

**ASSESSMENT OF IMPACTS OF PUBLIC SERVICE VEHICLE DRIVERS  
BEHAVIOR ON ROAD SAFETY (CASE OF ONGATA SACCO)**

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## **ABSTRACT**

The annual global cases due to fatalities caused by road crashes is alarming to a point it has become a global epidemic worth being considered a major public health. Estimate show that every year, 1.2 million cases of fatalities are reported globally attributed to road traffic crashes. The public service vehicle system in Kenya plays an important role in the daily transportation of people and the country's economy. The country has experienced a rapid increase in the transport sector caused by rapid economic development. This has however come at a cost, accompanied with road safety problems resulting to an upsurge of road accidents. This study will therefore assess impacts of public service vehicle driver's behavior on road safety. The objectives will be to: examine the effects of speedy driving; find out how mobile phone use while driving by PSV drivers affects road safety; find out how driving under the influence by PSV drivers affect road safety; and examine how playing loud music while driving by PSV drivers affect road safety. The study will make use of the Risk Homeostasis Theory and the Causal Theory in the study. It will adopt descriptive research design. Slovin's formula will be used to arrive at a sample of 121. Data that will be obtained from the questionnaires will be analyzed using a statistical software (SPSS) while results will be presented in tables and graphs as percentages and frequencies.

## **ABBREVIATIONS**

BAC	-	Blood Alcohol Concentration
EC	-	European Commission
GRSP	-	Global Road Safety Partnership
IVDR	-	In-vehicle Data Recorders
NTSA	-	National Transport and Safety Authority
PSV	-	Passenger Service Vehicle
RTA	-	Road Transport Accidents
SACCOs	-	Savings and Credit Cooperative Organizations
SPSS	-	Statistical Package for Social Sciences
TLB	-	Transport Licensing Board
UNECE	-	United Nations Economic Commission for Europe
WHO	-	World Health Organization

## **CHAPTER ONE**

### **INTRODUCTION AND BACKGROUND OF THE STUDY**

#### **1.1 Introduction**

This chapter presents the area of study that is introduction to the research. It starts with background information of the study, the statement of the problem, purpose of the study and objectives of the study. It also seeks to identify the research questions, scope of the study. It further outlines the significance of the study, limitations of the study, research assumptions, and winds up by providing definition of terms used in the study.

#### **1.2 Background of the study**

The annual global cases due to fatalities caused by road crashes is alarming to a point it has become a global epidemic worth being considered a major public health. UNECE (2018) estimate that every year, 1.2 million cases of fatalities are reported globally attributed to road traffic crashes. Middle – and low-income countries account for an estimated 90% of the road crashes. It estimates that on a daily basis, an estimated 3,700 people die due to road accidents. A report by WHO (2018) project this problem to getting worse. WHO (2013) and Foreman, Marquez, Dolgert, Fukutaki, Mcgaughey and Platcher (2018) support this by stating that it is a global problem that traffic crashes is a major cause for deaths and injuries making it a current trend projected to continue in the unforeseeable future.

It is forecasted by WHO (2012) that by 2020 the third leading cause of death will be road traffic accidents (RTA) slightly surpassed by clinical depression and heart disease. Ruikar (2014) defines a road traffic accident as an occurrence of an event on away or street accessible to traffic used by the public; as a result injury or death occurs to one or more people, due to at least one moving vehicle. This causes injuries and death and as a result human suffering, socio economic impact and

loss of productivity. Societal and human development relies on road transport for purposes of movement of goods and people and to enable them access services such as jobs, healthcare and education (WHO, 2009). In spite of this, people have been exposed to road traffic accidents resulting to injuries and even death. Sabbour and Ibrahim (2015) opine that road transport is the most dangerous and complex of all systems of daily transport. Studies have shown that European regions have the lowest risk of road accident fatalities and injuries (10.3 per 100,000 population) while the African region is the highest (24.1 per 100,000) with Kenya being ranked amongst the world's highest at 34.4 per 100,000.

The public service vehicle system in Kenya plays an important role in the daily transportation of people and the country's economy. Road safety has however been a major situation. Ndungu, Bonface and Mwai (2015) contends that the Kenyan public road transport make up for 45% of passenger transport and bulk good transport services. This can be perceived to be the most convenient mode of transport service in Kenya. According to NEXT (2017), annually the Kenya reports fatality rates of 39% of involving pedestrian, 22% fatalities involving passengers, 12% fatalities involving drivers, 18% fatalities involving motorbikes, 7% involving pillion passengers and 2% involving cyclist. It also reports drunk driving as the major cause of road accidents in Kenya, followed by un-roadworthy vehicles careless driving and failure to use safety equipment's. WHO (2018) ranks injuries due to road traffic at number 8 in the list of leading source of people's deaths no matter the age.

Kenya has experienced a rapid increase in the transport sector caused by rapid economic development. This has however come at cost, accompanied with road safety problems resulting to an upsurge of road accidents. A significant role is played by road transport accounting for about 80% of the Kenyan economy (Ndungu, Bonface & Mwai, 2015). The transport sector in Kenya is

dominated by public road transportation be it within the county or linking counties. The public transport system is used by a majority of Kenyans as a means of transport from their homes to various destinations around them or even to adjacent and far away destinations within the country.

### **1.2.1 Kenyan Public Road Transport Industry**

The Kenya public road transport sector is dominated by ‘matatu’ vehicles. Matatu is a commonly used word that refers to public service vehicles in Kenya. It accounts for about 80% usage of the commuting public with an estimated Ksh 73 billion annual turnover (Okwako, 2017). Over the past 20 years the sector has been reorganized in many ways such as the establishment of the Transport Licensing Board (TLB) and the National Transport and Safety Authority (NTSA) which is a board established 2012 by an act of Parliament to integrate key functions of the transport department and assist in streamlining the road sub-sector and reduce fatalities caused by road accidents. The sector has also seen the organization of the public service vehicles (PSV’s) into savings and credit cooperative organizations (SACCOs) whose mandate was to bring order in the operations of the industry and make the PSV’s accountable to their owners (Okwako, 2017). It is argued by Osoro, Nganga and Yitambe (2015) that there has been an increase in road traffic fatalities in Kenya at a rate of 35% over the years. The upsurge has been partly attributed to a lack of safety precaution as captured in road traffic network despite the fast pace of expansion in motorized transport. Odera *et al.*, (2013) opines that there are various reasons that can cause the occurrence of accidents in Kenya, such include roads that are poorly designed and their lack of maintenance. According to the Daily Nation (2018), Kenya has lately been experiencing a rise in road traffic accidents which is currently estimated to be above 3% which is the global average. Nairobi County was reported by Omulo (2018) to have lost the highest number of lives nationally at 2917 in 2018 alone. This is triple the reported cases in Mombasa and Kisumu with a total of 142

fatalities. The accidents were mainly caused by public service vehicles and privately owned commercial vehicles which accounted to 69% of fatalities. Pedestrians topped the list of fatalities at 1117 cases, at second was motorcycles (boda boda) 775 cases and passengers came in third at 682 fatality cases. In a bid to reduce the number of road accident on Kenyan roads, the government ordered all PSVs to replace the previously fitted speed governor with new tamper proof one. Another requirement was to ensure all public service vehicles were fitted with seat belts, matatu crew had uniforms among other safety measures which were dubbed “Michuki rules”. These measure were being taken to bring back sanity in the roads and to enhance road safety.

### **1.3 Statement of the problem**

The transport sector in Kenya plays a crucial role in the creation of employment and economic growth. Road transport therefore is important in the sector of transport and communication. Passenger traffic and domestic freight in Kenya utilizes 93% of road transport. Road transport in Kenya has seen an increase in the number of public service vehicles on public roads that the transport licensing board has granted licenses. This has been attributed by the number of passenger traffic using this form of transport. The transport licensing board has contributed in this sector by introducing stringent requirements for public service vehicles before they are granted licenses to operate. One requirement is to be a member of a registered matatu SACCO or company. The SACCOs were seen as a measure to institutionalize the public service vehicle industry. Despite the various measures and legislations that have been put in place in this sector, it has been described as chaotic (Macharia, 2017). The behavior of matatu drivers has been eye catching. Matatus are driven at high speeds and recklessly, some cut off other road users, some are driven on pavements while others act in total disregard of the traffic laws. This has put other road users at risk of accidents leading to injuries and even death. The upsurge in public service vehicle incidents despite

the availability of road safety measure has created a gap which this study would like to explore. The study would like to explore the impact of the behavior of public service vehicle drivers on road safety.

#### **1.4 Aim of the study**

The aim of this study is to assess the impact of public service vehicle driver's behavior on road safety with particular focus on Ongata Sacco.

##### **1.4.1 Objectives of the study**

The specific objectives of the study are to:

- i. Examine the effect of speedy driving by PSV drivers on road safety.
- ii. Find out how mobile phone use while driving by PSV drivers affects road safety.
- iii. Find out how driving under the influence by PSV drivers affect road safety.
- iv. Examine how playing of loud music while driving by PSV drivers affects road safety.

#### **1.5 Research questions**

- i. What effects does speedy driving by PSV drivers have on road safety?
- ii. How has use of mobile phones by PSV drivers affect road safety?
- iii. What effects does driving under the influence by PSV drivers have on road safety?
- iv. What effects does playing of loud music while driving by PSV drivers have on road safety?

#### **1.6 Significance of the study**

##### **1.6.1 Matatu owners association**

Matatu owners association may find the study findings valuable as they will be making informed decisions when employing a driver to be in-charge of their investment. The findings may assist matatu owners make informed choices in the drivers they employ to take charge of their vehicles



on the road. They will be able to understand the consequences of the driver's behaviour and the role they play in road safety.

### **1.6.2 Policy makers**

National transport and safety authority (NTSA) may find this study of importance as their policy makers and others in the traffic department and affiliated organizations develop and implement relevant policies. This study may be used by policy makers in strengthening the already existing regulations in the matatu sector. It may also assist in identifying critical areas that require focusing on and channelling the required resources to them.

### **1.6.3 Researchers and academicians**

The content of this study may be used by academicians and researchers in this area to develop their own studies, current and future. It may serve as a reference point for academicians and researchers in the public service vehicle sector. It may provide an insight to the academicians and researchers on the behaviour of PSV drivers in Kenya and also on strategies and measure of road safety.

## **1.7 Scope of the study**

The study will be limited to one matatu SACCO known as Ongata SACCO. The matatu SACCO is one of the major public service vehicles organizations that operates within Nairobi County. It operates the Nairobi town – Langata area route.

## **1.8 Limitation of the study**

The study will be limited to current Ongata SACCO matatu's plying the town – Langat route. This is attributed to the fact that it's the major public service vehicles SACCO on that particular route based on the number of matatus registered by it. The study will also limit its responses to registered drivers within that particular SACCO who are currently attached to a vehicle within that route.

Another limitation is that the study will be based on a sample to represent the target population responses. It will also limit itself to the variables for this study.

### **1.9 Operational terms and concepts**

**Matatu** – small scale public transport vehicles used in Kenya.

**Public service vehicles** – vehicles licensed for purposes of ferrying people from one destination to the next either through reward or hire.

**Road accidents** – incidences of death or injury caused by motorized means.

**Road safety** – all activities focused towards cutting down on the cases and incidences of road accidents or to influence road accidents prevention.

### **1.10 Chapter summary**

This chapter highlights recent statistics on road traffic accidents and its impact on road safety. It projects road traffic accidents as a major problem that is a menace both globally and locally in Nairobi County. Public service vehicles have been on the Kenyan roads for decades. Their increase on the road has been noted even as that has come with its share of an upsurge of reported accidents which has been costly to the public. Matatus as they are commonly known, have been embraced as the common means of road transport for daily travel from people's houses and to different destinations within the county and country. Matatus have been characterized by unruly behavior best described as chaotic even as they become part of their different SACCOs. Despite this path to institutionalize matatus, their behavior has not changed as their unruly behavior cost lives and injuries even as different road safety initiatives are put in place to try minimize number of fatalities and injuries.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

According to Kumar (2011), literature is the process the researcher delves into for purposes of mastering and examine the research problem. A review of literature is an account by account narrative of previously published researches by accredited scholars on related topics.

A researcher who completes a literature review hopes to achieve an insight into the topic being researched in order to discover areas that have previously been researched on, if they were completed, how it was approached, and what issues the research raised (Wisker, 2008). The aim for this literature review will be to assess the impact of the behavior of PSV drivers on road safety.

#### **2.2 Theoretical Framework**

In order to assess the impact of the behavior of PSV drivers on road safety, the researcher will review two most referenced theories which are, the Risk Homeostasis Theory and the Causal Theory.

##### **2.2.1 Risk Homeostasis Theory**

According to this theory, people increase their gain by looking at how they expect to benefit when they behave in a riskier or safer way Vis a Vis the cost. Four factors are pointed out by Gerald (2009) on how risk is perceived by a person: how the risky behaviour is going to benefit them (such as enhance flexibility, fighting weariness, and time saving through speeding); the costly the risky behaviour will be (such as insurance expenses, repairs of the car, fine on speeding); presumed gains related to safe behaviour (such as accident free insurance discounts and reputational build-up due to driving responsibility); presumed cost of safe behaviour (such as loss of time, using seat belts that are uncomfortable) (Trimpop, 1994). Wilde (2014) opines that risk homeostasis theory

is about the driver deciding on a risk level that is acceptable to them based on contemplating the benefits and costs associated with an alternative action. According to Fuller (2012), it is upon the driver to decide which pace to be in while driving as they are ones in-charge of selecting the speed of the vehicle they control.

This is an indicator of the driver's ability to decide on which risk factors to be influenced by especially speed. Another risk factor to be considered is motivation. Jonah (1997) opines that this forms the basis to which young drivers take to shorter headway, overtake more and most likely speed. It is the safety margins that determine the behaviour of the driver. According to Summala (1988), over a period of time as drivers become more experienced, they learn the safety margins and driving becomes regular because the safety margins become controlled automatically. The difference is therefore highlighted between expert and novice drivers because the previous is capable of using safety margin that are larger (anticipatory behaviour) which offers them a chance to avoid or rectify errors while the ability of novice drivers in familiarizing with the road is reduced and hence they drive in a reactive manner.

### **2.2.2 Causal theories**

Causal theories as applied in cases of accidents suggest that having real knowledge of the elements that cause accidents can assist to mitigate them. Causal accident theories have two main distinguished trends: probabilistic (group of factors) and deterministic (series of events). Heinrich (1950) is considered the father of this theory as determined by the series of events. He is credited with the "domino theory" which assumes that accidents happen as a result of one event with a cause. According to this theory better safety requires the establishment and elimination of the cause of the accident. According to Pietrzak (2004), multi-linear events series are the most developed theories which suppose that accidents are factor in a sequence of events and propose that accidents

be viewed as a process approach. A major research problem is therefore the human factors. A number of studies since the 1960s have recommended a strong correlation between human factors and causes of accidents. Human factors have been associated to road accidents (85 – 95%), aviation accidents (70 – 80%) and industry accidents (60%). Two approaches therefore exist in examining human factors: systematic and causal. The cost of errors is too much even if they happen naturally though there are many elements that result in errors. The errors can be categorized as trained behavior (activities unintentionally occurring due to errors) and untrained behavior (errors due to performance) (Ramussen, 2000). Environmental factors are the most frequent one followed by personal features (E.g. gender, age, practice and training), factors that modify driver behavior (alcohol, drugs, weather), vehicle equipment, supervised behavior and many others. Reducing road accidents require that human factors affect driving by either becoming less or more automatic. Several studies have therefore been conducted to establish the impact of human factors on road safety and traffic user behavior. This has led to the identification of four types of driver behavior in relation to accidents: competitive behavior and aggression, distraction, weariness, misperception and carelessness. The causal approach to analyzing accidents was based on the assumption that the real causes of accidents can only be identified by detailed studies of each accident and the events leading up to the accident.

## **2.3 Empirical review**

### **2.3.1 Speedy driving**

The lives of people are shattered and even ended on a daily basis due to road traffic accidents. Most of these accidents are unintended and can be prevented. Speed is a factor that causes road fatalities and injuries therefore making it an element often discussed when dealing with road safety (Egido, 2015). Over speeding or driving above the speed limit is a major risk factor in road traffic

accidents. Ojo (2015) identifies human factors as one of the three causes of road traffic accidents. Others are vehicle factors and environmental factors. According to Nyitor (2011) and Teye-kwadjo (2011), in developing countries, excess speeding is among the common causes of road traffic accidents. Human factors therefor becomes the most influential factor among the three named causes of road traffic accidents. Driver behavior is a human factor attributed to road traffic accidents which include speeding, decision making ability, impressionistic driving, lack of concentration and overtaking dangerously (Atubi, 2009).

Ojo (2015) conducted a study in Nigerian state of Ekiti in a bid to assess human factors as determinants of RTA. The study that focused on drivers established that over speeding was a significant cause of road traffic accidents. In agreement Nyitor (2011) and Teye-kwadjo (2011) stated that excess speeding was a crucial element in a third of our roads accidents or fatal crashes. It is opined by Atubi (2009) that regularly, road traffic accidents occur at flash points on the roads where there are potholes and bends or bad sections and are usually caused by excessive driving owing to the inability of the driver to have control of their vehicles.

According to Elvik (2012) scientific evidence has proven that moto vehicle collisions are related to speeding which leads to fatalities. This makes speeding a contributing factor in road traffic accidents and a challenge to road safety. The WHO (2004) indeed agrees that inappropriate and excessive speeding has contributed largely to the reported cases of traffic accidents. Martinez, Mantaras and Luque (2013) estimate that countries with high rate of motor vehicle usage experience fatal crashes due to speeding on one in every three cases reported. Speeding is therefore a dangerous behavior that drivers need to understand and be made aware of its repercussions for others and themselves alike. According to the WHO (2017) speeding results in 11% of road crash cases reported to security authorities, 15% of them incur injuries due to the crashes while 24%

result in fatalities. The speeding is caused by attaining speeds above the set limit and also driving within speed limit yet this speeds are deem too fast in certain conditions at that time (poor weather, poor visibility or high pedestrian activity). It is more likely for public vehicle drivers who drive at inappropriate speeds to cause traffic accidents hence causing more severe injuries to road users and themselves in the process.

Drives who speed also amplify other driver errors including maintaining close proximity while driving, exhaustion while driving and distraction hence magnifying the possibilities of such type of driving to cause crashes. ROSPA (2018) argues that driving at high speeds reduces the chances of drivers identifying and reacting to happening of the surrounding. The safety margins of the drivers are therefore removed and converts near misses into accidents. It has for long been important to research on the relationship between speeding and road safety. Elvik (2012) stated that different results have been recorded recently in attempts to mathematically model the relationship. Swov (2009) has since argued that the relationship between speed and accidents is a complex one because of the different factors that modulate and influence it putting into consideration the random nature of accidents. The characteristics of the drivers such as factors of demographic and psychology have contributed to the relationship between speed and accidents (Eriksson, Slovic, Mertz & Fuglestad, 2012) together with road environment factors and the ones related to the vehicles (NHTSA, 2007).

### **2.3.2 Mobile phone use**

There has been an increase in the use of mobile or cellular phones for the past decade. This has seen an acceleration in the studies attempting to understand the implications of safety in relation to use of mobile phones while driving (Horrey & Wickens, 2004). According to Rocco, Sampaio and Tigre (2015) the human mind has impressive processing power though it's limited by the

ability to consciously understand, remember and immediately act upon visual information. A neuroimaging study conducted by Watanabe and Funahashi (2014) established that there is simultaneous processing on information when two conflicting streams are input at the same time hence resulting in “dual-task interference”. This basically means a decrease in attention based on performing concurrent tasks as compared to when performing individual tasks at a time.

The increase in use of mobile phones has not only been observed but also an increase in their use by drivers while on the road recorded (Loeb, Clarke & Anderson, 2009). According to Drews, Yazdani, Godfrey, Cooper and Strayer (2009), studies have shown driving while text messaging negatively impacts driving. Improvement of communication has made people become addicted to their communication gadgets such as phones and often explore them while driving either through texting, calling or browsing. This is despite the fact that high levels of alertness and concentration is required by drivers at such a time. Feitosa, Gunther and Taco (2015) opine that a lack of alertness and concentration while driving often results in poor observance of driving hence accidents. Their study established that use of mobile phones while driving has negative implications because the drivers response time is reduced hence making them incapable to respond to collision nor follow the traffic rules. Information processing while using phone in the process of driving leads to shared attention and therefore driving is relegated to a second task while use of phone becomes a primary task. According to Talbort (2013), a major cause of road accidents is attributed to drivers who are distracted or inattentive.

According to White, Hyde, Walsh & Watson (2010), about 60% of drivers have at one time or the other interacted with their mobile phones in the process of driving without the aid of a hands free kit. This has led to their sight being restricted as use of mobile phone at this time reduces the driver’s capability to observe traffic flow changes, conduct road surveillance, and be cognisant of



obstacles since they are concentrating on the handset (Nasar & Troyer, 2013). According to Bener, Crundall, Ozkan and Lajunen (2009), there is a fourfold increase in the reported cases linking the risk of collision and hands free phones while driving. This has led to drivers not maintaining their lane, lack of gap distance judgment, not processing cues relevant within the road and headway reduction. Westlake and Boyle (2012) also concurs that use of in vehicles devices and mobile phones has affected negatively driving leading to a decrease in performance while driving because attention is divided towards cognitive engagement. Researchers are concerned by the high figure being reported proving there is a decrease in the ability to proficiently operate a vehicle due to interaction with mobile phones while driving (Horberry, Young, Regan, 2009). This in-sense increases the chances of road traffic accidents occurring. The attention of the driver is diverted from effective driving and safety which should be the main goals to secondary activity which is also known as driver distraction.

### **2.3.3 Driving under the influence**

A major risk factor that is related to road traffic accidents is drink driving, which globally has resulted to high levels of mortality and mobility (Haghpanahan, Lewsey, Mackay, Macintosh, Jones, Fitzgerald & Robinson, 2019). Drinking under the influence is among the top four main causes of road traffic accidents. Alcohol causes impairment which is a risk factor in road collisions resulting in fatalities and injuries worldwide. Road traffic accidents is therefore considered to be highly likely when a person is under the influence of alcohol. Alcohol in the bloodstream of a person who is driving is likely to impair their driving ability and thus a contributing factor of road traffic accident (Haghpanahan, Lewsey, Mackay, Macintosh, Jones, Fitzgerald & Robinson, 2019). In developing and developed countries, driver impairment is considered a factor that significantly contributes to road traffic accidents (Muchene, 2012). It is this sought of impairment

that is contributed by influence of alcohol and drugs (Kasau, Manguriu & Dianga, 2017). In their study, they concluded that drunkenness was a driving behaviour that majorly contributed to incidences of road traffic accidents.

According to the European Commission (2015), in the European Union, of all the deaths on the road, 25% is because of illegal blood alcohol concentration (BAC) of drivers. Worldwide, countries have been grappling with lowering the permitted blood alcohol concentration levels for drivers which is viewed as an intervention measure in public health. Haghpanahan *et al.*, (2019) opine that there exists significant relationship between road traffic accidents and blood alcohol concentration. Estimates by Taylor & Rehm (2012) show an increase in the odds of fatalities by 1.74 for every 0.02% increase in blood alcohol concentration. According to Haghpanahan *et al.*, (2019), evidence on international platform shows that there is a reduction of frequency on road traffic accidents and reported fatalities within countries that have legally changed the BAC limit to 0.05g/dl from 0.08 g/dl. According to WHO (2013), there is an increased risk of road traffic accidents when driving under the influence. This is observed even when the blood alcohol concentration is at a moderate level. The more the blood alcohol concentration level the higher the risk of crashing. WHO (2013) opines that the higher the level of blood alcohol concentration the more severe the injuries will be in case of a crash. Global Road Safety Partnership (2007) has linked presence of alcohol in the body to an increased risk of serious injury and death while driving in relation to road traffic accidents. They opine that young drivers have more than twice the risk of accidents when their blood alcohol concentration is 0.05g/dl as compared to the same concentration on experienced drivers.

Policy makers have to turn their attention to the increasing problem of driving under the influence of alcohol. This is because even at levels deemed low, drink driving elevates the risk the occurrence

of accident fatalities due to the reaction time of the driver being increased and lowering of vigilance, attentiveness and visual keenness (Calinescu & Adminaite, 2018). Alcohol impairment is therefore a vital element that influences the possibility of road crashes and seriousness of injuries caused by the crash. It's attributed to poor judgment while driving and inability to respond quickly to reflexes as well as increased confidence and the possibility of engaging in other risky behavior including not using the seatbelt and speeding. Calinescu & Adminaite (2018) opine that it's not possible to compare drink driving cases resulting into death or injuries between countries because of the large difference in the manner in which different nations define and record these cases linked to drink driving. Several countries base their data on official drink driving deaths singularly from the police records despite this not being able to paint the true picture. Alonso, Pastor, Montoro and Esteban (2015) state that several studies conducted over the recent years have found that about a half of young drivers and a third of adults have drunk driven with most not being caught in the process. The study showed that the level of arrests due to drunk driving is generally low and it's mostly "first time" offenders who are arrested.

According to the Center for Public Health Excellence NICE (2010), some effective strategies have been identified by research as measures of keeping driver who are alcohol impaired out of the roads. This will assist in saving a lot of lives each year. Some of the methods suggested include reducing the legal limit for blood alcohol concentration, mounting regular alcohol breathalyzer checks, rehabilitation programmes and enforcing effective drink driving laws.

#### **2.3.4 Playing of loud music while driving**

It is a popular practice to listen to music while driving. According to studies conducted by Sloboda (2009) and Sloboda, O'Neill and Vivaldi (2011), it is during transportation transits that 91% of the time people are exposed to music. Staum and Brotons (2010) opine that music has the ability to

influence relaxation, the speed and even the stress levels while driving. This therefore indicates that performance while driving is facilitated by listening to music. According to Febriandirza, Chaozhong, Zhong, Hu and Zhang (2017), there is inconsistent findings in literature in relation to how background music affects tasks related to driving. Even though studies have shown the benefits to the performance and behavior of the driver while listening to music while driving, it has also shown the driver gets distracted in major ways and it's therefore detrimental to their ability to drive. Febriandirza, Chaozhong, Zhong, Hu and Zhang (2017) state that music that causes high excitement deters performance while driving due to competition of space in the cortex. The study concluded that performance of drivers while driving and listening to loud music was poor and drivers exhibited least control, they were also distracted.

According to the European Commission (2015), the performance of a driver while driving is affected by listening to music though it depends on the type of music. In their study, they established that listening to loud high paced music affected the performance tasks. More traffic violations were being committed by drivers who listened to loud music because they were unable to react in good time. According to Mogambi and Nyakeri (2015), in Kenya about 3000 cases of road traffic accidents are reported yearly making it among the global highest rates. Standing accused for this is the public service vehicles which is blamed for causing this accidents. The accidents have been attributed to the loud music being played in these vehicles which has acted as a distraction to the drivers (Mogambi & Nyakeri, 2015). Foss and Goodwin (2014) single out playing loud music as one type of driver distraction. According to them, the increase of this distraction depends upon 3 factors: the immediate loss of ability to drive caused by distracted behavior; how frequent the distraction happens; and how long the distracted behavior take place. Drivers who listen to music while driving are known to continuously interact with the music device

as they operate the music device (EU, 2015). According to Young, Regan & Lee (2011), this interaction is distracting to the driver as they have to search for a song and in the process their driving performance is interfered with. Interacting with the music device in the process of driving therefore is a contributing factor in driver distraction and factor that is detrimental to the performance of the driver. A study by Kujala (2013) found that actions of choosing music manually on the music system such as scrolling, touching and looking are associated with increased variability of lateral control.

Unal, Steg and Epstude (2012) conducted a study to establish the effects of music on mental effort and how it influenced performance while driving. The study concluded that loud music led to speed increase and violation of the red light. Loud music was therefore found to be demanding to listen to and therefore negatively affected the concentration levels of the driver which impaired their ability to detect early the relevant signals. This is supported by a study by Dalton (2007) which found that drivers were impaired by loud music of 95dBA therefore leading to slow vigilance in driving tasks and slow reaction time and movement. A study was conducted in Israel by Brodsky and Slor (2012) on the influences of background music on young drivers. The study factored it as a distraction while gathering data through the use of in-vehicle data recorders (IVDR). The study found a correlation between listening to loud music by drivers with road traffic accidents. According to the study, frequency and severity of driving violation increased in cases where young drivers were driving while listening to loud music as compared to low music or no music at all.

## **2.4 Conceptual framework**

According to Young (2013), a conceptual framework is a visually explanatory framework that uses diagrams to characterize the existing connections between the dependent variable and the independent variables.

Independent variables are those variables which are systematically varied by the researcher. Dependent variables are those variables whose values are presumed to depend on the effects of the independent variables. Robson (2012) suggested that a conceptual framework is often developed as a diagram. In this study, the independent variables are: speedy driving, mobile use, driving under influence and listening to loud music while driving. The dependent variable is road safety.

#### **2.4.1 Speedy driving**

Speed is considered as one of the most contributing components of road accidents in the world. This therefore makes it the most research element in the field of road safety. Elvik (2012) opines that there is significant scientific evidence that links speeding to fatality risk and severity. The WHO (2004) also points out excessive/ inappropriate speed as a major contributor of traffic accidents. According to Matinez, Mantaras and Luque (2013), speeding is estimated to be the cause of serious/ fatal crashes in every one in three reported motor vehicle accidents. Governments have therefore consider this data as alarming and declared speeding as major challenge in road safety. Speeding is therefore a very dangerous behavior and its consequences need to be disseminated to people and drivers in particular (Alonso, Esteban, Calatayud & Egidio, 2015). Studies (Zhang, 2013; Bener, 2013) have shown that the decision by drivers to speed is influenced by perception of risk, estimation of the speed, beliefs and attitude on penalties and rules among other psychological factors responsible for violation of traffic and habits in driving. According to Lheureux (2012), there is a significant predictor in how the drivers relate to non-compliance in relation to their motivation to speed as influenced by perceived risk.

#### **2.4.2 Mobile use**

Technology has become readily available as a source of communication. This to a point has led to an addiction of phone use by people even when engaged in driving (Feitosa, Gunther & Taco,

2015). A driver requires some level of alertness when driving to enable concentration. Poor concentration and a lack of alertness often results in the driver not being able to properly observe driving rules hence leading to crashes (Feitosa, Gunther & Taco, 2015). Advances in technology together with widespread access to mobile phones has led to continuous use of mobile phones while driving to a point it has become a source of distraction leading to accidents. According to Horsman and Conniss (2015), there is a significant decrease in the driver's ability to proficiently operate their vehicle in the process of interacting with the mobile device thus increasing the possibilities of road incidences and accidents. Weller, Shackelford, Dieckmann and Slovic (2013) points at young drivers for being responsible for the increase in use of mobile devices while driving. This includes the use of hands free kits. Many drivers continue to utilize mobile device while driving because they believe the risk of being caught is minimal (White, Hyde, Walsh & Watson, 2010).

### **2.4.3 Driving under influence**

Driving under the influence is one of the major factors of road traffic accidents in the world. According to WHO (2016), drug use and road safety have become a major global concern. According to Alonso, Pastor, Montoro and Esteban (2015), drivers lack awareness of their assumed risk when driving under the influence because it's not every time an accident occurs when they drink drive. The drivers therefore lack the sense of danger when drink driving and hence continue with the behavior of driving under the influence once again. Zhao, Zhang and Rong (2014) in their study found that drivers are increasingly exposed to the risk of injuries and death due to accidents that can occur because of the influence of drinking and driving. Liu and Ho (2010) opine that a number of countries have enacted law to deter drink driving and violators have been slapped by hefty fines. Despite these measure, driving under the influence of alcohol is still among

the highest contributors of road traffic accidents globally. Zhao, Zhang and Rong (2014) established that the drivers were driving under the influence because seeking the sensation and because drugs made them adventurous while driving.

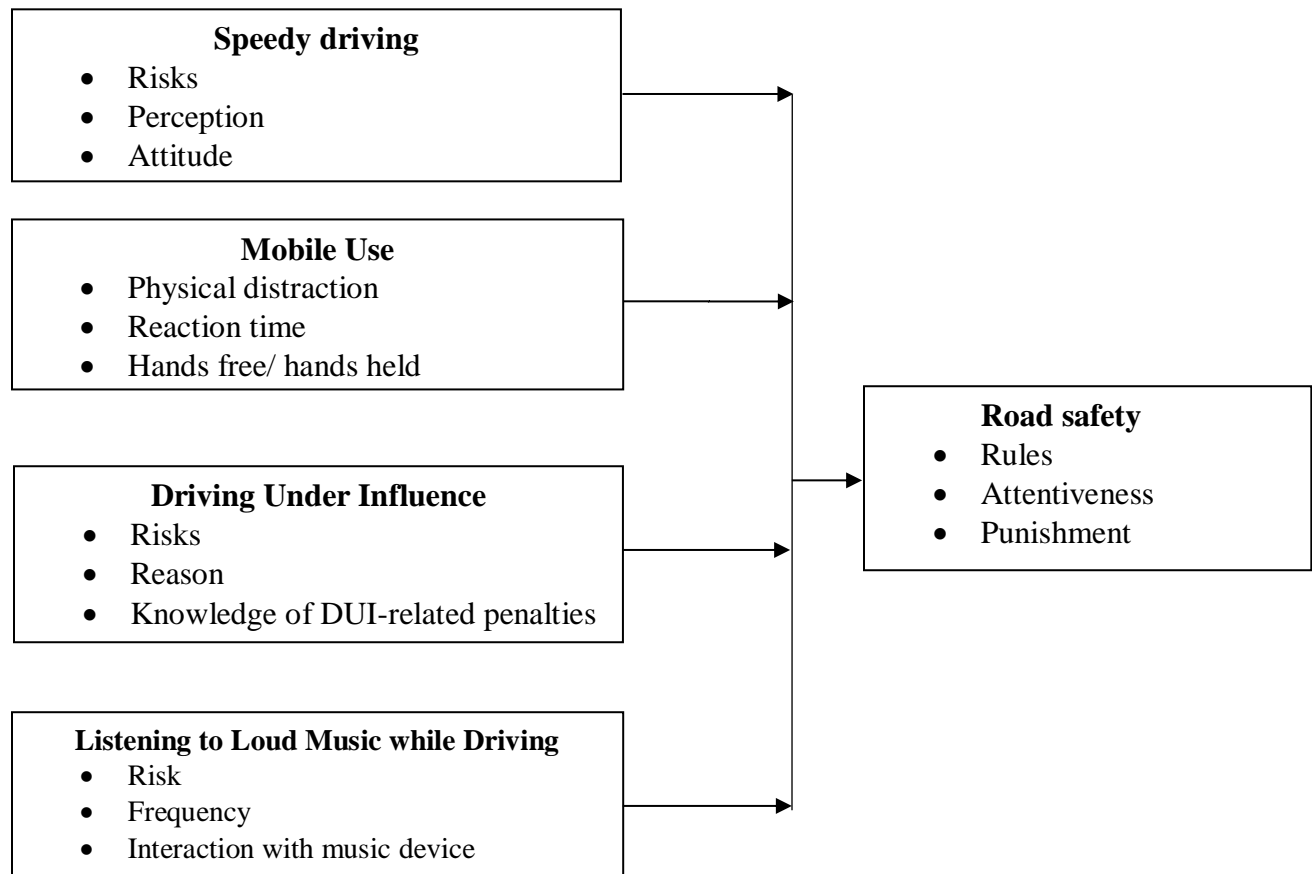
#### **2.4.4 Listening to loud music while driving**

Drivers consider listening to music while driving a habitual behavior that assists them pass time while they drive. Listening to music is considered by drivers as the most common auditory stimuli while on the road (Unal, Steg & Epstude, 2012). Dibben and Williamson (2007) opine that drivers therefore do not consider listening to music as a distraction compared to using mobile phone and chatting with passengers, to a point that it can impair their performance while driving. According to Unal, Steg and Epstude (2012), loud music is demanding to listen and negatively influences the driver's attention capacity which causes impairment of early detections of relevant signals. Dalton *et al.*, (2007) in their study concluded that loud music of 95dBA causes prolonged attention impairment which leads to slow driver reaction and a lack of vigilance. This is because there is a competition between music and other cognitive resources which high mental load while driving.



**Independent variables**

**Dependent variable**



**Figure 2. 1: Conceptual Framework**

Source: Author, 2019

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7. What is/are the reason(s) of you speeding? (you may tick **more than one** options)

- It is fun
- Running late
- I am very familiar with the road
- The road designs encourage speeding
- I feel the urge to show off or assert myself
- The passengers are encouraging me to drive faster

**SECTION C: MOBILE USE**

8. How frequently do you use your mobile phone while driving?

- Never  Rarely  Occasionally  Often  Always

9. To what extent do you agree with the following statements?

	<b>Strongly Disagree 1</b>	<b>Disagree 2</b>	<b>Not sure 3</b>	<b>Agree 4</b>	<b>Strongly Agree 5</b>
I always make/receive phone calls while driving					
I always read/ send text messages while driving					
I always reduce my speed of driving while talking on the phone					
I access social media while driving					

10. Which of the following do you **USUALLY** do when making or receiving a call while driving?

- Hold the phone in your hand
- Squeeze the phone between your ear and shoulder
- Use a hands-free earpiece
- Use the cell phone’s speakerphone feature

**SECTION D: DRIVING UNDER INFLUENCE**

11. How often do you consume alcohol or other drugs

- Daily  Once a week  Once a month   
 Only on special occasion  I don’t drink



12. Are you aware of laws against drinking and driving?

Yes [ ] No [ ]

13. Have you ever been charged of drinking and driving?

Yes [ ] No [ ]

14. Why do you drink and drive?

Its fun [ ] I don't [ ] Confidence [ ] Peer pressure [ ]

**SECTION D: LISTENING TO LOUD MUSIC WHILE DRIVING**

15. How often do you listen to loud music while driving?

Always [ ] Very often [ ] Sometimes [ ]

Rarely [ ] Never [ ]

16. To what extent do you agree with the following statements?

	<b>Strongly Disagree 1</b>	<b>Disagree 2</b>	<b>Not sure 3</b>	<b>Agree 4</b>	<b>Strongly Agree 5</b>
I always interact with my music system while driving to adjust music volume.					
Playing loud music assist me achieve my daily driving target.					
Playing loud music influences me to drive faster					
Listening to loud music helps me ignore other drivers					

Thank You!