi"* and "*Ngano cia andu a nduthi"* also provided informative content aimed at educating *Boda-boda* motorcyclists about safe riding practices and adherence to traffic rules.

However, stakeholders also pointed out challenges associated with media campaigns, including limited resources and sporadic implementation. Despite recognizing the effectiveness of media campaigns, stakeholders highlighted the need for more comprehensive and sustained efforts to address road safety issues among *Boda-boda* motorcyclists. The lack of evaluation mechanisms

on the impact of media campaigns on reducing accidents and injuries was also highlighted as a significant challenge.

Overall, while media campaigns are considered valuable in promoting road safety awareness among *Boda-boda* motorcyclists.

One key informant noted that:

> *"Media campaigns are good, we take part in TV and radio shows but the challenge is that there is no evaluation of impact, we are unable to determine the number of riders that have listened to the talk shows and the impact of the program thereafter"*.

While another key informant pointed out that:

> *"…. financial resources are a great challenge in the rolling out of media interventions especially in the main stream media which has high rates especially in the prime segments".*

Addressing challenges such as resource constraints and the lack of evaluation mechanisms is essential to maximize media campaign effectiveness and impact. Collaborative efforts involving multiple stakeholders, including government agencies, media organizations, and *Boda-boda* associations, are needed to develop and implement comprehensive media campaigns that highlight the challenges faced by *Boda-boda* motorcyclists in Kenyan cities.

The qualitative data revealed a consensus among respondents regarding the value of utilizing multiple communication channels to reach *Boda-boda* motorcyclists effectively. While traditional channels such as radio broadcasts, community meetings, and print materials remained popular choices, there was also recognition of the growing importance of digital platforms, including social media and mobile messaging apps. Respondents emphasized the need for a multi-pronged

approach that leverages both traditional and digital channels to ensure broad and inclusive communication coverage.

4.7 Influence of Participatory Communication on Road Safety amongst *Boda-boda* Motorcyclists

The influence of participatory communication on road safety among *Boda-boda* motorcyclists is explored, addressing the second research objective. The researcher examined various forms of interactive communication channels utilized within the *Boda-boda* community, thematic and inferential analysis on the effectiveness of participatory communication strategies was carried out to determine whether it enhanced road safety awareness and fostering responsible riding habits among *Boda-boda* motorcyclists. The influence was deemed as adding valuable insights to the field of transportation safety.

4.7.1 Descriptive Findings for Participatory Communication

This section presents descriptive findings on the role of participatory communication in promoting road safety among *Boda-boda* motorcyclists in Kenyan cities. The analysis focuses on three key areas: interpersonal communication, community engagement, and public awareness and information sharing. By examining respondents' levels of agreement with various statements, this section provides insights into how different forms of participatory communication contribute to enhancing road safety awareness and behaviours among *Boda-boda* motorcyclists. Results include percentages, mean scores, standard deviations, skewness, and kurtosis to offer a comprehensive understanding of the effectiveness and impact of these communication strategies.

Table 4.11: Level of Agreement on Aspects Describing Participatory Communication

Statement	Distribution of Responses (%)					Mean	Std. Deviation	Skewness	Kurtosis
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Statistic	Statistic	Statistic	Statistic
Interpersonal Communication:									
a) I find safety information from interpersonal communication among *Boda-boda* motorcyclists valuable.	6.2	8.8	23.8	29.2	32.0	3.721	1.180	-0.680	-0.352
b) Regular discussions with peer educators improve my road safety awareness.	3.6	9.8	29.2	31.8	25.6	3.659	1.074	-0.474	-0.389
c) Interactions with fellow motorcyclists positively influence my road safety behaviour.	1.8	8.8	22.0	40.3	27.1	3.822	0.988	-0.641	-0.096
Aggregate	***3.9***	***9.1***	***25.0***	***33.8***	***28.3***	***3.734***	***1.081***	***-0.598***	***-0.279***
Community Engagement:									
a) *Boda-boda* motorcyclists effectively contribute to addressing road safety issues.	3.4	11.6	26.1	35.7	23.3	3.638	1.064	-0.495	-0.395
b) Collaborative efforts within the *Boda-boda* community positively influence road safety practices.	3.1	8.5	23.0	41.9	23.5	3.742	1.011	-0.691	0.099
c) I believe a collective approach involving *Boda-boda* motorcyclists and the community is essential for promoting road safety.	3.1	12.7	25.1	36.2	23.0	3.633	1.065	-0.480	-0.459
Aggregate	***3.2***	***10.9***	***24.7***	***37.9***	***23.3***	***3.671***	***1.047***	***-0.555***	***-0.252***
Public Awareness and Information Sharing:									
a) Public awareness campaigns and opportunities for information exchange enhance my understanding of road safety.	3.4	3.9	13.7	41.9	37.2	4.057	0.983	-1.217	1.445
b) I actively seek and engage with road safety information disseminated to the public.	3.4	4.1	13.4	42.6	36.4	4.047	0.983	-1.211	1.423

Statement	Distribution of Responses (%)					Mean	Std. Deviation	Skewness	Kurtosis
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Statistic	Statistic	Statistic	Statistic
c) Joint efforts in social mobilization activities contribute to positive changes in road safety practices.	2.8	3.1	17.8	40.6	35.7	4.031	0.957	-1.060	1.153
Aggregate	***3.2***	***3.7***	***15.0***	***41.7***	***36.4***	***4.045***	***0.974***	***-1.163***	***1.340***

Table 4.11 highlights the significance of interpersonal communication among *Boda-boda* motorcyclists for disseminating road safety information. A substantial proportion of respondents (61.2 per cent) found safety information exchanged through interpersonal communication valuable, reflected in a mean score of 3.721 and a standard deviation of 1.180. Regular discussions with peer educators were also seen as beneficial, with 57.4 per cent of respondents agreeing or strongly agreeing that these discussions improve their road safety awareness, resulting in a mean score of 3.659 and a standard deviation of 1.074. Interactions with fellow motorcyclists were perceived positively by 67.4 per cent of respondents, who noted that these interactions positively influence their road safety behaviour, leading to a mean score of 3.822 and a standard deviation of 0.988. The aggregate mean for interpersonal communication was 3.734 with a standard deviation of 1.081, indicating a general agreement on the value of interpersonal communication for road safety among *Boda-boda* motorcyclists.

Findings indicate that community engagement plays a critical role in addressing road safety issues among *Boda-boda* motorcyclists. Around 59.0 per cent of the respondents agreed or strongly agreed that *Boda-boda* motorcyclists effectively contribute to addressing road safety issues, with

a mean score of 3.638 and a standard deviation of 1.064. Collaborative efforts within the *Boda-boda* community were perceived positively, with 65.4 per cent agreement and a mean score of 3.742 (standard deviation of 1.011). Furthermore, 59.2 per cent of respondents believed that a collective approach involving Boda-boda motorcyclists and the community is essential for promoting road safety, reflected in a mean score of 3.633 and a standard deviation of 1.065. The aggregate mean for community engagement was 3.671 with a standard deviation of 1.047, showing overall positive attitudes towards community involvement in road safety initiatives.

Public awareness campaigns and information sharing were highly valued by respondents. A notable 79.1 per cent agreed or strongly agreed that these campaigns enhance their understanding of road safety, resulting in a mean score of 4.057 and a standard deviation of 0.983. Similarly, 79.0% actively sought and engaged with road safety information disseminated to the public, with a mean score of 4.047 and a standard deviation of 0.983. Joint efforts in social mobilization activities were also seen as beneficial, with 76.3 per cent and a mean score of 4.031 (standard deviation of 0.957). The aggregate mean for public awareness and information sharing was 4.045 with a standard deviation of 0.974, indicating strong support for the role of public campaigns and collaborative information sharing in enhancing road safety among *Boda-boda* motorcyclists.

4.7.2 Inferential Findings for Participatory Communication and Road Safety amongst *Boda-boda* Motorcyclists

In this section, the inferential findings for participatory communication and road safety among *Boda-boda* motorcyclists are presented. Through statistical analysis, the extent to which participatory communication influences road safety behaviours within this demographic is

examined. Key metrics such as R-squared values, ANOVA results, and model coefficients are analysed to ascertain the significance and predictive power of participatory communication strategies in fostering safer practices among *Boda-boda* motorcyclists. These findings provide valuable insights into the efficacy of interactive communication approaches in promoting road safety awareness and behaviours within the *Boda-boda* community, contributing to the broader discourse on enhancing transportation safety in diverse settings.

Table 4.12: R^2 for Participatory Communication and Road Safety amongst *Boda-boda* Motorcyclists

R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
.780a	0.609	0.608	0.487	1.758

a Predictors: (Constant), Participatory Communication on Road Safety
b Dependent Variable: Road Safety

Source: Author 2024

Table 4.12 presents the R-squared values for the relationship between participatory communication and road safety among *Boda-boda* motorcyclists. The coefficient of determination (R-squared) is a measure of the proportion of the variance in the dependent variable (road safety) that is predictable from the independent variable (participatory communication). In this context, the R-squared value of 0.609 indicates that approximately 60.9 per cent of the variability in road safety can be explained by participatory communication. The adjusted R-squared value of 0.608 suggests that this model's explanatory power remains consistent even after accounting for the number of predictors. The standard error of the estimate reflects the accuracy of the regression model's predictions, with a value of 0.487 indicating a relatively low level of error. Additionally, the Durbin-Watson statistic of 1.758 suggests no significant autocorrelation in the residuals, indicating that the assumptions of the regression model are met.

Table 4.13: ANOVA for Participatory Communication and Road Safety amongst *Boda-boda* Motorcyclists

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	141.942	1	141.942	598.825	.000b
Residual	91.258	385	0.237		
Total	233.2	386			

a Dependent Variable: Road Safety
b Predictors: (Constant), Participatory Communication

Source: Author 2024

In Table 4.13, the ANOVA results provide further insights into the relationship between participatory communication and road safety among *Boda-boda* motorcyclists. The significant F-value of 598.825 ($p < 0.001$) indicates that the regression model is a good fit for the data, suggesting that participatory communication significantly predicts road safety outcomes among motorcyclists. The sum of squares for regression (141.942) represents the variability in road safety explained by participatory communication, while the sum of squares for the residual (91.258) represents the unexplained variability. These findings underscore the importance of participatory communication strategies in influencing road safety behaviours among *Boda-boda* motorcyclists.

Table 4.14: Model Coefficients for Participatory Communication and Road Safety amongst *Boda-boda* Motorcyclists

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	0.727	0.129		5.62	0.000
Participatory Communication	0.791	0.032	0.780	24.471	0.000

a Dependent Variable: Road Safety

Source: Author 2024

Table 4.14 provides the model coefficients for participatory communication and road safety among *Boda-boda* motorcyclists. The coefficient for participatory communication (0.791) indicates the change in the dependent variable (road safety) for every one-unit increase in the independent variable (participatory communication). With a t-value of 24.471 and a significance level of $p < 0.001$, the coefficient is statistically significant, confirming that participatory communication has a substantial positive impact on road safety outcomes among motorcyclists. This coefficient's significance underscores the importance of actively involving *Boda-boda* motorcyclists in communication and educational initiatives to enhance road safety practices within their community.

4.7.3 Qualitative Findings for Participatory Communication and Road Safety

Qualitative findings on participatory communication and road safety illuminate the collaborative efforts and strategies employed to engage *Boda-boda* motorcyclists effectively. One prominent theme is the emphasis on community engagement and empowerment. Stakeholders recognize the pivotal role of involving community members directly in road safety initiatives. Through participatory approaches like community meetings, workshops, and trainings, *Boda-boda* motorcyclists are empowered to take ownership of road safety initiatives. By participating in decision-making processes and dialogue sessions, they develop concern and accountability towards road safety.

Another significant theme is the role of stakeholder collaboration. Collaboration among various entities, including government agencies, community leaders, Boda-boda associations, and NGOs, is essential.

One of the respondents noted that:

> *"…This has not been common however, multiple agency approach campaigns were used this year, stakeholders from police, NTSA, ministry of transport, magistrates and others went out to the community to speak on road safety. The community of road users included matatu drivers, pedestrians and Boda-bodas; these road users were very happy."*

Another respondent equally submitted that:

> "…. *participation is very important because at one time or another everyone is a motorist, pedestrian or a passenger and hence knowledge of road safety is very important to all. Everyone will have to be sensitized on road usage for the better good of all*."

By pooling resources, expertise, and networks, stakeholders can develop and implement effective road safety interventions. Joint workshops, awareness campaigns, and training programs facilitate coordination and synergy among stakeholders, leading to more impactful initiatives.

Tailored and context-specific interventions emerge as crucial elements of participatory communication efforts. Understanding the local context, including cultural norms and infrastructure limitations, is paramount in designing effective interventions. Participatory methods such as interpersonal communication allow stakeholders to gather insights directly from *Boda-boda* motorcyclists and community members. This informs the design and implementation of targeted interventions tailored to the specific needs and challenges faced by *Boda-boda* motorcyclists in Kenyan cities.

Capacity building and skills development are also central themes. Training programs and educational campaigns equip *Boda-boda* motorcyclists with essential road safety knowledge and defensive driving skills. By enhancing motorcyclists' capacity, stakeholders aim to empower them to make informed decisions and adopt safer road behaviours, ultimately contributing to the reduction of road accidents and injuries. Finally, feedback mechanisms and continuous improvement are emphasized. One respondent posited that*:*

"The impact cannot be evaluated, especially whether accidents and injury on the road have reduced or not."

Establishing feedback channels enables stakeholders to assess the impact of interventions and gather suggestions for improvement. By soliciting feedback from *Boda-boda* motorcyclists and community members, stakeholders can adapt strategies based on evolving needs and challenges, ensuring the ongoing effectiveness of road safety initiatives.

Overall, participatory communication approaches play a vital role in promoting road safety among *Boda-boda* motorcyclists in Kenyan cities. Through community engagement, stakeholder collaboration, tailored interventions, capacity building, and feedback mechanisms, stakeholders aim to empower motorcyclists, enhance their road safety awareness and skills, and create safer road environments for all.

4.8 Influence of Traffic Visual Communication and Road Safety amongst *Boda-boda* Motorcyclists

In section 4.8, the influence of traffic visual communication on road safety among *Boda-boda* motorcyclists is investigated, addressing the third research objective. This section focuses on the role of visual communication strategies, such as road signs, symbols, and advertisements, in promoting safer riding practices and enhancing overall road safety awareness within the *Boda-boda* community.

4.8.1 Descriptive Findings for Traffic Visual Communication

This section provides descriptive findings on the effectiveness of traffic visual communication in promoting road safety among *Boda-boda* motorcyclists in Kenyan cities. The analysis covers three main areas: road signs and symbols, road markings, and the combined impact of roadside advertisements and police presence. By evaluating respondents' levels of agreement with various statements related to these aspects, the section aims to assess how well different forms of visual communication contribute to road safety awareness and behaviour. The findings include percentages, mean scores, standard deviations, skewness, and kurtosis, offering a detailed understanding of the role and perception of traffic visual communication among the target audience.

Table 4.15: Level of Agreement on Aspects Describing Traffic Visual Communication

Statement	Distribution of Responses (%)					Mean	Std. Deviation	Skewness	Kurtosis
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Statistic	Statistic	Statistic	Statistic
Road Signs and Symbols:									
a) I effectively understand and interpret road signs and symbols.	29.5	21.2	18.6	14.2	16.5	2.672	1.446	0.328	-1.243
b) Road signs and symbols provide clear information about road safety.	28.4	16.5	26.4	16.5	12.1	2.674	1.361	0.215	-1.143
c) Knowledge of road signs and symbols influences my road safety behaviour.	26.6	18.3	24.0	12.1	18.9	2.783	1.443	0.228	-1.243
Aggregate	***28.2***	***18.7***	***23.0***	***14.3***	***15.8***	***2.710***	***1.417***	***0.257***	***-1.210***
Road Markings:									
a) Road markings guide traffic and enhance road safety.	3.6	6.7	16.8	36.4	36.4	3.954	1.062	-0.977	0.427
b) Clear road markings positively influence road safety awareness.	4.4	6.7	18.3	39.3	31.3	3.863	1.070	-0.924	0.386
c) Road markings are essential for promoting safe road behaviour among *Boda-boda* motorcyclists.	4.4	5.9	24.0	35.4	30.2	3.811	1.069	-0.781	0.166
Aggregate	***4.1***	***6.5***	***19.7***	***37.0***	***32.6***	***3.876***	***1.067***	***-0.894***	***0.326***
Roadside Advertisements and Police Presence:									
a) Roadside advertisements catch my attention and provide valuable information.	5.4	6.7	25.6	35.9	26.4	3.711	1.094	-0.721	0.039
b) Police presence on the roads enhances road safety behaviour.	4.9	9.0	27.1	37.5	21.4	3.615	1.070	-0.602	-0.109
c) Roadside advertisements and police control contribute to increased road safety awareness among *Boda-boda* motorcyclists.	7.0	7.2	25.1	33.9	26.9	3.664	1.152	-0.707	-0.146

Statement	Distribution of Responses (%)					Mean	Std. Deviation	Skewness	Kurtosis
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Statistic	Statistic	Statistic	Statistic
Aggregate	***5.8***	***7.7***	***25.9***	***35.7***	***24.9***	***3.663***	***1.105***	***-0.677***	***-0.072***

Source: Author 2024

Table 4.15 presents the level of agreement on various aspects describing traffic visual communication among *Boda-boda* motorcyclists. The respondents expressed mixed levels of understanding and interpretation of road signs and symbols. Only 30.7 per cent of respondents agreed or strongly agreed that they effectively understand and interpret road signs and symbols, leading to a mean score of 2.672 and a standard deviation of 1.446. Similarly, 28.6 per cent felt that road signs and symbols provide clear information about road safety, with a mean score of 2.674 and a standard deviation of 1.361. The knowledge of road signs and symbols was perceived to influence road safety behaviour by 31.0 per cent of respondents, resulting in a mean score of 2.783 and a standard deviation of 1.443. The aggregate mean for this category was 2.710 with a standard deviation of 1.417, indicating a generally low level of agreement on the effectiveness of road signs and symbols in promoting road safety among *Boda-boda* motorcyclists.

In contrast, road markings were viewed more favourably by the respondents. A significant 72.8 per cent agreed or strongly agreed that road markings guide traffic and enhance road safety, with a mean score of 3.954 and a standard deviation of 1.062. Clear road markings were also seen as positively influencing road safety awareness by 70.6 per cent of respondents, leading to a mean score of 3.863 and a standard deviation of 1.070. Additionally, 65.6 per cent of respondents agreed or strongly agreed that road markings are essential for promoting safe road behaviour among *Boda-*

boda motorcyclists, resulting in a mean score of 3.811 and a standard deviation of 1.069. The aggregate mean for road markings was 3.876 with a standard deviation of 1.067, reflecting a strong consensus on their importance for road safety.

The impact of roadside advertisements and police presence on road safety behaviour elicited moderate agreement among respondents. Roadside advertisements caught the attention and provided valuable information to 62.3 per cent of respondents, yielding a mean score of 3.711 and a standard deviation of 1.094. Police presence was seen to enhance road safety behaviour by 58.9 per cent of respondents, with a mean score of 3.615 and a standard deviation of 1.070. Additionally, 60.8 per cent agreed or strongly agreed that roadside advertisements and police control contribute to increased road safety awareness, resulting in a mean score of 3.664 and a standard deviation of 1.152. The aggregate mean for this category was 3.663 with a standard deviation of 1.105, indicating a generally positive perception of the role of advertisements and police presence in promoting road safety among *Boda-boda* motorcyclists.

4.8.2 Inferential Findings for Traffic Visual Communication and Road Safety amongst *Boda-boda* Motorcyclists

In Section 4.8.2, the inferential findings concerning traffic visual communication and road safety among *Boda-boda* motorcyclists are explored. Through detailed statistical analysis, insights into the relationship between visual communication strategies and road safety outcomes within this demographic are uncovered. Key statistical metrics and model coefficients are examined to assess the effectiveness of traffic visual communication in enhancing road safety awareness and behaviour among *Boda-boda* motorcyclists.

Table 4.16: R^2 for Traffic Visual Communication and Road Safety amongst *Boda-boda* Motorcyclists

R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
.780a	0.608	0.607	0.487	1.522

a Predictors: (Constant), Traffic Visual Communication on Road Safety
b Dependent Variable: Road Safety

Source: Author 2024

Table 4.16 presents the inferential findings regarding the relationship between traffic visual communication and road safety among *Boda-boda* motorcyclists. The coefficient of determination (R-squared) indicates that approximately 60.8 per cent of the variance in road safety can be explained by traffic visual communication, suggesting a strong association between these two variables. The adjusted R-squared value remains consistent, further supporting the robustness of the model. Additionally, the standard error of the estimate and the Durbin-Watson statistic provide insights into the accuracy of the model's predictions and the presence of autocorrelation, respectively. The statistically significant values underscore the importance of traffic visual communication in influencing road safety outcomes for *Boda-boda* motorcyclists.

Table 4.17: ANOVA for Traffic Visual Communication and Road Safety amongst *Boda-boda* Motorcyclists

	Sum of Squares	df	Mean Square	F	Sig.
Regression	141.755	1	141.755	596.816	.000b
Residual	91.445	385	0.238		
Total	233.2	386			

a Dependent Variable: Road Safety
b Predictors: (Constant), Traffic Visual Communication

Source: Author 2024

Table 4.17 presents the results of the analysis of variance (ANOVA) for traffic visual communication and road safety among *Boda-boda* motorcyclists. The ANOVA table evaluates whether the regression model containing traffic visual communication variables significantly predicts road safety. The results reveal a statistically significant F-statistic (F = 596.816) with a corresponding p-value of .000, indicating that the regression model is a good fit for the data. This suggests that traffic visual communication variables collectively contribute to predicting road safety outcomes among *Boda-boda* motorcyclists, reinforcing the importance of visual communication strategies in enhancing road safety awareness and behaviour.

Table 4.18: Model Coefficients for Traffic Visual Communication and Road Safety amongst *Boda-boda* Motorcyclists

	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	0.637	0.133		4.783	0.000
Traffic Visual Communication	0.789	0.032	0.780	24.430	0.000
a Dependent Variable: Road Safety					

Source: Author 2024

Table 4.18 provides the model coefficients for traffic visual communication and road safety among *Boda-boda* motorcyclists. The unstandardized coefficients show the effect of each predictor variable on the dependent variable (road safety), while the standardized coefficients (Beta) represent the relative importance of each predictor in the model. The constant term indicates the expected road safety score when all predictor variables are zero. The coefficient for traffic visual

communication is statistically significant ($p < .001$), with a positive value of 0.789. This suggests that an increase in traffic visual communication is associated with higher levels of road safety among *Boda-boda* motorcyclists.

4.8.3 Qualitative Findings for Traffic Visual Communication and Road Safety

In qualitative findings concerning traffic visual communication and road safety, several themes emerge, shedding light on the effectiveness of visual communication strategies in promoting road safety among *Boda-boda* motorcyclists in Kenyan cities.

One prominent theme is the importance of clear and universally understandable visual cues. Respondents emphasized the significance of using simple and intuitive visual communication tools, such as road signs and symbols, to convey critical safety messages to *Boda-boda* motorcyclists. These visual cues need to be easily comprehensible to motorcyclists of varying literacy levels and cultural backgrounds to ensure their effectiveness in promoting safe road behaviours.

An interviewee noted that;

> "*Those (Motorcyclists) that have gone for training know most of the signs and symbols, however those that haven't gone for training have no comprehension of the road signs and symbols. There is need for rider training and refresher courses especially in meaning of signs and symbols."*

Another significant theme is the need for consistent and widespread dissemination of visual communication materials. Respondents highlighted the importance of ensuring that road signs, symbols, and other visual aids are prominently displayed across road networks in Kenyan cities. One respondent submitted that *"road signs are effective if understood by riders".* Additionally, they stressed the importance of incorporating visual communication elements into broader road

safety campaigns, including media initiatives and community engagement efforts, to maximize their reach and impact.

Contextual relevance and cultural sensitivity emerged as crucial considerations in the design and implementation of visual communication strategies. Respondents emphasized the need for visual materials to reflect local road conditions, traffic patterns, and cultural norms to resonate with *Boda-boda* motorcyclists effectively. By incorporating familiar imagery and language, visual communication materials can better capture motorcyclists' attention and facilitate comprehension of safety messages. One respondent posited; *"I wish there could be a road sign and symbol book in local languages!"* Accessibility and inclusivity were also highlighted as essential aspects of effective visual communication. Respondents underscored the importance of ensuring that visual materials are accessible to all road users, including those with disabilities or limited literacy. This includes employing clear fonts, colours, and symbols, as well as providing alternative formats, such as audio or tactile versions, to accommodate diverse needs and preferences.

Finally, ongoing evaluation and adaptation emerged as critical themes in the realm of traffic visual communication and road safety. Respondents emphasized the need for continuous monitoring and assessment of visual communication initiatives to gauge their effectiveness and identify areas for improvement. By soliciting feedback from *Boda-boda* motorcyclists and other stakeholders, authorities can refine visual communication strategies iteratively, ensuring their relevance and impact over time.

In summary, qualitative findings underscore the importance of clear, consistent, culturally relevant, and accessible visual communication strategies in promoting road safety among *Boda-boda* motorcyclists in Kenyan cities. By prioritizing these principles and engaging stakeholders in

the design, implementation, and evaluation of visual communication initiatives, authorities can enhance the effectiveness of their road safety efforts and contribute to safer road environments for all.

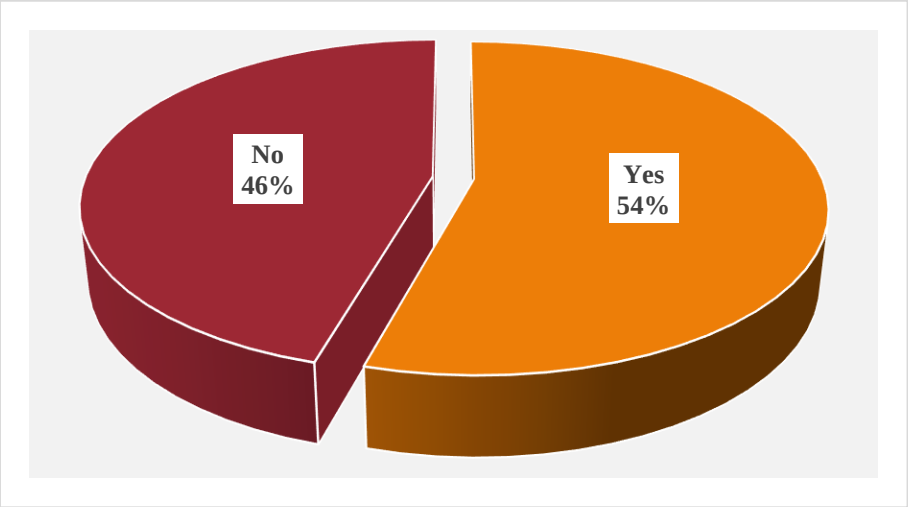
4.9 Influence of Information, Education, Communication for Road Safety amongst *Boda-boda* Motorcyclists

Section 4.9 addresses the fourth objective by exploring the influence of Information, Education, and Communication (IEC) on road safety among *Boda-boda* motorcyclists. This objective delves into the various programs, materials, and initiatives aimed at educating and communicating road safety practices to *Boda-boda* motorcyclists. By examining descriptive and inferential findings, this section aims to assess the effectiveness of these interventions in promoting safer behaviour and reducing road accidents within this demographic.

4.9.1 Descriptive Findings for Information, Education, Communication

In this section, we delve into the descriptive findings concerning information, education, and communication (IEC) strategies aimed at enhancing road safety among *Boda-boda* motorcyclists in Kenyan cities. Through a comprehensive analysis of respondents' perceptions and experiences, we explore three key areas: training programs, publicity materials, and mentorship initiatives. These findings shed light on the effectiveness and impact of various educational and communication approaches in promoting road safety awareness and behaviour among *Boda-boda* motorcyclists. By examining levels of agreement with specific statements and assessing mean

scores alongside standard deviations, this section provides valuable insights into the efficacy of IEC strategies in the context of *Boda-boda* safety.



Source: Author 2024

Figure 4.7: Whether Respondent Had Ever Taken a Motorcycle Training Course

Figure 4.7 illustrates the distribution of responses regarding the uptake of such training courses. Among the surveyed *Boda-boda* motorcyclists, 54.4% reported having undergone motorcycle training courses, indicating a significant portion of motorcyclists who have engaged in formal road safety education. Conversely, 45.6% of respondents indicated they had not taken such courses, highlighting a segment of the population that may benefit from increased access to road safety education and training programs.

Table 4.19: Level of Agreement on Aspects Describing Information, Education, Communication

Statement	Distribution of Responses (%)					Mean	Std. Deviation	Skewness	Kurtosis
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Statistic	Statistic	Statistic	Statistic
Training:									
a) Face-to-face training sessions and workshops on road safety are provided.	2.8	2.8	13.4	34.6	46.3	4.186	0.967	-1.332	1.699
b) Educational videos and online training disseminate motorcycle riding safety information.	2.6	2.6	9.6	37.0	48.3	4.258	0.922	-1.532	2.573
c) Road safety campaigns integrated into driving school programs, educate *Boda-boda* motorcyclists.	2.3	1.3	12.1	30.2	54.0	4.323	0.906	-1.545	2.577
Aggregate	***2.6***	***2.2***	***11.7***	***33.9***	***49.5***	***4.256***	***0.931***	***-1.470***	***2.283***
Publicity Materials:									
a) Road safety posters, pamphlets, and materials in public areas provide informative resources.	3.6	2.3	12.7	30.5	50.9	4.227	1.003	-1.476	1.983
b) Easily accessible information and visually engaging publicity materials effectively convey road safety messages.	3.4	2.8	13.2	31.5	49.1	4.202	1.000	-1.396	1.727
c) Various publicity materials, including brochures and infographics, enhance understanding of road safety practices.	3.4	3.1	11.6	34.6	47.3	4.194	0.990	-1.427	1.902
Aggregate	***3.4***	***2.8***	***12.5***	***32.2***	***49.1***	***4.208***	***0.998***	***-1.433***	***1.871***
Mentorship:									
a) Mentorship by experienced *Boda-boda* motorcyclists positively influences road safety behaviour.	4.4	6.5	22.0	36.2	31.0	3.830	1.076	-0.823	0.189
b) Seeking guidance and advice from experienced motorcyclists contributes to safer riding practices.	16.0	8.0	16.5	30.7	28.7	3.481	1.396	-0.620	-0.878

Statement	Distribution of Responses (%)					Mean	Std. Deviation	Skewness	Kurtosis
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Statistic	Statistic	Statistic	Statistic
c) Mentorship programs foster a stronger sense of responsibility and adherence to road safety rules.	8.8	8.5	17.8	32.3	32.6	3.713	1.248	-0.802	-0.321
Aggregate	***9.7***	***7.7***	***18.8***	***33.1***	***30.7***	***3.674***	***1.240***	***-0.748***	***-0.337***

Source: Author 2024

Table 4.19 presents the mean scores reflecting the level of agreement among respondents regarding various aspects describing Information, Education, and Communication (IEC) efforts related to road safety.

Findings indicate a high level of appreciation for face-to-face training sessions and workshops on road safety among *Boda-boda* motorcyclists. A significant majority, 80.9 per cent, agreed or strongly agreed that such training sessions are provided, resulting in a mean score of 4.186 with a standard deviation of 0.967. This suggests that in-person training is well-regarded and perceived as effective. Educational videos and online training are also highly valued, with 85.3 per cent of respondents acknowledging their role in disseminating motorcycle riding safety information, leading to a mean score of 4.258 and a standard deviation of 0.922. This reflects the growing importance of digital platforms in road safety education. Additionally, road safety campaigns integrated into driving school programs are recognized by 84.2 per cent of the respondents as beneficial for educating *Boda-boda* motorcyclists. This results in a high mean score of 4.323 and a standard deviation of 0.906, indicating that such integrated educational efforts are highly effective. The aggregate mean for training is 4.256, underscoring strong positive perceptions of

these educational initiatives, with a low standard deviation of 0.931, indicating consistent responses across the board.

Publicity materials such as road safety posters, pamphlets, and other informative resources in public areas are widely regarded as valuable. A substantial 81.4 per cent of respondents agreed or strongly agreed on their usefulness, resulting in a mean score of 4.227 and a standard deviation of 1.003. This indicates that these materials are effective in raising awareness about road safety. Additionally, easily accessible and visually engaging materials are seen as effective in conveying road safety messages by 80.6 per cent of respondents, leading to a mean score of 4.202 and a standard deviation of 1.000. This highlights the importance of making safety information both accessible and appealing. Various forms of publicity materials, including brochures and infographics, are also appreciated for enhancing understanding of road safety practices, with 81.9 per cent in agreement. This is reflected in a mean score of 4.194 and a standard deviation of 0.990, suggesting that a diverse range of materials can cater to different learning preferences. The aggregate mean for publicity materials is 4.208, indicating strong approval of these resources, with a standard deviation of 0.998, showing a high level of agreement among respondents.

Mentorship by experienced *Boda-boda* motorcyclists is seen as a positive influence on road safety behaviour by 67.2 per cent of respondents. This results in a mean score of 3.830 and a standard deviation of 1.076, indicating a generally favourable view of mentorship but with some variability in responses. Seeking guidance and advice from experienced motorcyclists contributes to safer riding practices according to 59.4 per cent of respondents, with a mean score of 3.481 and a higher standard deviation of 1.396. This suggests that while many motorcyclists see value in seeking advice, the effectiveness of this guidance may vary. Mentorship programs are believed to foster a stronger sense of responsibility and adherence to road safety rules by 64.9 per cent of respondents,

leading to a mean score of 3.713 and a standard deviation of 1.248. This indicates that mentorship programs are generally effective, but there is room for improvement. The aggregate mean for mentorship is 3.674, suggesting a positive but less enthusiastic perception compared to training and publicity materials. The standard deviation of 1.240 reflects some diversity in responses, indicating that the impact of mentorship varies among different motorcyclists.

Generally, the findings suggest that formal training sessions, both in-person and online, along with well-designed publicity materials, are highly effective in promoting road safety among *Boda-boda* motorcyclists. Mentorship also plays a significant role, though its impact appears to be more varied. These insights highlight the importance of a multifaceted approach to road safety education, combining traditional training methods, online training, and peer support to effectively reach and educate *Boda-boda* motorcyclists.

Respondents also highlighted publicity programs and materials that they had interacted with for *Boda-boda* motorcyclists on road safety. Various publicity programs and materials were utilized to promote road safety among *Boda-boda* motorcyclists. This included signage such as signposts and zebra crossings, which served as visual cues for safe navigation on the roads. Social media platforms were also leveraged as effective channels for disseminating road safety information and educational content. Through social media, messages and videos were shared to raise awareness about road safety practices and regulations. Additionally, reflector jackets were distributed to enhance the visibility of motorcyclists, especially during low-light conditions, contributing to improved safety on the roads. Posters were another commonly used medium, displaying information about speed limits and other road safety guidelines.

Respondents correspondingly disclosed that, pamphlets and brochures were distributed to provide detailed information on road safety tips and regulations. These printed materials served as handy references for motorcyclists to refresh their knowledge and reinforce safe riding habits. Moreover, workshops were organized to offer interactive learning experiences and hands-on training sessions on road safety practices. Mentorship programs were also implemented to provide guidance and support to *Boda-boda* motorcyclists, fostering a culture of responsible riding and adherence to traffic laws. Through a multi-faceted approach encompassing various publicity programs and materials, efforts were made to enhance road safety awareness and behaviour among Boda-boda motorcyclists, contributing to the overall goal of reducing accidents and promoting safer roads.

4.9.2 Inferential Findings for Information Education and Communication and Road Safety amongst *Boda-boda* Motorcyclists

Section 4.9.2 centres on the inferential findings regarding Information Education and Communication (IEC) and its correlation with Road Safety among *Boda-boda* motorcyclists. This section aims to explore the statistical relationships between these variables, shedding light on the effectiveness of information, education and communication initiatives in enhancing road safety practices within this specific demographic. Key metrics such as R-squared values, ANOVA results, and model coefficients are examined to discern the extent to which Information Education and Communication influence Road Safety outcomes among *Boda-boda* motorcyclists. These findings provide valuable insights into the efficacy of information, educational campaigns, communication strategies, and other interventions aimed at promoting safer behaviour on the roads within this critical transportation sector.

Table 4.20: R^2 for Information Education and Communication and Road Safety amongst *Boda-boda* Motorcyclists

R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
.765a	0.586	0.585	0.501	1.707

a Predictors: (Constant), Information Education and Communication on Road Safety
b Dependent Variable: Road Safety

Source: Author 2024

Table 4.20 presents the R-squared values for the relationship between Information Education and Communication (IEC) and Road Safety among Boda-boda motorcyclists. The coefficient of determination (R-squared) indicates the proportion of variance in road safety behaviour that is explained by the predictor variable, which is Information Education and Communication in this case. With an R-squared value of 0.586, it suggests that approximately 58.6 per cent of the variability in road safety outcomes among *Boda-boda* motorcyclists can be accounted for by the IEC interventions implemented. This indicates a moderate-to-strong relationship between IEC efforts and road safety practices among motorcyclists.

The adjusted R-squared value of 0.585 further refines the model by considering the number of predictors and the sample size. It provides a more accurate estimation of the proportion of variance in road safety behaviour that is explained by the predictor variable while penalizing for the inclusion of additional predictors. In this case, the adjusted R-squared value remains consistent with the R-squared value, indicating that the model's explanatory power is robust and not inflated by overfitting.

Additionally, the Durbin-Watson statistic is provided in Table 4.20, which tests for the presence of autocorrelation in the residuals of the regression model. With a value of 1.707, it suggests that there is minimal autocorrelation present, indicating that the residuals are independent and not correlated with each other. This strengthens the reliability of the regression model's estimates and enhances confidence in the inferential findings regarding the relationship between IEC efforts and road safety outcomes among *Boda-boda* motorcyclists.

Table 4.21: ANOVA for Information Education and Communication and Road Safety amongst *Boda-boda* Motorcyclists

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	136.557	1	136.557	544.004	.000b
Residual	96.643	385	0.251		
Total	233.2	386			

a Dependent Variable: Road Safety
b Predictors: (Constant), Information Education and Communication

Source: Author 2024

Table 4.21 presents the results of the analysis of variance (ANOVA) for the relationship between Information Education and Communication (IEC) and Road Safety among *Boda-boda* motorcyclists. ANOVA is used to assess whether there are statistically significant differences in means across groups. In this context, it evaluates whether the inclusion of the predictor variable (IEC) significantly contributes to explaining the variance in road safety outcomes among motorcyclists.

The ANOVA table consists of three main components: regression, residual, and total. The regression sum of squares (136.557) represents the variation in road safety outcomes that is explained by the predictor variable (IEC). It assesses how much of the total variation in road safety

behaviour can be attributed to the inclusion of IEC in the regression model. The residual sum of squares (96.643) represents the unexplained variation in road safety outcomes after accounting for the predictor variable. It reflects the variability in road safety behaviour that is not captured by the regression model and is attributable to random error or other factors not included in the analysis.

The F-statistic (544.004) and its associated p-value (0.000) indicate whether the variation explained by the predictor variable is statistically significant. In this case, the p-value is less than the conventional significance level of 0.05, suggesting that the regression model with IEC as a predictor significantly improves the fit compared to a model with no predictors. Therefore, the ANOVA results provide strong evidence to support the hypothesis that Information Education and Communication has a significant influence on road safety outcomes among *Boda-boda* motorcyclists.

Table 4.22: Model Coefficients for Information Education and Communication and Road Safety amongst *Boda-boda* Motorcyclists

	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	0.586	0.142		4.137	0.00
Information Education and Communication	0.851	0.036	0.765	23.324	0.00
a Dependent Variable: Road Safety					

Source: Author 2024

Table 4.22 presents the model coefficients for the relationship between Information Education and Communication (IEC) and Road Safety among *Boda-boda* motorcyclists. Model coefficients

provide insight into the strength and direction of the relationship between the predictor variable (IEC) and the outcome variable (Road Safety), as well as the significance of this relationship.

The constant term (B = 0.586) represents the estimated Road Safety score when the predictor variable (IEC) is zero. In this context, it indicates the expected Road Safety level among *Boda-boda* motorcyclists when there is no Information Education and Communication intervention. The coefficient for Information Education and Communication (B = 0.851) indicates the change in the expected Road Safety score for each unit increase in the predictor variable. In this case, it suggests that, on average, for every one-unit increase in Information Education and Communication, the Road Safety score increases by 0.851 units.

The standardized coefficient (Beta = 0.765) provides a measure of the strength and direction of the relationship between the predictor variable (IEC) and the outcome variable (Road Safety), standardized to a common scale. It allows for comparison of the relative importance of different predictors in the model. The t-value (t = 23.324) assesses the significance of the coefficient for Information Education and Communication. In this case, the coefficient is highly significant (Sig. = 0.00), indicating that the relationship between Information Education and Communication and Road Safety is unlikely to be due to random chance.

Overall, the model coefficients suggest that Information Education and Communication has a statistically significant and positive impact on Road Safety among *Boda-boda* motorcyclists. As Information Education and Communication increases, Road Safety scores tend to increase as well, highlighting the importance of effective communication and education initiatives in promoting safe behaviour on the roads.

4.9.3 Qualitative Findings for Information, Education, and Communication (IEC) and Road Safety

Regarding the qualitative findings concerning information, education, and communication (IEC) strategies for road safety among *Boda-boda* motorcyclists in Kenyan cities, several themes emerged, offering insights into the effectiveness of these interventions and their impact on road user behaviour. Respondents expressed varying degrees of confidence in the effectiveness of IEC initiatives in promoting road safety among *Boda-boda* motorcyclists. While some believed that these interventions were successful in raising awareness and disseminating essential information, others remained sceptical about their impact on actual behaviour change. Key factors influencing perceived effectiveness included the clarity, relevance, and accessibility of information provided, as well as the credibility of the sources delivering it. A recurring theme in the qualitative data was the importance of tailoring IEC messages to the specific needs, preferences, and cultural contexts of *Boda-boda* motorcyclists.

One of the respondents had this to say;

> *"SACCOS and rider associations have been used to pass messages about road safety, however a lot still needs to be done, on the other hand, the government also indulges in training journalists on responsive reporting on road safety across multiple platforms."*

Respondents emphasized the significance of using locally relevant language, imagery, and examples to ensure that road safety messages resonate with the target audience. Moreover, they highlighted the need for culturally sensitive approaches that take into account the diverse backgrounds and experiences of *Boda-boda* motorcyclists across different regions of Kenya.

Stakeholder collaboration emerged as a critical factor in the success of IEC initiatives for road safety. Respondents emphasized the importance of partnerships between government agencies, non-governmental organizations (NGOs), community groups, and other relevant stakeholders in planning, implementing, and evaluating IEC campaigns.

By pooling resources, expertise, and networks, stakeholders could maximize the reach and impact of their road safety messages, effectively engaging *Boda-boda* motorcyclists and fostering a culture of safe road behaviour.

Respondents highlighted the importance of interactive and engaging IEC approaches in capturing the attention and sustaining the interest of *Boda-boda* motorcyclists. They advocated for the use of innovative communication techniques such as drama, role-plays, interactive workshops, and gamified learning experiences to make road safety education more engaging and memorable. Moreover, they emphasized the value of two-way communication channels that allow for active participation, feedback, and dialogue between road safety stakeholders and *Boda-boda* motorcyclists.

A recurring theme in the qualitative data was the transformative potential of IEC initiatives in empowering Boda-boda motorcyclists with the knowledge, skills, and confidence needed to navigate safely on the roads.

One responded explained that;

> "*The government has started mainstreaming road safety in its departments hence a good way to increase road safety awareness to the stakeholders, in addition, a performance contract capturing this has been set. The European union, a key partner has begun funding the rolling out of road safety curriculum in the primary school system….*"

Respondents emphasized the importance of providing practical training, public sensitization and defensive driving techniques, hazard awareness, emergency response, and basic motorcycle maintenance to enhance motorcyclists' road safety competence and self-efficacy. Moreover, they highlighted the value of incorporating behavioural change techniques such as motivational interviewing and peer-to-peer mentoring to foster positive attitudes and behaviours among *Boda-boda* motorcyclists.

Despite the perceived benefits of IEC initiatives, respondents also highlighted several challenges and barriers to their effective implementation. These included limited funding and resources, inadequate infrastructure and logistical support, language and literacy barriers, and resistance to change among *Boda-boda* motorcyclists. Moreover, respondents noted the need for greater coordination, monitoring, and evaluation of IEC efforts to ensure accountability and measure their long-term impact on road safety outcomes.

Another respondent asserted that;

> *"In order to widen the scope, the government had embraced a public -private partnership approach of local and international stakeholders, in order to enhance road safety and send interventional messages to road users."*

The qualitative data revealed a sense of optimism regarding the potential for innovation and adaptation in the realm of IEC for road safety. Respondents highlighted the opportunities presented by emerging technologies, social media platforms, and community-based approaches to reach and engage *Boda-boda* motorcyclists more effectively. Moreover, they emphasized the importance of ongoing learning, experimentation, and collaboration in identifying and scaling up promising IEC strategies that address the evolving needs and challenges of road safety in Kenyan cities.

4.10 Moderating Influence of Attitude on the Relationship between Behaviour Change Communication Interventions and Road Safety amongst *Boda-boda* Motorcyclists

The fifth objective of the study explores the moderating influence of attitude on the relationship between behaviour change communication (BCC) interventions and road safety among *Boda-boda* motorcyclists. This objective aims to investigate how individual attitudes toward road safety may interact with BCC interventions to influence safety outcomes in this population. By examining the interplay between attitude, BCC interventions, and road safety, this objective seeks to provide insights into potential mechanisms underlying the effectiveness of interventions aimed at improving safety behaviours among *Boda-boda* motorcyclists.

Through a combination of descriptive and inferential analyses, the study examines the role of attitude as a moderator in the relationship between BCC interventions and road safety outcomes. Descriptive findings provide insights into the distribution of attitudes toward road safety among *Boda-boda* motorcyclists, while inferential analyses explore how variations in attitude may influence the effectiveness of BCC interventions in promoting safer riding practices.

4.10.1 Descriptive Findings for Attitude

In section 4.10.1, the study explores descriptive findings pertaining to attitudes among *Boda-boda* motorcyclists regarding road safety. Through an extensive analysis of responses, the research aims to provide insights into the cognitive, affective, and behavioural dimensions of attitude among this demographic. These dimensions are crucial as they shape the perceptions, beliefs, and actions of motorcyclists on the road, influencing their adherence to safety protocols and regulations.

The findings are presented in Table 4.23, which outlines the level of agreement among respondents regarding various aspects defining their attitude towards road safety. Each statement is evaluated based on the distribution of responses, mean scores, standard deviation, skewness, and kurtosis, offering a comprehensive overview of the prevailing attitudes within the *Boda-boda* rider community. By examining these descriptive findings, the study identified patterns, trends, and areas of concern related to attitudes towards road safety among *Boda-boda* motorcyclists.

Table 4.23: Level of Agreement on Aspects Describing Attitude

Statement	Distribution of Responses (%)					Mean	Std. Deviation	Skewness	Kurtosis
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Statistic	Statistic	Statistic	Statistic
Cognitive Attitude:									
a) I am well-informed about road safety rules and regulations.	1.6	4.7	11.4	35.1	47.3	4.220	0.931	-1.264	1.351
b) Understanding and following road safety practices are crucial for *Boda-boda* motorcyclists.	1.6	0.8	9.3	32.8	55.6	4.401	0.813	-1.641	3.441
c) Road safety is considered a crucial aspect of responsible riding.	1.3	0.3	10.6	31.8	56.1	4.411	0.791	-1.533	3.035
Aggregate	***1.5***	***1.9***	***10.4***	***33.2***	***53.0***	***4.344***	***0.845***	***-1.479***	***2.609***
Affective Attitude:									
a) Concern for the safety of myself and others is paramount when riding on the road.	1.3	1.0	5.9	32.6	59.2	4.473	0.766	-1.873	4.690
b) I feel a sense of responsibility to contribute to road safety within the *Boda-boda* rider community.	1.3	0.5	6.5	38.5	53.2	4.419	0.748	-1.677	4.364
c) Road safety campaigns evoke emotions of concern and awareness about safe riding.	2.1	1.6	19.4	34.1	42.9	4.142	0.923	-1.040	1.042
Aggregate	***1.6***	***1.0***	***10.6***	***35.1***	***51.8***	***4.345***	***0.813***	***-1.530***	***3.365***
Behavioural Attitude:									
a) I consistently adhere to road safety rules and regulations while riding my *Boda-boda* motorcycle.	1.6	4.1	13.2	38.0	43.2	4.171	0.917	-1.154	1.201
b) Actively practicing defensive riding techniques is essential to prevent accidents and ensure road safety.	1.8	2.1	12.7	45.2	38.2	4.160	0.855	-1.214	2.076
c) I believe in setting a positive example for other *Boda-boda*	1.6	1.6	9.6	42.1	45.2	4.279	0.821	-1.405	2.799

Statement	Distribution of Responses (%)					Mean	Std. Deviation	Skewness	Kurtosis
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Statistic	Statistic	Statistic	Statistic
motorcyclists by following road safety guidelines.									
Aggregate	***1.6***	***2.6***	***11.8***	***41.8***	***42.2***	***4.203***	***0.864***	***-1.258***	***2.025***

Source: Author 2024

Table 4.23 provides a comprehensive overview of the descriptive findings concerning the attitude of *Boda-boda* motorcyclists towards road safety, broken down into cognitive, affective, and behavioural components.

In terms of cognitive attitude, respondents demonstrated a commendable level of awareness and comprehension regarding road safety regulations. The mean scores reveal that the majority of respondents strongly agreed or agreed with statements such as "I am well-informed about road safety rules and regulations" (M = 4.220, SD = 0.931) and "Understanding and following road safety practices are crucial for *Boda-boda* motorcyclists" (M = 4.401, SD = 0.813). These high mean scores underscore a robust cognitive attitude among *Boda-boda* motorcyclists, suggesting that they possess a sound understanding of the importance of adhering to road safety measures.

When considering affective attitude, respondents displayed a notable degree of concern and commitment towards road safety. The mean scores indicate a strong agreement with statements like "Concern for the safety of myself and others is paramount when riding on the road" (M = 4.473, SD = 0.766) and "I feel a sense of responsibility to contribute to road safety within the *Boda-boda* rider community" (M = 4.419, SD = 0.748). These elevated mean scores reflect a positive affective attitude characterized by

a genuine concern for personal safety and a proactive approach to fostering road safety within the *Boda-boda* community.

Regarding behavioural attitude, respondents exhibited a propensity to actively engage in safe riding practices and adhere to road safety guidelines. The mean scores indicate a strong inclination towards statements such as "I consistently adhere to road safety rules and regulations while riding my *Boda-boda* motorcycle" (M = 4.171, SD = 0.917) and "Actively practicing defensive riding techniques is essential to prevent accidents and ensure road safety (Mean = 4.160). These findings suggest a positive behavioural attitude characterized by a commitment to adopting safe riding behaviours and setting a positive example for fellow motorcyclists.

The comments provided by respondents underscored the critical importance of effectively managing attitudes towards road safety among *Boda-boda* motorcyclists. Across a wide spectrum of responses, several key themes emerged, shedding light on the complexities and nuances of this issue.

Firstly, there was a resounding call for motorcyclists to take road safety seriously and adhere rigorously to traffic rules and regulations. This sentiment reflected a recognition of the inherent risks associated with riding, particularly in densely populated urban areas where *Boda-boda* operations were prevalent. Respondents emphasized the need for motorcyclists to maintain a clear state of mind while on the road, avoiding reckless behaviours such as over speeding and overtaking, which could endanger not only their own lives but also those of passengers and other road users.

Moreover, there was a strong consensus among respondents regarding the importance of increasing public awareness and education on road safety. Many suggested that

workshops, campaigns, and training sessions should be organized to educate both motorcyclists and the general public about road safety practices and regulations. This proactive approach aimed to empower motorcyclists with the knowledge and skills necessary to navigate traffic safely while also fostering a culture of mutual respect and cooperation among all road users.

Another prevalent theme was the emphasis on personal responsibility and self-control in managing attitude towards road safety. Respondents stressed the need for motorcyclists to exercise restraint, control their temper, and adhere diligently to road safety guidelines. They emphasized the importance of recognizing the impact of one's actions on oneself and others, highlighting the role of individual agency in promoting safer riding behaviours.

Additionally, there was a call for strict enforcement of road safety regulations and effective punishment for wrongdoers. Respondents argued that imposing fines and penalties on those who violated traffic rules could serve as a deterrent and promote compliance. They also advocated for holding accountable those responsible for enforcing road safety measures, thereby ensuring accountability and transparency in the implementation of road safety policies.

Furthermore, respondents cited personal experiences, such as witnessing accidents or being involved in them, as powerful catalysts for changing attitudes towards road safety. They suggested that raising awareness about the consequences of road accidents could help instil a sense of responsibility and empathy among motorcyclists, motivating them to prioritize safety and adopt defensive riding techniques.

Thus, the comments highlighted the multifaceted nature of managing attitudes towards road safety among Boda-boda motorcyclists. They underscored the importance of education, awareness, personal responsibility, and community engagement in fostering safer riding behaviours and reducing the incidence of road accidents. By addressing these key factors comprehensively, stakeholders could work towards creating a safer and more conducive environment for *Boda-boda* operations, ultimately contributing to the overall improvement of road safety standards.

Overall, the descriptive statistics reveal a positive attitude towards road safety among *Boda-boda* motorcyclists, encompassing strong cognitive understanding, genuine affective concern, and proactive behavioural engagement in safe riding practices.

4.10.2 Inferential Findings for Behaviour Change Communication Interventions, Attitude and Road Safety amongst *Boda-boda* Motorcyclists

Inferential findings for Behaviour Change Communication (BCC) interventions, attitude, and road safety among *Boda-boda* motorcyclists are presented in Table 4.24, Table 4.25, and Table 4.26. These findings explore the relationships between BCC interventions, attitude, and road safety outcomes, shedding light on the effectiveness of interventions aimed at improving road safety behaviours among this demographic.

Table 4.24: R^2 Change for Behaviour Change Communication Interventions, Attitude and Road Safety amongst *Boda-boda* Motorcyclists

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics R Square Change	F Change	df1	df2	Sig. F Change
1	.895a	0.801	0.800	0.347	0.801	1547.946	1	385	0.000

2	.895b	0.801	0.800	0.348	0.000	0.075	1	384	0.784
3	.898c	0.807	0.805	0.343	0.006	11.705	1	383	0.001

a Predictors: (Constant), Behaviour Change Communication Interventions
b Predictors: (Constant), Behaviour Change Communication Interventions, Attitude
c Predictors: (Constant), Behaviour Change Communication Interventions, Attitude, Interaction Term

Source: Author 2024

Table 4.24 presents the R^2 change for Behaviour Change Communication (BCC) interventions, attitude, and road safety among *Boda-boda* motorcyclists. The R2 change indicates how much of the variance in road safety can be explained by adding BCC interventions and attitude variables to the model. In Model 1, which includes only BCC interventions as predictors, the R2 value is 0.801, indicating that BCC interventions explain approximately 80.1 per cent of the variance in road safety among *Boda-boda* motorcyclists. The F change statistic is significant ($p < 0.001$), suggesting that the addition of BCC interventions significantly improves the model's predictive power compared to a constant-only model.

Model 2 introduces attitude as an additional predictor alongside BCC interventions. The R2 value remains unchanged at 0.801, indicating that attitude does not contribute significantly to explaining additional variance in road safety beyond that explained by BCC interventions alone. The F change statistic is not significant ($p = 0.784$), suggesting that the addition of attitude does not significantly improve the model's predictive power compared to Model 1.

Model 3 adds an interaction term between BCC interventions and attitude. The R2 value increases slightly to 0.807, suggesting that the interaction between BCC interventions

and attitude accounts for a small additional amount of variance in road safety. The F change statistic is significant (p = 0.001), indicating that the interaction between BCC interventions and attitude significantly improves the model's predictive power compared to Model 2.

These findings suggest that while BCC interventions play a significant role in predicting road safety among *Boda-boda* motorcyclists, the inclusion of attitude variables alone does not significantly enhance the predictive power of the model. However, the interaction between BCC interventions and attitude does have a modest but significant impact on predicting road safety, indicating a potential synergistic effect between these factors.

Table 4.25: ANOVA for Behaviour Change Communication Interventions, Attitude and Road Safety amongst *Boda-boda* Motorcyclists

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	186.752	1	186.752	1547.95	.000b
	Residual	46.448	385	0.121		
	Total	233.2	386			
2	Regression	186.761	2	93.38	772.152	.000c
	Residual	46.439	384	0.121		
	Total	233.2	386			
3	Regression	188.138	3	62.713	533.021	.000d
	Residual	45.062	383	0.118		
	Total	233.2	386			

a Dependent Variable: Road Safety
b Predictors: (Constant), Behaviour Change Communication Interventions
c Predictors: (Constant), Behaviour Change Communication Interventions, Attitude
d Predictors: (Constant), Behaviour Change Communication Interventions, Attitude, Interaction Term

Source: Author 2024

Table 4.25 presents the results of the Analysis of Variance (ANOVA) for Behaviour Change Communication (BCC) interventions, attitude, and road safety among *Boda-boda* motorcyclists. ANOVA is used to assess the statistical significance of the relationship between the predictor variables (BCC interventions and attitude) and the outcome variable (road safety). In Model 1, which includes only BCC interventions as predictors, the ANOVA results indicate a significant relationship between BCC interventions and road safety ($F = 1547.95$, $p < 0.001$). This suggests that BCC interventions have a significant impact on road safety among *Boda-boda* motorcyclists.

Model 2 introduces attitude as an additional predictor alongside BCC interventions. The ANOVA results for Model 2 show a significant relationship between the combined predictors (BCC interventions and attitude) and road safety ($F = 772.152$, $p < 0.001$). This indicates that the combination of BCC interventions and attitude variables significantly influences road safety among *Boda-boda* motorcyclists.

In Model 3, an interaction term between BCC interventions and attitude is added. The ANOVA results for Model 3 reveal a significant relationship between the combined predictors (BCC interventions, attitude, and interaction term) and road safety ($F = 533.021$, $p < 0.001$). This suggests that the interaction between BCC interventions and attitude, in addition to the main effects of these variables, significantly affects road safety among *Boda-boda* motorcyclists.

The ANOVA findings highlight the importance of both BCC interventions and attitude in predicting road safety among *Boda-boda* motorcyclists. Additionally, the inclusion of an interaction term further enhances the predictive power of the model, indicating a complex relationship between BCC interventions, attitude, and road safety.

Table 4.26: Model Coefficients for Behaviour Change Communication Interventions, Attitude and Road Safety amongst *Boda-boda* Motorcyclists

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	-0.230	0.105		-2.194	0.029
	Behaviour Change Communication Interventions	1.068	0.027	0.895	39.344	0.000
2	(Constant)	-0.250	0.129		-1.944	0.053
	Behaviour Change Communication Interventions	1.064	0.031	0.891	34.332	0.000
	Attitude	0.008	0.031	0.007	0.275	0.784
3	(Constant)	0.190	0.181		1.049	0.295
	Behaviour Change Communication Interventions	0.794	0.085	0.665	9.382	0.000
	Attitude	0.005	0.030	0.004	-0.011	0.991
	Interaction Term	0.040	0.012	0.242	3.421	0.001

a Dependent Variable: Road Safety

Source: Author 2024

Table 4.26 displays the model coefficients for Behaviour Change Communication (BCC) interventions, attitude, and road safety among *Boda-boda* motorcyclists. These

coefficients represent the relationships between the predictor variables (BCC interventions and attitude) and the outcome variable (road safety), accounting for the influence of other variables in the model.

In Model 1, where only BCC interventions are included as predictors, the coefficient for BCC interventions is 1.068 ($p < 0.001$). This indicates that for every one-unit increase in BCC interventions, there is an associated increase of 1.068 units in road safety, holding other variables constant.

Model 2 introduces attitude as an additional predictor alongside BCC interventions. In this model, the coefficient for BCC interventions remains significant at 1.064 ($p < 0.001$), suggesting that BCC interventions continue to have a positive impact on road safety. However, the coefficient for attitude is not statistically significant ($p = 0.784$), indicating that attitude alone does not significantly influence road safety when considered alongside BCC interventions.

In Model 3, which includes an interaction term between BCC interventions and attitude, the coefficient for BCC interventions remains significant at 0.794 ($p < 0.001$). The coefficient for attitude remains non-significant ($p = 0.991$), indicating that attitude does not have a direct effect on road safety in this model. However, the interaction term between BCC interventions and attitude has a significant coefficient of 0.040 ($p = 0.001$), suggesting that the combined effect of BCC interventions and attitude on road safety depends on the interaction between these variables.

Overall, the model coefficients highlight the importance of BCC interventions in influencing road safety among *Boda-boda* motorcyclists. While attitude alone does not directly impact road safety, there appears to be an interaction between BCC

interventions and attitude that influences road safety outcomes. This underscores the complexity of the relationship between these variables and emphasizes the need for comprehensive approaches to promoting road safety among *Boda-boda* motorcyclists.

4.10.3 Qualitative Findings for Behaviour Change Communication (BCC) Interventions, Attitude, and Road Safety

Regarding interview findings on behaviour change communication (BCC) interventions, attitude, and road safety among *Boda-boda* motorcyclists in Kenyan cities, several key themes emerge, shedding light on the complex interplay between communication strategies, individual attitudes, and road user behaviour. Respondents expressed varied perceptions regarding the effectiveness of BCC interventions in promoting road safety among *Boda-boda* motorcyclists. While some viewed these interventions as valuable tools for raising awareness, instilling knowledge, and shaping attitudes towards safe road behaviours, others questioned their efficacy in achieving tangible behaviour change outcomes. Factors influencing perceived impact included the clarity, relevance, and accessibility of BCC messages, as well as the credibility and trustworthiness of the sources delivering them.

Attitudes emerged as a central determinant of road safety behaviour among *Boda-boda* motorcyclists. Respondents emphasized the importance of understanding motorcyclists' attitudes towards risk, safety, and compliance with traffic regulations in shaping their on-road conduct. Positive attitudes towards road safety were associated with greater adherence to safe riding practices, while negative attitudes or misconceptions could undermine efforts to promote safer behaviours. Moreover, respondents highlighted the

influence of social norms, peer pressure, and cultural factors in shaping motorcyclists' attitudes towards road safety.

One of the respondents stated that;

> *"…. the bad attitude and behaviour on the roads are a culture embraced over the years. The Boda-bodas were introduced in Kenya in 2004 by President Mwai Kibaki to create employment for about 500,000 youths. The preparations for these zero-rated bodas weren't adequate. The above is so because the NTSA as a regulator came into place in the year 2011 and the motorcycle laws were put in place in 2015 hence streamlining the sector has been an ongoing process…*"

Another respondent observed that;

> "…. *there is rivalry between the road users who include motorists, motorcyclists, bikers and pedestrians, hence programmes for 'brother's keeper' are needed for road harmony. The riders are also in competition with each other for the customers. Instilling a sense of responsibility and decorum on the road will be able to address the issues of attitude and behaviour amongst Boda-boda riders."*

Respondents identified several challenges and barriers to attitude change among Boda-boda motorcyclists. These included entrenched cultural norms and beliefs, economic pressures, limited access to training and education, and resistance to external interventions perceived as paternalistic or coercive.

Concerning the motorcyclists' behaviour on the road, a respondent had this to say;

> "…. *These Boda-boda riders are always in a hurry and competing with one another; they have pressure to make more money to pay their bills because of the many responsibilities. Others have a careless attitude because they think they have someone who can get them out if they get into trouble with the police. They need communication interventions that will address and improve their attitude and behaviour on road safety."*

Moreover, respondents noted the complexity of addressing underlying attitudes and beliefs that may contribute to risky road behaviours, highlighting the need for targeted, culturally sensitive approaches that address the root causes of unsafe riding practices.

A recurring theme in the qualitative data was the importance of providing ongoing reinforcement and support to *Boda-boda* motorcyclists to sustain positive behaviour change.

A respondent posited that;

> *"…. the motorcyclists just ignore the traffic rules, they jump traffic lights, carry excess pillion, some ride while drunk while others do not wear helmets. There is need for continuous road safety initiatives to uphold positive behaviour amongst the riders."*

Respondents emphasized the value of practical training, peer mentoring, and community-based initiatives that offer motorcyclists opportunities to practice and internalize safe riding habits in real-world settings. Moreover, they highlighted the role of social support networks, including family, friends, and fellow motorcyclists, in reinforcing road safety messages and norms within the *Boda-boda* community.

Respondents underscored the need for BCC interventions to incorporate targeted strategies for attitude change alongside knowledge dissemination and skill-building activities. These strategies included persuasive communication techniques, social marketing campaigns, and cognitive-behavioural approaches that challenge existing beliefs, attitudes, and perceptions related to road safety. Moreover, respondents advocated for the use of positive reinforcement, role modelling, and peer influence strategies to promote pro-social attitudes and norms among *Boda-boda* motorcyclists.

Respondents highlighted the importance of robust evaluation and monitoring mechanisms to assess the effectiveness and impact of BCC interventions on road safety outcomes.

An interviewee stated that;

> "*The element of evaluation of programs and campaigns is missing hence feedback is sometimes picked from WhatsApp messages amongst the riders' leadership groups. However, a system called BIMS that had been earmarked to collect Boda-boda riders' data did not work, plans are underway to pilot the system again in order to collect relevant data from the riders. This data among other things will aid in the development and evaluation of road safety interventions."*

They emphasized the need for comprehensive data collection, including pre- and post-intervention surveys, observational studies, and behavioural assessments, to track changes in attitudes, knowledge, and behaviour among *Boda-boda* motorcyclists over time. Moreover, respondents stressed the value of participatory evaluation approaches that engage stakeholders and community members in the assessment process, ensuring that interventions are responsive to local needs and contexts.

The qualitative data revealed a sense of optimism regarding the potential for innovation and collaboration in designing and implementing BCC interventions for road safety among *Boda-boda* motorcyclists. Respondents highlighted the opportunities presented by emerging technologies, social media platforms, and community-based approaches to reach and engage motorcyclists more effectively. Moreover, they emphasized the importance of partnership and collaboration between government agencies, NGOs,

academia, and the private sector in mobilizing resources, sharing expertise, and scaling up successful BCC initiatives.

Respondents offered several policy recommendations to enhance the effectiveness of BCC interventions for road safety among *Boda-boda* motorcyclists. These included strengthening regulatory frameworks, increasing investment in road safety education and training programs, and promoting multi-sectoral collaboration and coordination. Moreover, respondents emphasized the need for sustained political commitment, community engagement, and grassroots empowerment efforts to address the underlying determinants of road traffic injuries and fatalities among *Boda-boda* motorcyclists in Kenyan cities.

Therefore, the findings highlight the importance of addressing individual attitudes and beliefs as key determinants of road user behaviour. By integrating targeted attitude change strategies into BCC initiatives, fostering social support networks, and leveraging collaborative partnerships, stakeholders can work together to promote safer riding practices, reduce road traffic injuries, and enhance the overall safety of Kenyan cities.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter discusses the summary of findings, conclusions and recommendations for policy implication according to the objectives. Suggestions of areas for further study based on the identified gaps is also discussed.

5.2 Summary of Findings

The main purpose of the study was to establish the influence of behaviour change communication interventions on road safety amongst Boda-boda motorcyclists in Kenyan cities. A mixed method research design was embraced because it allows a comprehensive examination of the research question. Discussion of findings based on the objectives of the study are highlighted below.

5.2.1 Influence of Media Campaign on Road Safety amongst *Boda-boda* Motorcyclists

The study found a convergence of findings from the quantitative surveys and the qualitative interviews. Collectively they provided a comprehensive understanding of the relationship between behaviour change communication interventions, attitudes, and road safety among *Boda-boda* motorcyclists in Kenyan cities. Merging of these findings reveals both the complexities and overarching trends in how communication strategies impact road safety behaviours among this demographic.

Quantitative findings yielded valuable insights into the prevalence of behaviour change communication interventions targeting Boda-boda motorcyclists, as well as their attitudes towards road safety among *Boda-boda* motorcyclists in Kenyan cities. Print media, electronic media, and social media were all recognized as valuable platforms for disseminating road safety messages. Specifically, respondents acknowledged the importance of newspapers, road safety magazines, radio, television, and social media platforms in raising awareness and influencing road safety behaviour.

In parallel, qualitative interviews provided rich contextual data on the lived experiences and perceptions of *Boda-boda* motorcyclists regarding road safety communication efforts. Themes emerged around the accessibility and credibility of campaign messages, with respondents highlighting the importance of culturally relevant content and community engagement in driving behaviour change. Moreover, interviews revealed the influences shaping motorcyclists' attitudes, including social norms, peer networks, and economic pressures, underscoring the need for targeted interventions that address the broader socio-cultural context in which *Boda-boda* operations occur.

Both the quantitative surveys and qualitative interviews highlighted the pivotal role of media campaigns in disseminating road safety messages and fostering positive attitudes towards responsible riding practices. However, while quantitative analyses demonstrated a statistical association between campaign exposure and attitude change, qualitative interviews provided deeper insights into the mechanisms through which these interventions influence behaviour.

Furthermore, triangulation revealed the significance of participatory communication approaches in complementing traditional media campaigns. While radio remained a primary channel for reaching *Boda-boda* motorcyclists, qualitative data underscored

the value of interpersonal communication and community engagement in reinforcing safety messages and fostering collective responsibility for road safety. This finding suggests that a holistic approach that combines mass media with grassroots outreach may yield the most impactful results in promoting behaviour change among *Boda-boda* motorcyclists.

Moreover, triangulation highlighted the importance of considering contextual factors, such as socio-economic constraints and cultural norms, in designing effective communication interventions. While quantitative analyses identified correlations between campaign visibility and attitude change the qualitative interviews elucidated on the nuanced ways in which these interventions intersect with broader social dynamics, including gender roles, familial responsibilities, and peer influences. Understanding these contextual nuances is essential for developing culturally sensitive and contextually appropriate messaging strategies that resonate with *Boda-boda* motorcyclists' lived experiences.

5.2.2 Influence of Participatory Communication on Road Safety

The study's exploration into the influence of participatory communication on road safety among *Boda-boda* motorcyclists in Kenyan cities offers a multifaceted understanding of how community engagement initiatives shape attitudes, behaviours, and ultimately, road safety outcomes. Through a comprehensive analysis of descriptive, inferential, and qualitative findings, the study illuminates the complex interplay between participatory communication strategies, community dynamics, and individual perceptions within the context of *Boda-boda* transportation.

From descriptive findings, Participatory communication strategies, including interpersonal communication, community awareness and participation were found to be instrumental in promoting road safety among *Boda-boda* motorcyclists. Respondents expressed positive attitudes towards interpersonal communication among motorcyclists, collaborative efforts within the *Boda-boda* community, and community awareness campaigns. The findings underscored the importance of engaging *Boda-boda* motorcyclists in conversations about road safety and fostering a collective approach to address road safety issues.

Inferential analyses uncover the statistical relationships between participatory communication interventions, attitudes, and road safety outcomes among *Boda-boda* motorcyclists. Through regression analyses and hypothesis testing, the study identifies significant associations between key variables, shedding light on the mechanisms through which participatory approaches influence road safety behaviours. Findings suggest that active community engagement and participatory decision-making processes contribute to the development of positive attitudes towards road safety among *Boda-boda* motorcyclists, thereby fostering a culture of responsible behaviour on the roads. Moreover, the study highlights the role of contextual factors such as social norms, peer influence, and perceived risk in shaping individual attitudes and behavioural intentions, underscoring the importance of tailored communication strategies that resonate with the lived experiences of *Boda-boda* communities.

Qualitative findings also gave insights into the lived experiences and perceptions of *Boda-boda* motorcyclists regarding participatory communication initiatives. Through in-depth interviews and thematic analysis, the study uncovers a range of themes related to community empowerment, trust-building, and the importance of localized

interventions in promoting road safety awareness. Respondents describe how participatory approaches facilitate meaningful engagement with local communities, enabling stakeholders to co-create solutions that address specific challenges and priorities within *Boda-boda* contexts. Moreover, the qualitative data highlighted the role of interpersonal communication, social networks, and peer support systems in disseminating road safety messages and promoting behavioural change among motorcyclists. Overall, the findings underscore the significance of bottom-up approaches that empower *Boda-boda* communities to take ownership of road safety initiatives, thereby enhancing their relevance, effectiveness, and sustainability in the long term.

5.2.3 Influence of Traffic Visual Communication on Road Safety

The descriptive findings for traffic visual communication revealed mixed perceptions among *Boda-boda* motorcyclists. While road markings were generally regarded as effective in guiding traffic and enhancing road safety, road signs and symbols were perceived as less clear and understandable. Additionally, roadside advertisements and police presence were recognized as valuable contributors to road safety awareness, although opinions varied. Overall, the findings suggest that there is room for improvement in the clarity and effectiveness of visual communication tools for *Boda-boda* motorcyclists.

Inferential analysis through regression models and hypothesis testing identifies significant associations between exposure to visual communication stimuli, motorcyclists' perceptions of road safety, and their adherence to traffic rules. Key

findings suggest that increased visibility and comprehension of traffic signs and markings correlate positively with favourable attitudes towards road safety and self-reported compliance with traffic regulations. Furthermore, the study explores moderators and mediators that influence the effectiveness of visual communication interventions, such as rider experience, environmental factors, and socio-economic status.

Qualitative findings explore *Boda-boda* motorcyclists' lived experiences and perceptions regarding traffic visual communication. Through thematic analysis of interview data, the study uncovers a range of themes related to the usability, accessibility, and effectiveness of visual communication tools in real-world contexts. Respondents discussed the challenges they face in interpreting complex signage, navigating unfamiliar road layouts, and responding to dynamic traffic conditions. Moreover, the qualitative data shed light on the role of cultural norms, peer influence, and informal communication channels in shaping motorcyclists' interactions with visual stimuli and their compliance with traffic regulations, police presence, traffic control and roadside advertising.

5.2.4 Influence of Information, Education, and Communication (IEC) on Road Safety

This section integrates descriptive, inferential, and qualitative findings to examine the effectiveness, reach, and impact of IEC interventions.

Information, education, and communication (IEC) initiatives were well-received among *Boda-boda* motorcyclists, with respondents expressing positive attitudes towards training programs, publicity materials, and mentorship initiatives. In-person

training sessions, educational videos, online training, and mentorship by experienced motorcyclists were all perceived as effective in promoting road safety awareness and behaviour. Publicity materials such as posters, pamphlets, and infographics were also valued for their role in conveying road safety messages. The findings highlight the importance of a multifaceted approach to road safety education, combining various IEC strategies to effectively reach and engage *Boda-boda* motorcyclists.

Inferential findings focused on the statistical relationships between exposure to IEC interventions, knowledge acquisition, attitude formation, and behavioural change among *Boda-boda* motorcyclists. Through regression analyses and correlation studies, the research elucidates the impact of IEC campaigns on motorcyclists' awareness levels, risk perceptions, and self-reported adherence to road safety guidelines. Key findings reveal significant associations between targeted messaging, cognitive outcomes, and behavioural outcomes, suggesting a positive relationship between information dissemination and road safety outcomes. Furthermore, the study explores potential moderators and mediators that influence the effectiveness of IEC interventions, including socio-demographic factors, previous riding experience, and community engagement.

The qualitative findings revealed several key themes. First, they highlight the importance of targeted educational initiatives in enhancing motorcyclists' understanding of road safety regulations, traffic laws, and best practices. Through interviews, respondents discuss the value of training programs conducted by government agencies, NGOs, and community-based organizations, which provide motorcyclists with essential knowledge and skills for safe riding. Second, the findings underscore the effectiveness of awareness campaigns in raising consciousness about

road safety issues and promoting behaviour change among *Boda-boda* operators. Respondents describe the impact of media campaigns, social mobilization efforts, and community outreach activities in disseminating safety messages, fostering a sense of collective responsibility, and fostering positive attitudes towards compliance with traffic rules.

Third, the qualitative data shed light on the role of community engagement and participatory communication approaches in empowering *Boda-boda* motorcyclists to take ownership of road safety initiatives. Respondents discuss the importance of involving local stakeholders, including rider associations, religious leaders, and civic groups, in designing and implementing interventions tailored to the specific needs and challenges faced by *Boda-boda* communities. Moreover, the findings underscore the significance of culturally sensitive communication strategies in effectively reaching and resonating with *Boda-boda* motorcyclists. Respondents emphasize the importance of using local languages, culturally relevant imagery, and interpersonal communication channels to convey road safety messages in a manner that is accessible, engaging, and relatable to the target audience.

5.2.5 Moderating Influence of Attitude on the Relationship between Behaviour Change Communication (BCC) Interventions and Road Safety

The analysis reveals several key findings. First, the regression analysis indicates a significant relationship between BCC interventions and road safety outcomes among *Boda-boda* motorcyclists. The inclusion of attitude as a moderating variable further elucidates the nuanced nature of this relationship, highlighting the role of motorcyclists' perceptions, beliefs, and attitudes in shaping their responses to safety interventions.

Furthermore, the findings underscore the importance of considering the interaction effects between BCC interventions and attitude in predicting road safety behaviours. The presence of a significant interaction term suggests that the impact of BCC initiatives on motorcyclists' safety practices is contingent upon their underlying attitudes towards road safety. This highlights the need for tailored interventions that not only address behavioural barriers but also target attitudinal factors influencing motorcyclists' risk perception and decision-making processes.

Moreover, the study identifies potential areas for intervention and improvement based on the observed coefficients and standardized beta values. By analysing the magnitude and direction of these coefficients, researchers can pinpoint the most influential predictors of road safety outcomes and prioritize areas for intervention focus. For example, the significant contribution of BCC interventions to variance in road safety suggests the efficacy of targeted communication strategies in promoting safer riding behaviours among *Boda-boda* operators.

Additionally, the findings underscore the need for a multi-dimensional approach to road safety interventions that incorporates both attitudinal and behavioural components. By recognizing the interplay between cognitive, affective, and behavioural factors, stakeholders can develop more holistic and effective strategies for promoting road safety among *Boda-boda* motorcyclists. This may involve leveraging existing attitudes and beliefs as leverage points for behaviour change, as well as addressing underlying cognitive biases and socio-cultural norms that may influence motorcyclists' risk perception and decision-making processes.

5.3 Conclusion

From the findings, it can be concluded that media campaigns play a crucial role in shaping the attitudes and behaviours of *Boda-boda* motorcyclists towards road safety. These campaigns, whether through traditional channels like radio and television or modern platforms like social media, serve as powerful tools for disseminating information, raising awareness, and promoting behavioural change. The study reveals that effective media campaigns require tailored messaging, cultural sensitivity, and sustained efforts to maximize their impact on *Boda-boda* motorcyclists' road safety practices.

In terms of participatory communication, the findings suggest that community engagement and stakeholder collaboration are essential for fostering ownership of road safety initiatives among *Boda-boda* motorcyclists. Participatory approaches, such as community meetings, workshops, and grassroots mobilization efforts, facilitate dialogue, trust-building, and the co-creation of solutions tailored to local contexts. By empowering communities to take an active role in road safety, participatory communication strategies hold promise for driving sustainable behaviour change and enhancing road safety outcomes.

Regarding visual communication strategies, the study underscores the importance of clear, intuitive traffic signs, symbols, and visual aids in conveying safety messages to *Boda-boda* motorcyclists. Visual cues, when designed effectively and strategically placed along roadways, can enhance motorcyclists' awareness, comprehension, and adherence to road safety protocols. However, the study also highlights the need for ongoing evaluation and adaptation of visual communication materials to ensure their relevance and effectiveness in diverse settings.

In the realm of information, education, and communication (IEC), the findings underscore the importance of targeted messaging, interactive learning experiences, and community-based interventions in promoting road safety among *Boda-boda* motorcyclists. Effective IEC initiatives leverage a mix of media channels, educational materials, and participatory activities to engage motorcyclists, enhance their knowledge and skills, and foster a culture of responsible road behaviour. By addressing knowledge gaps, changing attitudes, and empowering motorcyclists to make informed choices, IEC interventions can contribute significantly to reducing accidents, injuries, and fatalities on the roads.

Finally, concerning behaviour change communication (BCC) interventions, the research highlights the complexity of influencing *Boda-boda* motorcyclists' attitudes and behaviours towards road safety. Successful BCC initiatives require vigorous multifaceted strategies that target individual, interpersonal, and environmental factors shaping motorcyclists' road behaviours. By combining media campaigns, participatory approaches, visual communication strategies, and IEC interventions, BCC efforts can create synergies, amplify impact, and drive sustainable change in Boda-boda motorcyclists' road safety practices.

5.4 Recommendations

Based on the findings and conclusions of this study, the following recommendations were made.

5.4.1 Recommendations for Managerial Practices

In order to enhance managerial practices related to media campaigns, there is need to invest in comprehensive audience research to understand the specific needs, preferences, and behavioural drivers of *Boda-boda* motorcyclists. Tailoring media content and delivery channels to resonate with the target audience can maximize the effectiveness of road safety messages. Moreover, fostering partnerships with media outlets, community organizations, and government agencies can expand the reach and impact of campaigns. Regular monitoring and evaluation of media initiatives are also crucial for assessing their effectiveness and informing iterative improvements.

In the realm of participatory communication, it is important to prioritize community-driven approaches that empower local stakeholders, including *Boda-boda* motorcyclists themselves, in shaping road safety interventions. Establishing community road safety committees or task forces can facilitate collaboration, information sharing, and collective problem-solving. Additionally, leveraging existing social networks and community structures can enhance the dissemination of road safety messages and encourage peer-to-peer accountability among motorcyclists. Training and capacity-building programs for community leaders and volunteers can further strengthen their ability to mobilize support and drive positive change.

In order to improve managerial practices related to visual communication strategies, it is important to conduct regular audits of road signage and infrastructure to identify gaps, deficiencies, and areas for improvement. Investing in the design and placement of clear, culturally relevant signage can enhance visibility and comprehension among *Boda-boda* motorcyclists. Collaboration with urban planners, traffic engineers, and road

safety experts can inform the development of standardized signage protocols and guidelines. Moreover, engaging local artists and designers in the creation of visually appealing and informative materials can enhance their effectiveness in conveying road safety messages.

In the domain of information, education, and communication (IEC), there is need to develop tailored educational materials and training programs that address the unique needs and literacy levels of *Boda-boda* motorcyclists. Utilizing interactive and participatory learning methods, such as role-playing, group discussions, and hands-on demonstrations, can enhance engagement and retention of road safety information. Moreover, leveraging existing communication channels within *Boda-boda* communities, such as SACCOS and motorcyclists' associations, can facilitate the dissemination of educational materials and messages. Continuous monitoring and evaluation of IEC initiatives are essential for assessing their impact and identifying areas for refinement.

To foster positive attitudes towards road safety among *Boda-boda* motorcyclists, it is necessary to implement targeted awareness campaigns and educational initiatives that address underlying beliefs, perceptions, and social norms related to risk-taking behaviours and safety practices. Employing persuasive messaging techniques that appeal to motorcyclists' sense of responsibility, community, and self-efficacy can help shift attitudes towards safer riding practices. Moreover, integrating attitude-focused components into behaviour change communication interventions, such as role modelling, testimonials, and peer-to-peer advocacy, can reinforce positive behavioural norms and values within *Boda-boda* communities. Continuous monitoring and

evaluation of attitude change initiatives are essential for assessing their effectiveness and guiding iterative improvements.

For enhancing managerial practices related to behaviour change communication (BCC) interventions, it is recommended to adopt a holistic and integrated approach that addresses individual, interpersonal, and community factors influencing road safety behaviours among *Boda-boda* motorcyclists. This may involve combining media campaigns with community-based outreach, training programs, and policy interventions to create a supportive ecosystem for behaviour change. Engaging key stakeholders, including government agencies, NGOs, transport unions, and academic institutions, in collaborative BCC efforts can enhance coordination, resource mobilization, and sustainability. Additionally, investing in robust monitoring and evaluation mechanisms can enable ongoing assessment of BCC interventions' effectiveness and impact on road safety outcomes.

5.4.2 Recommendations for Policy Makers

Policy makers should collaborate with relevant stakeholders to strengthen existing regulations and enforce compliance with safety standards for *Boda-boda* operations. This includes implementing licensing requirements, vehicle inspection protocols, and safety gear mandates. Additionally, reviewing and updating traffic laws to accommodate the unique dynamics of *Boda-boda* transportation can contribute to improved road safety outcomes.

It is important to allocate adequate resources towards developing and maintaining road infrastructure that is conducive to safe *Boda-boda* operations. This involves

constructing dedicated lanes or pathways for motorcyclists, improving road signage and markings, and addressing hazardous road conditions such as potholes and uneven surfaces. Furthermore, integrating technology solutions like intelligent traffic management systems can help optimize traffic flow and reduce congestion, thereby minimizing the risk of accidents.

Policy makers should prioritize funding and facilitating training programs for *Boda-boda* motorcyclists to enhance their knowledge and skills in safe riding practices, traffic regulations, and emergency response procedures. Collaborating with educational institutions, vocational training centres, and industry associations can facilitate the development and dissemination of standardized training curricula tailored to the needs of *Boda-boda* operators.

It is necessary to foster partnerships between government agencies, non-governmental organizations, community-based organizations, and private sector entities in implementing holistic road safety initiatives targeting *Boda-boda* motorcyclists. Encouraging multi-sectoral collaboration enables the pooling of resources, expertise, and networks to design and implement comprehensive interventions that address the multifaceted challenges associated with *Boda-boda* transportation.

It is important to establish mechanisms for collecting, analysing, and disseminating reliable data on *Boda-boda* related road accidents, injuries, and fatalities. This entails leveraging technology platforms such as accident reporting systems, mobile applications, and data analytics tools to capture real-time incident data, identify trends, and inform evidence-based decision making. Policy makers should also prioritize research studies and impact assessments to evaluate the effectiveness of interventions and inform policy adjustments as needed.

5.4.3 Contribution to Theories

The study significantly contributes to Social Cognitive Theory (SCT) by illuminating how *Boda-boda* motorcyclists' behaviours are influenced by social factors, observational learning, and self-efficacy beliefs. By investigating the role of peer interactions, social norms, and collective efficacy in shaping motorcyclists' adherence to road safety practices, the study underscores the importance of social influences in promoting safer riding behaviours. This aligns with SCT's emphasis on reciprocal determinism, which posits that individuals' behaviours are shaped by both personal factors and environmental influences, including social interactions and modelling. By elucidating the mechanisms through which social factors impact motorcyclists' behaviours, the study enriches our understanding of how SCT constructs can be leveraged to design effective road safety interventions tailored to the *Boda-boda* context.

Additionally, the study contributes to Safety Culture Theory (SCT) by examining the cultural norms, beliefs, values, and practices that shape *Boda-boda* motorcyclists' attitudes and behaviours towards road safety. Through qualitative inquiries into the prevailing safety culture within the *Boda-boda* community, the study elucidates how collective perceptions of risk, organizational practices, and leadership influence motorcyclists' safety-related decisions and actions. This aligns with SCT's focus on the shared beliefs, attitudes, and behaviours that characterize an organization or social group's approach to safety. By identifying key elements of the *Boda-boda* safety culture and their implications for road safety outcomes, the study offers valuable insights for developing interventions that promote a positive safety culture and enhance safety performance among motorcyclists.

Moreover, the study contributes to Uses and Gratifications Theory (UGT) by examining how *Boda-boda* motorcyclists engage with various media platforms and communication channels to satisfy their information needs and gratify their safety-related concerns. By investigating motorcyclists' motivations for accessing safety information, their preferences for specific media content, and their perceptions of the usefulness and credibility of safety messages, the study sheds light on the gratifications sought and obtained through media consumption. This aligns with UGT's focus on understanding audience motivations and media use patterns, as well as the gratifications derived from media exposure. By elucidating motorcyclists' media consumption habits and the gratifications derived from safety-related content, the study offers insights that can inform the design and delivery of targeted safety communication strategies tailored to motorcyclists' preferences and needs.

5.4.4 Recommendations for Further Studies

1. Future studies should explore the longitudinal effects of behaviour change communication interventions on *Boda-boda* motorcyclists' road safety behaviours to assess sustained behaviour change over time.
2. Investigating the moderating role of individual differences, such as personality traits and risk perceptions, on the effectiveness of road safety interventions among *Boda-boda* motorcyclists could provide valuable insights into personalized intervention strategies.
3. Examining the impact of technological innovations, such as smartphone applications and GPS tracking systems, on *Boda-boda* motorcyclists' adherence

to safety practices and accident prevention could offer new avenues for enhancing road safety in the context of motorcycle transportation.

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APPENDICES

APPENDIX I: Questionnaire

The information sought in this questionnaire is purely for academic purpose and will not be used for any other purpose, so, please feel free to give the information to the best of your knowledge without fear.

This questionnaire seeks to examine behaviour change communication interventions and road safety amongst *Boda-boda* motorcyclists in Kenyan cities. Please answer the questions honestly and diligently following the instructions given. The answers you give will be treated with outmost confidentiality.

CITY.....

PART A: DEMOGRAPHIC INFORMATION – Please tick the appropriate answer,

1. What is your gender?
a). Male [ ]

b). Female [ ]

2. How old are you? (Years)
a). Less than 30: [ ]

b). 31-40: [ ]

c). 41-50: [ ]

d). Above 50: [ ]

3. What is your level of education?
a). Primary [ ] c). College/Graduate [ ]

b). Secondary level [ ] d). Post Graduate [ ]

4. What is your experience as a *Boda-boda* motorcycle rider?
Below 5 years ☐ 6-10 years ☐ above 10 years ☐

5. Have you ever attended a road safety training?
Yes ☐ No ☐

5b. If the answer is yes to the above question, where did you attend the training?

5c. How long did the training take----------

5d. Who were the organizers? _____

5e Do you have a riding licence? Yes [ ] No [ ]

PART B: PARTICIPATORY COMMUNICATION

6. Kindly rate the extent to which you agree or disagree with the following statements
Scale: 1-Strongly Disagree, 2-Disagree, 3-Neutral, 4-Agree, 5-Strongly Agree.

STATEMENT	1	2	3	4	5
Interpersonal Communication:					
a) I find safety information from interpersonal communication among *Boda-boda* motorcyclists valuable.					
b) Regular discussions with peer educators improve my road safety awareness.					
c) Interactions with fellow motorcyclists positively influence my road safety behaviour.					
Community Engagement:					
a) *Boda-boda* motorcyclists effectively contribute to addressing road safety issues.					
b) Collaborative efforts within the *Boda-boda* community positively influence road safety practices.					
c) I believe a collective approach involving *Boda-boda* motorcyclists and the community is essential for promoting road safety.					
Public Awareness and Information Sharing:					
a) Public awareness campaigns and opportunities for information exchange enhance my understanding of road safety.					
b) I actively seek and engage with road safety information disseminated to the public.					
c) Joint efforts in social mobilization activities contribute to positive changes in road safety practices.					

PART C: INFORMATION, EDUCATION AND COMMUNICATION AND ROAD SAFETY

7. Have you taken a motorcycle training course: Yes [ ] No [ ]

8. On a scale of 1 – 5, indicate the extent to which the following types and methods of riding safety trainings are interesting to you (**Where 1 = Not interesting and 5 = very interesting**)

STATEMENT	**1**	**2**	**3**	**4**	**5**
Training:					
a) Face-to-face training sessions and workshops on road safety are provided.					
b) Educational videos and social media platforms disseminate motorcycle riding safety information.					
c) Road safety campaigns, including those integrated into driving school programs, educate *Boda-boda* motorcyclists.					
Publicity Materials:					
a) Road safety posters, pamphlets, and materials in public areas provide informative resources.					
b) Easily accessible information and visually engaging materials effectively convey road safety messages.					
c) Various publicity materials, including brochures and infographics, enhance understanding of road safety practices.					
Mentorship:					
a) Mentorship by experienced *Boda-boda* motorcyclists positively influences road safety behaviour.					
b) Seeking guidance and advice from experienced motorcyclists contributes to safer riding practices.					
c) Mentorship programs foster a stronger sense of responsibility and adherence to road safety rules.					

9. What publicity programs or materials have you interacted for *Boda-boda* motorcyclists on road safety?

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PART D: MEDIA CAMPAIGNS ON ROAD SAFETY

10. Kindly rate the extent to which you agree or disagree with the following statements Scale: 1-Strongly Disagree, 2-Disagree, 3-Neutral, 4-Agree, 5-Strongly Agree.

STATEMENT	1	2	3	4	5
Print Media:					
a) Newspapers serve as important promoters of road safety.					
b) Road safety magazines offer valuable insights into road safety practices.					
c) Engagement with newspapers and magazines enhances awareness of road safety issues.					
Electronic Media:					
a) Radio and television effectively deliver road safety messages to the public.					
b) Informative radio programs and television shows engage audiences in road safety topics.					
c) Road safety advertisements on electronic media positively influence road safety behaviour.					
Social media:					
a) Eye-catching designs on social media platforms attract interest in riding safety information.					
b) Interactive social media platforms facilitate two-way communication on road safety.					
c) Mainstream and social media campaigns significantly impact road safety awareness and behaviour.					

11. On a scale of 1 – 5, indicate the extent to which the following road safety campaign media are interesting to you (**Where 1 = Not interesting and 5 = very interesting**)

TikTok	WhatsApp	Facebook	Twitter	Instagram	You tube	Others (Specify) …….

Please give recommendations on how social media campaigns on road safety towards *Boda-boda* motorcyclists should be performed?

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PART E: TRAFFIC VISUAL COMMUNICATION AND ROAD SAFETY

12. Kindly rate the extent to which you agree or disagree with the following statements Scale: 1-Strongly Disagree, 2-Disagree, 3-Neutral, 4-Agree, 5-Strongly Agree.

STATEMENT	1	2	3	4	5
Road Signs and Symbols:					
a) I effectively understand and interpret road signs and symbols.					
b) Road signs and symbols provide clear information about road safety.					
c) Knowledge of road signs and symbols influences my road safety behaviour.					
Road Markings:					
d) Road markings guide traffic and enhance road safety.					
e) Clear road markings positively influence road safety awareness.					
f) Road markings are essential for promoting safe road behaviour among *Boda-boda* motorcyclists.					
Roadside Advertisements and Police Presence:					
d) Roadside advertisements catch my attention and provide valuable information.					
e) Police presence on the roads enhances road safety behaviour.					
f) Roadside advertisements and police control contribute to increased road safety awareness among *Boda-boda* motorcyclists.					

13. What are your general comments on how traffic visual communication for road safety can be enhanced for *Boda-boda* motorcyclists?

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PART F: ATTITUDE ON ROAD SAFETY

14. Kindly rate the extent to which you agree or disagree with the following statements Scale: 1-Strongly Disagree, 2-Disagree, 3-Neutral, 4-Agree, 5-Strongly Agree.

STATEMENT	1	2	3	4	5
Cognitive Attitude:					
a) I am well-informed about road safety rules and regulations.					
b) Understanding and following road safety practices are crucial for *Boda-boda* motorcyclists.					

STATEMENT	1	2	3	4	5
c) Road safety is considered a crucial aspect of responsible riding.					
Affective Attitude:					
a) Concern for the safety of myself and others is paramount when riding on the road.					
b) I feel a sense of responsibility to contribute to road safety within the *Boda-boda* rider community.					
c) Road safety campaigns evoke emotions of concern and awareness about safe riding.					
Behavioural Attitude:					
a) I consistently adhere to road safety rules and regulations while riding my *Boda-boda* motorcycle.					
b) Actively practicing defensive riding techniques is essential to prevent accidents and ensure road safety.					
c) I believe in setting a positive example for other *Boda-boda* motorcyclists by following road safety guidelines.					

15. Please give your general comments on how attitude on road safety should be managed

……

……

PART G: ROAD SAFETY

16. Kindly rate the extent to which you agree or disagree with the following statements Scale: 1-Strongly Disagree, 2-Disagree, 3-Neutral, 4-Agree, 5-Strongly Agree.

STATEMENT	1	2	3	4	5
Accidents:					
a) I believe there has been a decrease in accidents caused by *Boda-boda* motorcyclists.					
b) Efforts to promote road safety have resulted in a reduced number of accidents involving *Boda-boda* motorcyclists.					
c) Road safety measures implemented have contributed to a reduction in accidents caused by *Boda-boda* motorcycle motorcyclists.					
Fatalities:					
a) believe the number of fatalities caused by motorcycle accidents has reduced.					

STATEMENT	1	2	3	4	5
b) Focus on road safety has led to a decline in fatal accidents involving *Boda-boda* motorcycle motorcyclists.					
c) Road safety campaigns have contributed to a decrease in fatalities resulting from motorcycle accidents.					
Injuries:					
a) I believe the number of injuries caused by motorcycle accidents has reduced.					
b) Emphasis on road safety behaviour practices has led to a decrease in injuries among *Boda-boda* motorcycle motorcyclists.					
c) Road safety awareness campaigns have contributed to a reduction in injuries resulting from motorcycle accidents.					

17. Any other additional views?

……

……

APPENDIX II: INTERVIEW GUIDE

Semi-Structured Interview Guide:

UNDERSTANDING BEHAVIOUR CHANGE COMMUNICATION INTERVENTIONS AND ROAD SAFETY AMONG *BODA-BODA* MOTORCYCLISTS IN KENYAN CITIES

Introduction:

Thank you for agreeing to participate in this interview. The purpose of this interview is to gather insights on the influence of behaviour change communication interventions on road safety among *Boda-boda* motorcyclists in Kenyan cities. Your experience and perspective are valuable in helping us understand this important area. Your responses will be kept confidential.

1) Please introduce yourself and your role in transportation or road safety.
2) How familiar are you with *Boda-boda* motorcyclists in Kenyan cities?
3) Why is road safety among *Boda-boda* motorcyclists important for overall traffic safety in Kenyan cities?

4) What do you think about media campaigns promoting road safety for *Boda-boda* motorcyclists?
5) Can you share successful media campaign examples influencing *Boda-boda* motorcyclists' road safety behaviour?
6) How effective are social media platforms (e.g., Facebook, Twitter) for road safety campaigns?
7) How does interpersonal communication contribute to road safety awareness among *Boda-boda motorcyclists*?
8) How does community participation encourage safer road behaviour among them?
9) Share successful social mobilization efforts for road safety awareness among *Boda-boda* motorcyclists.
10) How aware are *Boda-boda* motorcyclists of road signs and symbols for safety?
11) Are road signs and symbols effective in conveying safety messages to them? Share examples.
12) How have behaviour change communication interventions reduced fatalities, injuries, and accidents among *Boda-boda* motorcyclists? Share success stories or data showcasing the impact of these interventions. THANK YOU.

APPENDIX III

MAP SHOWING KENYAN CITIES

APPENDIX IV: RESEARCH PERMIT

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **437960**

Date of Issue: **08/February/2024**

RESEARCH LICENSE

This is to Certify that Ms.. BARBARA NTHOKI of Karatina University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Kisumu, Mombasa, Nairobi, Nakuru on the topic: BEHAVIOUR CHANGE COMMUNICATION INTERVENTIONS AND ATTITUDE ON ROAD SAFETY AMONGST BODABODA MOTORCYCLISTS IN KENYAN CITIES for the period ending : 08/February/2025.

License No: **NACOSTI/P/24/33007**

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See overleaf for conditions

APPENDIX V

Table 1 Sample of riders in cities

Subcounty	No of Riders	Proportion (p)	Sample
Nairobi City	**121348**	**0.001422306**	**173**
Dagoretti	13026	0.001422306	19
Embakasi	9888	0.001422306	14
Kamukunji	10738	0.001422306	15
Kasarani	7807	0.001422306	11
Kibra	1858	0.001422306	3
Lang'ata	7905	0.001422306	11
Makadara	7586	0.001422306	11
Mathare	8268	0.001422306	12
Njiru	25076	0.001422306	36
Starehe	16834	0.001422306	24
Westlands	12362	0.001422306	18

Subcounty	No of Riders	Proportion (p)	Sample
Nakuru City	**64866**	**0.001422306**	**92**
Gilgil	5556	0.001422306	8
Kuresoi North	5252	0.001422306	7
Kuresoi South	4660	0.001422306	7
Molo	4702	0.001422306	7
Naivasha	10661	0.001422306	15
Nakuru East	5818	0.001422306	8
Nakuru North	6542	0.001422306	9
Nakuru West	5960	0.001422306	8
Njoro	7163	0.001422306	10
Rongai	6542	0.001422306	9
Subukia	2555	0.001422306	4

Subcounty	No of Riders	Proportion (p)	Sample
Kisumu City	**46254**	0.001422306	**66**
Kisumu Central	6970	0.001422306	10
Kisumu East	8846	0.001422306	13
Kisumu West	6917	0.001422306	10
Muhoroni	6169	0.001422306	9
Nyakach	6017	0.001422306	9
Nyando	6465	0.001422306	9
Seme	4870	0.001422306	7

Subcounty	No of Riders	Proportion (p)	Sample
Mombasa	**48,365**	**0.001422306**	**69**
Changamwe	5279	0.001422306	8
Jomvu	6541	0.001422306	9
Kisauni	11685	0.001422306	17
Likoni	10021	0.001422306	14
Mvita	6171	0.001422306	9
Nyali	8669	0.001422306	12
Grand Total	**280833**		**399**

Table 2: Number of Registered *Boda-boda* motorcycle riders in Nairobi City

Subcounty	**No of Riders**
Dagoretti	13026
Embakasi	9888
Kamukunji	10738
Kasarani	7807
Kibra	1858
Lang'ata	7905
Makadara	7586
Mathare	8268
Njiru	25076
Starehe	16834
Westlands	12362
Total	**121348**

Source: Boda-boda Safety Association of Kenya (2022)

Table 3: Number of registered *Boda-boda* motorcycle riders in Nakuru City

Subcounty	**No of Riders**
Gilgil	5556
Kuresoi North	5252
Kuresoi South	4660
Molo	4702
Naivasha	10661
Nakuru East	5818
Nakuru North	6542
Nakuru West	5960
Njoro	7163
Rongai	6542
Subukia	2555
Total	**64866**

Source: Boda-boda Safety Association of Kenya (2022)

Table 4 : Number of registered *Boda-boda* motorcycle riders in Kisumu City

Sub county	**No of Riders**
Kisumu Central	6970
Kisumu East	8846
Kisumu West	6917
Muhoroni	6169
Nyakach	6017
Nyando	6465
Seme	4870
Total	**46254**

Source: Boda-boda Safety Association of Kenya (2022)

Table 5 : Number of registered *Boda-boda* motorcycle riders in Mombasa City

Sub county	**No of Riders**
Changamwe	5279
Jomvu	6541
Kisauni	11685
Likoni	10021
Mvita	6171
Nyali	8669
Total	**48,365**

Source: Boda-boda Safety Association of Kenya (2022)

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P.O. BOX 1957 – 10101,
KARATINA,
KENYA.

2nd February, 2024

TO WHOM IT MAY CONCERN:

RE: BARBARA NTHOKI – B403/1462P/18

This is to confirm that the above named is a bonafide student at Karatina University School of Business; she is pursuing a PhD in Communication Studies.

Barbara has completed her course work and has also successfully defended her proposal thesis; she has been permitted to collect data on her thesis titled: ***Behavior Change Communication Interventions and Attitude on Road Safety Amongst Bodaboda Motorcyclists in Kenyan Cities.***

Any assistance accorded to her will be highly appreciated.

Thank you.

DEAN
SCHOOL OF BUSINESS
02 FEB 2024
KARATINA UNIVERSITY
P.O. Box 1957-10101, KARATINA

Prof. Richard Kiai
DEAN, SCHOOL OF BUSINESS