INFLUENCE OF IMPLEMENTATION OF THE REVISED TRAFFIC RULES ON ROAD ACCIDENTS IN THE TRANSPORT SECTOR IN NAIROBI COUNTY, KENYA

BY

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DECLARATION

This research project report is my original work and has not been submitted for an award of degree in any other university.

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DEDICATION

This project report is dedicated to my parents, Kitheka and Mwikali, sisters, Petrolinah and Catherine and brothers, Evans, Benedict, Boniface, Augustus Richard and Stanley for their support. Their presence was the constant motivation to succeed in this project.

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LIST OF ABBREVIATIONS AND ACRONYMS

GDP	-	Gross Domestic Product
OECD	-	Organization for Economic Cooperation and Development
ITF	-	International Transport Forum
CEEC	-	Central and European Countries
CIS	-	Commonwealth of Independent States
IRTAD	-	Institute for Research of Traffic Accident Data Analysis
ICCU	-	Injury Control Centre Uganda
WHO	-	World Health Organization
GSR	-	Global Status Report
RTA	-	Road Traffic Accident
FCTA	-	Federal Capital Territory Administration
NARC	-	National Rainbow Coalition
NGO	-	Non-Governmental Organization
VAT	-	Value Added Tax
MWA	-	Matatu Welfare Association
MOA	-	Matatu Owners Association
INTP	-	Integrated National Transport Policy
NRSAP	-	National Road Safety Action Plan
PSV	-	Public Service Vehicles
KBS	-	Kenya Bus Service
LTB	-	Transport Licensing Board
SUMATRA	-	Surface and Marine Transport Regulatory Authority

ABSTRACT

Road traffic accidents have continued to be one of the greatest challenges not only in Kenya but globally. The World Health Organization accident statistics indicate that globally, an estimated 1.2 million people are killed annually through road traffic accidents and millions more are injured or disabled. Besides creating enormous social and economic losses to individuals, families and communities, road traffic accidents place a heavy burden on health services and economic development. Kenya loses an average of 3000 lives through traffic accidents annually and more than ten times this number end up partially or totally disabled. Some of the accidents recorded in Kenya over the past years are very grisly, with some claiming entire families. While efforts are being made at global level to address road traffic accidents, Kenya though trying is yet to come up with elaborate measures that can help address this menace effective and safeguard lives of people who use public service vehicles. One of the landmark interventions at the global level aimed at addressing road safety challenges was the declaration of the years 2011-2020 as a Decade of Action on Road Safety by the United Nations in March 2010 though the UN General Assembly Resolution 64/255. In 2004 the revised traffic rules were introduced in the effort of restoring order in Public transport. Kenya's road safety status remains one of the worst not only in Africa, but globally. This is in spite of the fact that Kenya has a very low level of motorization compared to that of developed economies. The purpose of the study was to establish influence of implementation of the revised traffic rules on road accidents in transport sector in Nairobi County by assessing how use of seat belts, speed governors, overloading and use of defined routes by PSVs influences road accidents in Nairobi County, Kenya. The design used is mixed model as it integrates quantitative and qualitative data through a transformative process. The study had a target population of 1,856618 and a sample size of 443 Quota sampling technique was used to collect data from the respondents and questionnaires were used as research instruments. Primary data collection method was used whereby the questionnaires were administered to the respondents by hand delivery and after the specified time collected them and analysed the data. The collected data was sorted mathematically and organized for easy analysis. The data was then processed, coded, analysed and the results presented in form of tables whereby 79.5% disagreed that use of functional seat belts helped in reduction of traffic road accidents, 72.3% disagreed that all PSVs are fitted with functional speed governors, 83.2% disagreed that all PSVs carry specified number of passengers and 49% disagreed that all PSVs follow their defined routes. The findings of the study shows that use functional seat belts, quality speed governors, stoppage of overloading and use defined routes had a possibility of providing a long lasting solution to the road carnage but the issue was politicized and lacked enough stakeholders support hence not fully implemented. The study confirms that the implementation of the revised traffic rules could help reduce road accidents and recommends that the government of Kenya should show commitment and determination in addressing increased deaths on the Kenyan roads by fully implementing the revised traffic rules, that all stakeholders should be involved in making decisions relating to the industry as well as ensuring regular vehicle inspection. The study due to time and financial constraints could not exhaust all factors causing traffic roads accidents not only in Nairobi County but other parts of the country thus providing suggestions for further research.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Each year about one million people are killed and 50 million people injured on roads around the world according to World Health Organisation (Global Status Report, 2009) on road safety. This level of road trauma imposes huge economic costs representing 1 and 3 percent of GDP in most countries. In addition, deaths and disability cause great emotional and financial stress to the millions of families affected. Crashes are largely preventable and each life saved and serious injury avoided reduces pain and suffering and achieves important economic savings as per the Operation Seat Belts Forum 2012.

Eric and Brian (2005) states that due to the fact that road safety is a serious problem all over the world, commitment to tackle the road safety problem by developing and implementing a comprehensive road safety program with good objectives by every country is required. Joint Transport Research Centre of the Organization for Economic Cooperation and Development (OECD) and the International Transport Forum established a Joint Transport Research centre in 2004 to address all modes of transport and to support policy making in member countries.

The International Transport Forum is an inter-governmental body within the OECD and is a global platform for transport policy makers and stakeholders with the main objective of serving political leaders and a larger public in developing a better understanding of the role of transport in economic growth and the role of transport policy

in addressing the social and environmental dimensions of sustainable development (Eric and Brian (2005). The members of the International Transport Forum include; Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Italy, Japan, Spain, Russia, Portugal, Norway, The United Kingdom and the United States among others Eric and Brian (2005).

The Institute for Transport Accident Research and Data Analysis(2010) survey noted that, in most OECD/ITF countries, fatalities decreased by around 50% over the period 1970-2005 but performance has not been evenly spread. The greatest regional reductions were in countries in Western Europe and the Asia-Pacific region (declines of 61% and 45%, respectively). In North America (United States and Canada), fatalities decreased by 20%, with reductions generally greater during the 1980's than in subsequent years. Central and Eastern European Countries (CEEC) and the commonwealth of independent states (CIS) achieved considerable annual reductions in the 1990's but since 2000 fatalities have stabilized in the CEEC and have increased in the Commonwealth of Independent States (CIS).

Considering individual countries, there has generally been a steady decline in fatalities per head of population since 1970 with the Netherlands, Sweden, Switzerland, Norway, the United Kingdom, Denmark and Japan reaching rates below 6.0 fatalities per 100,000 inhabitants by 2006. However, even in countries with good performance, progress is not continuous and is marked with periods of stagnation and reversal according to the survey. The IRTAD road safety (2010) survey also noted that Road Safety performance levels particularly in countries with lower levels of road safety

performance can be improved in the short term by implementing a better of proven measures.

A survey report by OECD (2006-1) on road safety in Kenya and South Africa asked leading road safety practitioners to identify the main risks and the findings were as follows: Speed management: Enforcement of existing speed limits can provide immediate safety benefits, perhaps more quickly than any other single safety measure. Effective speed management also requires that speed limits are approximate for the standard of the road, roadside risks, road design and presence of vulnerable road users. Public support for reduced speed limits needs to be fostered, as there is generally little understanding that small decrements in speed produce substantial reductions in trauma. Other essential components of speed management are infrastructure improvement and the use of new technologies, such as intelligent speed adaptation to modify behavior.

Seat belt use: Legislation with firm police enforcement backed by intensive mass-media programmes and penalties is the most effective strategy to improve seatbelt wearing. Technologies such as seatbelt reminder systems and seatbelt ignition interlocks could almost completely counter the non-wearing of seatbelts if introduced universally but would require community and vehicle industry acceptance (IRTAD, 2010).

Enhanced vehicle safety: The safety of vehicles has increased significantly in recent years, due to technological development of passive (crash protection) and active (crash avoidance) systems. In particular, electronic stability control systems represent a major recent advance in active safety, with collision avoidance and lane departure warning systems are examples of other promising technologies (IRTAD, 2010).

Reduced drink-driving: based on best practice experiences, highly visible enforcement using random breath testing is needed to enforce blood-alcohol limits that should not exceed 0.5 g/1 for the general population. Enforcement is most effective when backed by extensive publicity, with tough sanctions for repeat offenders. Alcohol interlocks fitted to all vehicles are a future option, subject to successfully increasing public acceptance. Reduced young driver risk: Graduated licensing schemes in tandem with extended training during the learner period have been effective in reducing deaths among young drivers (IRTAD, 2010). The road safety practitioners concluded that the above proven interventions will continue to be effective only if they are implemented with a sufficient level of intensity and are carefully matched to the individual circumstances of each country. Effective implementation also involves management processes that include analyzing data to identify key problem areas, setting targets for achievement, choosing effective interventions, building community and political support, allocating sufficient resources and monitoring and evaluating performance (IRTAD, 2010).

In France, according to the IRTAD road safety (2010) annual report noted that the results for 2009 were mitigated with a quasi stability in the number of fatalities and a slight decrease in the number of injury accidents (-2.9%) and number of injured (-3.1%) whereby there were 4,273 fatalities in 2009 (compared to 4,275 in 2008, 72,315 injury accidents (73,390) and 90,934 injured. Despite an increase in mobility, there has been an overall continuous decrease in the number of road users killed with the exception of motorcyclists for which the situation deteriorated seriously in 2009, with a 11.7% increase of fatalities. According to IRTAD road safety (2010) annual report based on preliminary data for 2010, an overall improvement in road safety was observed during the

first semester of 2010 compared to the first semester of 2009 due to determined road safety policy developed with effective measures regarding speed management, drink-driving and seat-belt use.

Germany is one of the world's most highly motorized country and motor-vehicle occupant's account for the large majority of traffic fatalities that occur each year on Germany roads as per the IRTAD road safety 2010 survey. The 2009 toll represents the lowest number of road users killed in crashes since 1950. Based on the Institute for Traffic Accident Research and Data Analysis (IRTAD) provisional data for January to July 2010, the number of fatalities has decreased by 10% and the number of injury accidents by almost 8%. Between 1970 and 2009, the number of fatalities decreased by 81%, the number of injury crashes fell by only 25% and the number of vehicles nearly tripled. In the recent years (2000-2009) the number of fatalities decreased by 45% forcing the IRTAD to conclude that most of the road accidents are manmade and can be avoided.

Japan being one of the highly motorized countries in the world, in 2009, the number of road fatalities decreased by 4%, reaching its lowest level since record-keeping began according to IRTAD road safety 2010 survey. There is strict adherence of road safety rules which are clearly understood to the people and the national goal of making Japan's roads the "safest in the world" by reducing annual traffic fatalities to below 5000 by 2012. Seatbelt wearing and helmets for motorcyclist are compulsory and about 99% of road users complies. According to the survey, drink-driving is a serious offence, speed governors are supposed to be intact whatsoever (IRTAD, 2010).

According to IRTAD, 2010 survey, the number of people killed in road accidents in the United Kingdom fell by 12% in 2009 in comparison to 2008. There were just 233,000 road casualties in United Kingdom in 2009, 4% less than in 2008 between 1970 and 2009, the number of fatalities decreased by 70% and the number of vehicles increased by 141%. In recent years (2000-2009) according to the survey, the number of fatalities continued to fall, by 35%. The survey realized that adherence to the traffic rules plays a big role in reducing the road accidents. The United Kingdom new government elected in May 2010 brought an idea of developing a framework to continue reducing the number of casualties in the United Kingdom which was indented to be published by the end of April 2011.

Between 1970 and 2009, the United States experienced a marked reduction of more than 60% in passenger car fatalities from 34,480 to 13,095 (IRTAD, 2010). A further reduction in passenger car fatalities is expected with increased availability of front and side air bags, electronic stability control, safety belt use, use of age-appropriate child safety seats and a continued reduction in alcohol and drug impaired driving according to the IRTAD report. Speeding is a contributing factor as per the report and the more the road safety rules are observed the more road fatalities and injuries are reduced.

Road safety is a serious problem all over the world and its severity is more pronounced in the developing countries, especially in Africa. Tanzania being one of the African countries is no exception in this regard. The government of Tanzania has made commitment to tackle the road safety problem by developing and implementing a comprehensive road safety program with the following objectives: To establish a road safety organization capable of managing a multi-sectoral integrated approach to the road

safety problem, to improve the quality of life in Tanzania by reducing the frequency of road accidents and minimizing their consequences, to improve undue damage to road pavements through stringent vehicle and axle load control. However, despite this commitment by the government, the frequency of the accidents over the past ten years has increased (Khayesi, 1999). The cost of road accidents in Tanzania has recently been estimated at T.Shs. 20 billion annually (Ogden, 2008). Overloading on the major highways is estimated at 20-25% hence being one of the causes of the undue damage to the road pavement.

According to Axup (2007), some of the problems that have caused the current road safety situation in Tanzania giving emphasis on the institutional set up of road safety activities, traffic legislation, law enforcement, training and education, vehicle safety and inspection and road traffic management addressed well can help reverse the situation and reduce accidents as well as fatalities.

In 2009 the Uganda government realized that the road safety in their country was still unsatisfactory and road accidents, fatalities and injuries had been increasing in the last ten (10) years. In 2000 there were 14,390 reported accidents with 1,438 fatalities and 12,946 injuries compared to 2008 which had 2,334 fatalities, 18,250 reported accidents and 12,076 injuries. During the period 2000 to 2008, the number of vehicles doubled leading to high rate of road accidents. (Global Road Safety Report, 2009)

According to the Injury Control Centre Uganda (ICCU) community survey, the top three causes of severe injuries among urban children (less than 18 years) in Uganda are traffic (46%). The analysis of accident statistics reports in Uganda indicate that the major causes of road accidents are: Human error which accounts for

about 80% of the road traffic crashes. (This includes reckless driving, over speeding, inconsiderate use of the road, careless or ignorant pedestrians, incompetent drivers and driving under the influence of alcohol or drugs), Defective vehicle condition which accounts for about 10% (include defective brakes, steering, suspension, worn out tyres, defective lights, indicators and engine among others, Environmental factors which account for about 5% (include weather conditions and activities along the road such as repairs, grazing of cattle along the road and road site markets), Road conditions which also accounts for about 5% (include bad road surface, pot holes and poor road designs and inadequate road furniture) as per the ICCU survey of 2011.

Due to the great concern, the Uganda government committed itself with the commission for Global Road Safety with a mandate of "Call for a Decade of Action for Road Safety" in the effort of curbing road accidents. Uganda has developed a comprehensive road safety road map as one of the ways to achieve a 50% reduction in road traffic accident death by 2012 recommended by the UN Resolution on Decade of Action for Road Safety according to Minister of Works and Transport, Hon. John Nasasira as per the Commission for Global Road Safety (2009).

Egypt loses about 1200 lives per year due to road traffic crashes every year. It has road traffic fatality rate of 42 deaths per 100,000 population. Majority (48%) of those killed are passengers of four-wheelers though pedestrians also constitute a significant proportion (20%) of these fatalities. According to the recently (2012) WHO published Global Status Report (GSR) on road safety, though there are laws on speed, blood alcohol concentration for the general population, seat-belt wearing and helmet

wearing, they are poorly enforced. The report in its conclusion indicates that there is no adequate provision of infrastructure for non-motorized modes of transport.

Road Traffic Accident (RTA) is a common occurrence on Nigeria roads. Its effect is enormous but the more devastating is the gruesome pain it causes its victims before life is finally sniffed out. RTA has been reported by experts of road safety as one of the causes of national economic retrogression and poverty to families which presently is affecting Nigeria as a nation and many families that are affected cannot be healed of its trauma effect (Fidelis Nnadi, 2006). It is estimated that over 35,000 (under report) people are killed annually by Road Traffic Accident in Nigeria, but despite its daily occurrence, the Federal and some state governments are yet to respond positively in tackling the carnage except Lagos State and the Federal Capital Territory Administration (FCTA) that have deployed resources for effective enforcement of road traffic regulation to ensure adequate safety of road users and sanity in the road transport sub-sector (Fidelis Nnadi, 2006).

In Kenya although the matatu industry plays a leading role in transportation of both persons and goods in urban and rural areas, it equally has a long history of fatal accidents that involved the public service vehicles. These accidents resulted into the annual death rate from traffic accidents of more than 3,000 people by the time the NARC government took office in 2002.

These high rates of death sent signals of fear among the road users and insecurity on Kenyan roads remained a matter of great concern. When the National Rainbow Coalition (NARC) won the 2002 polls, one of its pledges was to make Kenyan roads safer and the then Transport minister at the time, Hon. John Michuki, a key Kibaki ally proposed tough

measures in his first year 2004 of office by introducing what would famously come to be known as the "Michuki Rules" which aimed at restoring order in public transport. Among the measures the rules set out were: Installation of speed governors, Compulsory good conduct certificate from the criminal investigation department, Passenger seat-belts, Public service vehicles to operate in clearly defined routes, Public Service Vehicles to carry a specified number of passengers and drivers as well as conductors to wear uniform, Driver's photograph to be hanged next to the driver, Vehicles to be painted in a peculiar manner for passengers identification.

1.2 Statement of the Problem

Road safety trends in Kenya seem to be worsening day by day despite the fact that the components of the revised traffic rules popularly known as "Michuki Rules" are very well defined. In most Public Service Vehicles speed governors are fitted but one wonders whether they are really in a working condition due to the fact that in our roads everyone is over speeding if not held up by traffic jam thus being a major cause of accidents. This study was to be done failure to which Kenyan roads would become death traps with careless drivers who does not want to be held responsible for their actions. Equally the policy makers would not have clear information from scholarly researched piece which gives a clear picture of the situation on our roads. Therefore, they will not come up with clear policies which can assist in maintaining sanity on our roads. The study must emphasize on the importance of road safety and measures taken to maintain it as well as safeguarding human lives. Failure to adhere to the road safety rules, road accidents continue claiming human lives which is evidenced by the accident statistics from January 2013 to August 2013 whereby 1,731 lives have been lost and over 2000

people injured following road traffic accidents according to Law Society of Kenya report of 2013.

The purpose of seat belts is to hold or secure the occupant of the vehicle against harmful movement that may result during a collision or a sudden stop. In most cases seat belt reduces the likelihood of death or serious injury in a traffic collision by reducing the force of impact and prevents occupants from being ejected from the vehicle in a crash. Due to either ignorance or lack of knowledge commuters do not wear seat belts especially in Nairobi County giving lame excuses like, alighting the next stage or seat belts are dirty and when an accident occurs the injuries are severe some leading to death.

The revised traffic rules also known as "Michuki Rules" were implemented in 2004 and sought to regulate the industry by eliminating standing on city buses, overcrowding, established speed governors and safety belts but although this was seen as a step in the right direction to deal with issues regarding safety on the Kenyan roads, there is reluctance in compliance. There is a high possibility of accident when one drives in the influence of alcohol because lack of concentration and sometimes sleeping on the steering thus causing accidents. This study must be done to establish the measures which should be taken to bring sanity in the Kenyan roads and more especially in urban roads like in Nairobi County failure to which more innocent lives will continue being lost, many people will be disabled, social and economic resources will be wasted, negligence and careless driving will rise the number of road accidents which places a heavy burden on health services and economic development on Kenyan government. There is need to investigate and reveal the true picture of the impact of the revised traffic rules (Michuki Rules) on matatu industry as a way of establishing a lasting solution.

1.3 Purpose of the Study

The purpose of the study was to establish the influence of the implementation of the revised traffic rules (Michuki Rules) on road accidents in the transport sector in Nairobi county, Kenya, with critical examination of the components of Michuki rules; seatbelts, speed governors, overcrowding, alcohol free drive, limited passenger capacity, use of defined routes among others.

1.4 Objectives of the Study

The study was guided by the following objectives:

i. To assess the extent to which use of seat belts influences road accidents in the transport sector in Nairobi County, Kenya.
ii. To establish how use of speed governors influences road accidents in the transport sector in Nairobi County, Kenya.
iii. To establish how overloading influences road accidents in the transport sector in Nairobi County, Kenya.
iv. To assess how use of defined routes by public service vehicles influences road accidents in transport sector in Nairobi County, Kenya.

1.5 Research Questions

i. To what extent do the use of seat belts influence road accidents in the transport sector in Nairobi County, Kenya?
ii. How does use of speed governors influence road accidents in the transport sector in Nairobi County, Kenya?
iii. How does overcrowding influence road accidents in the transport sector in Nairobi County, Kenya?

iv. How does use of defined routes by public service vehicles influence road accidents in the transport sector in Nairobi County, Kenya?

1.6 Significance of the Study

This study sought to justify or provide evidence in critically assessing the influence of components of the revised traffic rules on the rate of accidents in Nairobi County, Kenya. The research may contribute to the knowledge concerning road accidents that have become common characteristics of Nairobi, county. It is also likely to expose challenges to road sanity in Kenya. The research is also hoped to assist policy makers in understanding the road transport system and develop mechanisms of handling the road carnage in Kenya. Results of the study may assist the government in decision making, policy formulation and setting guidelines for road safety in Nairobi County, Kenya. The researcher hoped that the study findings and recommendations would form basis for further research on road safety in Kenya.

1.7 Basic Assumptions of the Study

This study was designed on the premise that life is very precious and there is need to take all the precautions to safe in curbing or preventing road accidents. There was also an assumption that most respondents have witnessed road accidents and would give real life experiences and correct answers. In addition, the researcher hoped that the findings of the study could be generalized to represent experiences and outcomes of road safety measures in other parts of Kenya.

1.8 Limitations of the Study

The study was concerned with the influence of the components of the revised traffic rules popularly known as "Michuki Rules" on road accidents in Nairobi County, Kenya. A number of problems were anticipated in this research. Firstly, Michuki rules themselves faces numerous interpretations and requires a careful selection of context and content. To overcome this, the research consciously avoided going deep into various discussions that would have led to circles of discussion without easily getting to the point. For example, the study consciously excluded an in depth discussion on types of accidents that are not road related and are recorded with the police and media.

Another problem would concern availability and access to literature sources particularly from the police. There is little access to documentation in police custody and they tend to give what they want about anything they deal with. To some extend, it is because of the corruption accusations directed towards the police. Therefore, to fill this part, the researcher mainly relied extensively on documented data, newspaper articles, and other reports especially from other NGOs working with the road transport industry.

The study involved a lot of movement which requires time and money in form of bus fare which poses another challenge to the researcher. However, the researcher did a proper sampling while collecting data to ensure that each area is fully covered. Generalization of findings was therefore limited to the urban areas where matatus are used as a means of transport.

1.9 Delimitations of the Study

The scope of the study was six years stretching from 2008 up to and including 2013.

There were however, a number of very important reasons why the traffic systems existing in Nairobi area should not be disregarded by this research. Most importantly, Nairobi

being the capital city of Kenya has the highest number of public service vehicles as well as high population of people on employment, business as well as residents and therefore the rate of road accidents is high as the traffic police estimates that three people die every day in the city and therefore the research can be used to assess the situation of other counties in Kenya. Due to the high number of motor vehicles and pedestrians in Nairobi, there are high violations of traffic rules and insanity on the roads than any other city in Kenya. Generally, Nairobi environment can be regarded as more complex with many different types of road users with different needs, the physical and mental demands placed on road users are therefore much higher and are reflected in the statistics by a comparatively greater number of accidents involving injuries. This is why Nairobi was preferred by this research. The study provided an in-depth investigation on the impact of "Michuki rules" on reduction of road accidents in the transport sector in Nairobi, Kenya. Uses of interviews to gather information enabled the researcher to create a good rapport with the respondents.

1.10 Definition of Significant Terms used in the Study

The significant terms used in the study include:

Michuki Rules – These are revised traffic rules on road safety measures with the aim of curbing road accidents.

Seat belt – Seat/safety belt is a vehicle safety device designed to secure the occupant of a vehicle against harmful movement that may result during collision or sudden stop.

Speed Governor – A governor or speed limiter is a device used to measure and regulate the speed of machine, such as an engine.

Overcrowding/Overloading – This means carrying more passengers than the required capacity.

Use of defined Routes – This is use of the designated routes as it stipulates in the vehicle registration records.

Road Traffic Accidents (RTA) - accidents caused by vehicles on the road.

Alcohol blow – A device used by traffic police to detect whether the driver is drunk.

Road Sanity – transport free of road accidents.

Reduction of road accidents in the transport sector – to decrease the number of road accidents.

1.11 Organization of the Study

The study report was organized in five chapters as follows: Chapter one introduces the influence of the components of the revised traffic rules on road accidents in transport sector in Nairobi County, Kenya. It comprised of the Background of the Study, Statement of the Problem, Purpose of the Study, Research Objectives, Research Questions, Significance of the Study, Basic Assumptions of the Study, Limitations, delimitations and Organization of the Study.

Chapter two presents concept of the revised traffic rules popularly known as "Michuki Rules" on road accidents in the Transport Sector in Nairobi County. It also dealt with the seat belts, speed governors, overcrowding on road accidents in the Transport Sector in Nairobi County, the theoretical and conceptual frameworks used in introducing national integrated transport policy to tame the matatu sector in Kenya.

Chapter three outlines and highlights the rationale of the research methodology used in the study. Primary and secondary sources of data was employed. Structured

questionnaires were distributed to respondents who included Nairobi residents, stakeholders in transport industry and key government representatives in relevant ministries (transport, internal security and works) Literature on Kenya transport policy, transport laws and road users from books, journals, official documents, internet documents was collected, synthesized and used as secondary data. Emphasis was put on getting qualitative data. In- depth views of respondents were sought on Michuki rules and accident linkage. It was hoped that key data including such important issues as data availability, misconception and miscommunication of Michuki rules and sanity in road transport linkages of its broader policy implications, interdisciplinary research in Kenya were revealed through Literature review, interviews and questionnaires.

Chapter four focuses on analysis, presentations and interpretation of the research findings. Qualitative and quantitative data received from the questionnaires was analyzed to assist presentation and collation of research findings. As far as appropriate and practicable, tables and figures are used to capture the required information. Throughout the research, effort was made to provide answers to the questions raised in the research problem. The questionnaires captured issues related to driving behavior, effectiveness of seatbelts, speed governors and defined routes in reduction of accidents. Interviews were done to get opinion on seatbelt, speed governor usage, defined routes and overloading. It is envisioned that some difficulties would be experienced during the research.

Chapter five of the study report is a summary of the findings, conclusions and recommendations made in line with the study objectives.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews literature which is related to the study based on the following thematic areas: The concept of revised traffic rules on road accidents in Kenya, Seat-belts influence on road accidents in the transport sector, Speed governors influence on road accidents, Overloading influence on road accidents, use of defined routes by public service vehicles influence on road accidents.

2.2 Historical Perspective of Road Transport in Kenya

Public transport in Kenya and especially in urban areas is dominated by matatu vehicles. The term "matatu" is derived from a local Kikuyu vernacular term "mang'otore matatu" which means "thirty cents" which was then the standard charge for every trip made Chitere (2004). The origin of the matatu industry can be traced from 1934. At this time the Kenya Bus Service was the sole legal provider of public transport services. The Kenya Bus Services was jointly owned by the United Transport Overseas Ltd (75%) and the Nairobi City Council (25%) of the shares. This company operated in major towns like Nairobi, Mombasa, Kisumu, Nakuru and Eldoret but could not meet the high demand of services from the urban population which was growing as Africans migrated to urban areas to look for employment after their land was alienated (Chitere, 2006).

At independence in 1963 the total number of matatus operating in the country was less than 400 and did so in the form of taxis. As the population rose, matatu operators lobbed for more space. The then president Jomo Kenyatta responded by allowing the matatu operators to carry passengers without obtaining special licenses although to do so

had to comply with the existing insurance and traffic regulations. This can be said to have marked the beginning of insanity on the Kenyan roads particularly as the number of vehicles increased on Kenyan roads. For instance, by 1990 out of the 33,300 vehicles registered in the country, 17,600 were matatus. This number would rise to 40,000 by 2003 (Chitere, 2006). They provided employment to about 160,000 persons and generated vast revenue for the government in form of charges for licenses, duty, VAT among other taxes. Although the industry plays a leading role in transportation of both persons and goods in urban and rural areas, it equally has a long history of fatal accidents that involved the public service vehicles. These accidents resulted into the annual death rate from traffic accidents of more than 3,000 people by the time the NARC government took office in 2002.

These rates of death sent signals of fear among the road users. Insecurity on Kenyan roads remained a matter of great concern. And despite official position that the rate of accidents had decreased in comparison to previous years, Kenyan road users across the country still felt more insecure now than any other time in the country's history. When the National Rainbow Coalition (NARC) won the 2002 polls, one of its pledges was to make Kenyan roads safer. The then transport minister at the time, John Michuki a key Kibaki ally proposed the tough measures in his first year of office. He introduced what would famously come to be known as the "Michuki Rules' which aimed at restoring order in public transport. The rules which came into effect in February 2004 required all public taxis (matatus) and buses to install speed governors, passenger safety belts, operate in clearly defined routes, to carry a specified number of passengers and their drivers and conductors to be disciplined and to have a clean security record.

Michuki decreed that all commercial vehicles could only be allowed to cruise at 80 kilometres per hour and on city roads the speed limit was enforced at 50 kilometres per hour. Equally standing passengers in city buses were banned and the passenger capacity of matatus or minivans was reduced from 18 passengers to 13 as Chitere puts it. In addition, crews of buses and matatus had to be vetted by police and a certificate of good conduct issued before employment. It was also mandatory for bus and matatu crews to be in uniform and to have their pictures posted in the vehicle. Many stakeholders and specifically commuters saw the move as a positive step to bring sanity in the matatu industry. Others were opposed to the "Michuki rules". Although some stakeholders especially the matatu owners, the operators and the Matatu Welfare Association (MWA) as well as Matatu Owners Association (MOA) requested for some time to adjust, some claiming to be servicing loans, others talking about scarcity of seatbelts and speed governors, Michuki insisted that it was urgent and mandatory. Although the changes initiated by the Michuki rules were seen as positive by many road users, scholars have neglected their impact on the transport sector and little is done if any on this subject leaving the public to give mixed reactions on the same (Chitere, 2004).

2.3 Concept of the Revised Traffic Rules and Road Accidents in Kenya

Road traffic is an area of focus in terms of development of transport policy. The policy is supposed to bring sanity on the roads of Kenya by considering the quality of road, vehicles, drivers, operators, pedestrians, road traffic operations, the road environment and interaction in the traffic network (Khayesi, 2005). This includes mutual interaction between road users, the road infrastructure, and the road environment. Such policy was seen through the Michuki laws. The Michuki laws are spelt well through the

Legal Notice 161 of 2003. The legal notice purports to direct the PSVs owners' driver, and conductor to wear an identified uniform. The laws also imposed the obligation to fix speed governors upon manufacturers, or unknown dealers, the minister required that the PSV owners and all those who are registered by the Registrar of Motor Vehicles to fit the speed governors. Through Gazette Notice number 384 of 2004 the minister specified the types of speed governors approved by himself pursuant to the purported Rule according to Integrated National Transport Policy (INTP) report of 2009.

The revised traffic rules also dealt with the issue of the route numbers. This section amended Rule 55 of the Traffic Rules of the Legal Notice Number 161 which purported to create a new sub-rule (b) and which imposed obligation of PSV owners to paint route numbers on the offside of their vehicles. These rules were to enhance road traffic quality and encompass traffic safety, traffic discipline, protection of the road infrastructure and the environment, administrative and economic order in road traffic. Michuki introduced these laws following Kenya's road traffic realities which stood at approximately 899,000 vehicles registered in the country of which over 38,000 are public service vehicles of which 7,000 were in Nairobi alone, (Scalar and Alexander, 2007).

This made traffic safety to be a serious problem in Kenya, with over 13,000 traffic accidents annually involving approximately 26,000 vehicles causing 3000 fatalities and over 11,000 serious injury cases. This translates to over 36 accidents and 8 fatalities daily. The number of casualties per crash also went up from 1.3 in 1965, 1.8 in 1990 to 2.0 in 2002, while fatalities per 10,000 populations during 1985 to 2002 rose from 7.8 to 10 respectively. Matatus accounted for the majority of vehicles involved in accidents of over 14.4 percent, 14.3 percent and 11.8 percent in 2005, 2006 and 2007 respectively,

followed by buses 9.1percent, 9.9 percent and 9.8 percent finally taxis 2.3 percent, 2.5 percent and 3.2 percent per year. Matatu and bus accidents combined accounted for 23.4percent, 24.1percent and 21.5percent in 2005, 2006 and 2007 respectively thus almost equaling total annual accidents involving all cars and utility vehicles combined. The context of the revised traffic rules as seen through the Legal Notices No. 161 of 2003, No. 83 of 2004 and No. 65 of 2005 was to regulate the public transport sector as part of the Integrated National Transport Policy (INTP), while the National Road Safety Action Plan (NRSAP) was meant to restore order, reduce accidents, increase passenger safety, reduce conflicts and safeguard private investment in the public transport sector as per the Traffic Act Cap 403 (1963) and Legal Notice No. 161 of 2003. That was why seat belts, speed governors and defining of routes was clearly emphasized (Chitere, 2006).

The revised traffic rules (famous Michuki Rules) if implemented to the later was a policy framework to ensure overall sanity on our roads, infrastructure provision, and control as well as issue sanctions and penalties. The City Council's planning department was set to be key in assisting to direct route planning and provision of the necessary infrastructure, which would include, traffic management and passenger information. There would have been numerous benefits with franchising. To the Government, it would have become easier to tame transport externalities and policing and interventions would be easier to effect. The government would also stand to realize an increase in tax collection from the industry since it would be much easier to deal with an organized transport industry. The investors also would stand to reap greatly as they would

be operating in a predictable investment climate besides having assured good returns on their investments (Asingo, 2004).

In addition by operating in a franchise concept wasteful competition is greatly reduced since the routes and the gaps between the buses are managed professionally. The commuters also benefit since they can rest assured of their safety fares as well as departure and arrival times. Motorists would have been also decent alternative mode of travel with reduced traffic jams and therefore lower costs of motoring. Reduction of accidents on Kenyan roads could also lead to a subsequent reduction in insurance premiums (Khayesi, 2005).

2.4 Seat belts and Road accidents in the Transport Sector

Seat/Safety belt is a vehicle safety device designed to secure the occupant of the vehicle against harmful movement that may result during collision or sudden stop, according to the English dictionary. Seat belts are designed to retain people in their seats, and so prevent or reduce injuries suffered in a crash. According to the royal Society for the Prevention of Accidents, the seat belts ensure that as little contact is made between the occupant and vehicle interior as possible and significantly reduce the risk of being thrown out from the vehicle (Khayesi, 2005).

Before the introduction of the mandatory traffic law that all passengers should wear seat belts, fatal accidents were high in the State of Kansas, USA translating to 428 deaths and 22, 723 serious injuries in 2006. After the introduction of the mandatory seat belts, the fatal accidents reduced by 56% in 2007 (Dissanayake and Indike, 2007). Evans and Graham (1997) on their study on the effect of seat belt use on fatalities noted that direct effect of using seat belts reduced fatality risk by 40% to 50% in Europe.

Gerondeau (1999) carried out a study in France on importance of seatbelt to control traffic road accidents and established that between 1980 and 1997, crash levels in France decreased slowly at a fairly even rate, the annual death toll falling from 12,000 to 8,000 and noted that this period saw a number of positive decisions of a major White Paper produced in 1989. The major road safety decisions taken over this period includes: Introduction of one-point penalty for failure to wear a seat belt, reduction in the speed limit from 80 km/h to 60 km/h and adoption of a law strengthening penalties for driving under the influence of alcohol.

According to Kenneth, Koval and Spratt (2011) mortality from motor vehicle collisions around the world declined steadily over the past 30 years, particularly in developed countries which recorded low accident related deaths. The argument behind this reduction is the introduction of seat belts and laws that ensure travelers use them. Seat belts have been identified as a significant contributor to reduction of accident related deaths. In their study, these scholars found a substantial reduction in risk for both mortality and injury severity attributable to use of seat belts. They argue that the combination of seat belts and air bags provided a 67% reduction in mortality and a significant reduction in severe injuries. Use of only a seat belt reduced mortality risk by more than 50%, and use of an air bag alone reduced mortality by more than 32%. These findings demonstrate a significant reduction in risk for mortality and severe injury from road accidents in developed countries. The findings by the above scholars are plausible but do not mention anything on third world countries. In Kenya the famous Michuki rules introduced similar measures as those discussed by the scholars. This study will therefore

establish if there was substantial decrease in mortality for all types of motor vehicle accidents with use of seat belts in Nairobi after the introduction of the Michuki rules.

According to Chitere (2006) in October 2003, Kenya's minister for transport and communications issued a Legal Notice No. 161 that sought to regulate the public service vehicle sub-sector. The objectives of the legal notice were to: reduce accidents by over speeding, enhance safety of commuters; ensure responsibility, accountability and competence of drivers and conductors; eliminate illegal drivers, conductors and criminals that had infiltrated the industry; and facilitate identification of vehicles and restrict their operation to authorized routes. Fitting of seat belts on all vehicles (public, commercial and private) was one of the provisions of the Legal Notice (No. 161 of 2003) which were to be observed with effect from 1st February 2004. Chitere (2006) also states that the Legal Notice required that vehicles which met the outlined conditions be inspected by the government motor vehicle inspection centres in different parts of the country for testing and certification. It indicated that any person who contravenes or fails to comply with the Legal Notice provisions shall be guilty of an offence and could pay a specified fine or face imprisonment. A passenger found not wearing seat belt was also to pay a specified fine.

In 1984, the National Highway Traffic Safety Administration carried out a research in the United States of America on effectiveness of seatbelts and found out that seatbelts effective usage reduced fatalities and injuries in road accidents. According to the study, seat belts are 40% - 50% and 45% -55% effective in reducing fatalities and nonfatal injuries, respectively. Although this is a positive revelation, similar information is lacking on the Kenyan side. What was the seat belt effectiveness in Nairobi after the

introduction of revised traffic rules? What was the possible impact of the seat belt introduction on deaths associated with road accidents?

Chitere (2006) noted that seat belts fitted by some public vehicles are substandard and do not guarantee safety in the event of accidents. In some vehicles, they are not taken care of and some commuters decline wearing them owing to them being dirty. Often the crew does not emphasize their importance until they are about to encounter the police. According to Jennifer Graeff (2007) when the Michuki rules were gazatted in 2004, to many of the stakeholders, specifically to the commuter, it was a positive step for the matatu industry and the transport system in Kenya, others were opposed to the rules particularly the matatu owners, operators, Matatu Welfare Association (MWA) and Matatu Owners Association (MOA). The matatu owners were so angry that nationwide matatu strikes were organized shutting cities down for days citing that the provisions mandated by the Michuki rules were quite costly for the owners, sparkling the outrage but the government stood firm and all vehicles were to be fitted with seat belts. The ignorance and reluctance by the stakeholders to comply with the provisions implies that there was no enough awareness campaign on the safety measures, was the provisions costly than the human lives lost in road accidents? (Greaff, 2007).

In July 2013, through the media Kenyans have witnessed several fatal road accidents, a case in point of 10th July 2013 accident where a total of 13 people among them students and teachers perished at night (shortly after 7.30 pm) in a tragic road accident at Nyambunde, Kisii county, 53 others mainly students were injured in the accident. At the time of the accident, the bus had 70 passengers more than the required 52; the driver of the bus died on the spot, assuming that the 52 passengers were wearing

seat belts, what about the other 18 passengers? Could it be they are among the ones who perished?

2.5 Speed Governors and Road Accidents in the Transport Sector

A governor or speed limiter is a device used to measure and regulate the speed of machine, such as an engine. Speeding is one of the most prevalent factors contributing to traffic crashes around the world. Speeding plays out a big percentage of all fatal crashes which translates to huge loss of lives in speeding-related crashes. According to the Massachusetts Traffic Safety Research Program (2005) traditional regulatory measures used to control speed have not been effective. Traffic calming efforts such as speed bumps, roundabouts and pavement textures are used to persuade road users to reduce their speed, especially in residential areas but frequently overlooked. An alternative way to reduce excessive speeds is to introduce speed governors which serve to alter driver's perceptions of the correct speed for a particular road. While regulatory measures require enforcement, traffic calming and passive speed control measures are intended to be self-enforcing and therefore reducing accidents. Have the speed governors introduced by the Michuki Laws on Nairobi roads reduced accidents?

A survey in Uganda on road safety and established that in 2000, road safety condition in Uganda was still unsatisfactory whereby 14,390 road accidents were reported with 1,438 fatalities and 12,946 injuries but after introduction of mandatory road safety laws including use of speed governors in all vehicles, although the number of vehicles on the roads doubled, the fatalities per 10,000 vehicles reduced from 88% in 2000 to 64% in 2007 (Global road safety commission, 2009).

Sprattler (2012) carried out a survey on risks of speeding and speeding-related fatal crashes in United States and realized that speeding is one of the most prevalent factors contributing to serious and fatal crashes, yet if does not command nearly as much attention as other safety issues such as alcohol-impaired or distracted driving. The survey also noted that the speed limit vary from one state to another ranging from 70 mph to 85 mph and established that although speed governors are mandatory in all vehicles there are road accidents.

In October 2003, Kenya's Minister for Transport and Communication issued Legal Notice No. 161 to regulate the public Service Vehicle sub-sector and one of the objective of the Legal Notice was to reduce accidents caused by over speeding thus all vehicles were to be fitted with speed governors. After six months of the Legal Notice implementation (Feb-July, 2004) fatal accidents had reduced to 616 from 1,047 in Feb-July, 2003 while serious accidents reduced to 1,199 from 2,110 in the same period (GoK, MOTC Report, 2004).

According to Chiduo and Minja (2005) there is clear evidence of the effect of speed on accident rates and accident severity. They argue that the energy dissipated in an accident is proportional to the square of the impact speed. They contend that the impact of more than 130km/hr involves more than twice the energy of one at 90km/hr. Cuthbert further argues that vehicle becomes less stable at higher speeds, the driver has less time to react, other road users have less time to react and the severity of accidents increases. If the Traffic Police enforce this speed limit laws, then accidents will reduce. This study will investigate if the application of Michuki rules on speed governors reduced the accidents on Nairobi roads.

Wilson (2010) argues that one effective way to reduce speeding among drivers is through the use of automated speed cameras. He also states that in urban areas where speed cameras have been in place accidents were reduced by over 70 percent. These cameras were also introduced on Nairobi and Kenyan Highways, did they reduce the accidents? This study will endeavour to reveal. Johnson, Pawar and Mack-Blackwell (2005) argues that safety is the most strongly advocated argument in favour of speed governors. They contend that numerous studies point to speed as one of the most important factors in traffic accidents. They say that studies show that when a vehicle is moving at a high speed, crashes are somewhat more likely to occur and when they occur, they are likely to be serious. Therefore for road safety to be realized, quality speed governors must be introduced and this was one of the requirements of Michuki laws. The question that this study will attempt to answer is whether the introduction of speed governors reduced accidents.

According to Chitere (2006) although the matatu industry plays a leading role in transportation of both persons and goods in urban and rural areas, it equally has a long history of fatal accidents that involved the public service vehicles. These accidents resulted into the annual death rate from traffic accidents of more than 3,000 people by the time the National Rainbow Coalition (NARC) government took office in 2002. These rates of death sent signals of fear among the road users and insecurity on Kenyan roads remained a matter of great concern. According to Chitere (2006) the NARC government pledges was to make Kenyan roads safer. The then transports minister at the time, John Michuki, a key Kibaki ally proposed the tough measures in his first years of office by introducing what would famously come to be known as the “Michuki Rules” which

aimed at restoring order in public transport and among the rules was to install speed governors in all public vehicles.

Michuki decreed that all commercial vehicles could only be allowed to cruise at 80 Kilometres per hour and on city roads the speed limit was enforced at 50 Kilometers per hour. In addition, crews of buses and vehicles had to be vetted by police and certificate of good conduct issued before employment (Daily Nation 4 February 2004). Although some stakeholders especially the matatu owners, the operators and the Matatu Welfare Association (MWA) as well as Matatu Owners Association (MOA) requested for some time to adjust, come claiming to be servicing loans, others talking about scarcity of seat belts and speed governors but Michuki insisted that it was urgent and mandatory. Although the changes initiated by the Michuki rules were seen as positive by many road users, scholars have neglected their impact on the transport sector and little is done if any on this subject leaving the public to give mixed reactions on the same according to Chitere.

On 27th February 2013, 34 people died and 50 others were seriously injured when a bus they were travelling in crashed near Mwingi town on the Thika-Garissa highway. According a reporter, Mutua (2013), the survivors of the accident claimed that the bus (Modern Desert Cruiser) was over speeding and overloaded with 25 extra passengers and many were left wondering whether the bus was really fitted with a speed governors and if so was it in a working condition? On 27th July 2013, a speeding car belonging to Police Presidential Escort Unit hit and killed a mother and her child in an accident along the Northern By-Pass, Nairobi near Githurai area. Eye witnesses and police said the land rover was moving at a very high speed when the accident occurred

and noted that most of the deaths are caused by speeding cars. In view of the series of the road accidents due to speeding, the researcher seeks to find out whether the speed governors as components of the revised traffic rules are playing any role in curbing the road accidents in Kenya.

According, Ndonga (2013), "41 passengers perish in Narok bus crash – city to city bus" on 29th August 2013, 41 people perished and 33 were injured in dawn crash after night bus left road and plunged into valley near Narok. As usual blame game started with Traffic Police suspecting the driver slept at the wheel, public questioned about the quality of the speed governor if it was fitted, a survivor (Peter Okinyi) said the bus was over speeding, another survivor (Gerald Okoth) claimed the bus was overloaded and others listed some sad tales of the jinxed August. The Minister ordered firm's buses grounded and owners charged after horror crash. It was later noted that the bus company had no licence of operation making it difficult for a common man to understand the role of traffic police on Kenyan roads. The President, Hon. Uhuru Kenyatta promised to take action to curb the number of road accidents in the country and also asked the vehicle owners to take full responsibility of their vehicles. Does the blame game and the warnings of careless driving reduce the road accidents in our roads?

2.6 Overloading and Road Accidents in Transport Sector

According to the Global Status Report on Road Safety (2007), overloaded and unsafe modes of public transport contribute to road traffic injuries and deaths, particularly in low-income and middle-income countries. Choice of transport mode is frequently related to socioeconomic status, with those who can afford it avoiding the unregulated and unsafe vehicles. A study in Nairobi county, Kenya by (Odero and

Khayesi (2006) on Road Traffic Injuries in Kenya found that buses and matatus are the vehicles most frequently involved in fatal crashes and that passengers in these vehicles account for 38% of the total road deaths. The study will establish the relationship between overloading or overcrowding and the road accidents.

Kibua (2006) noted that the high rate of road accidents in Kenya had been occasioned by the government's neglect of the road sub-sector in the past 10-15 years whereby overloading was order of the day provided passengers were in the vehicle or hanging on the door. After the introduction of reforms in the operation of public service vehicles (PSVs) in October 2003 the seating capacity of PSVs was revised whereby the smaller Nissan vehicles was to carry 14 passengers (13 passengers and a conductor) instead of 18 passengers when passengers were squeezed in the vehicles including standing or leaning and some seating on others, the new law required each passenger to occupy his/her own seat and wear a seat belt (Kibua (2006).

Odero and Khayesi (2006) asserts that current road safety interventions in Kenya are sporadic, uncoordinated and ineffective arguing that road safety measures in Kenya have not made measurable impact in reducing the numbers, rates and consequences of road traffic crashes and that despite the marked increase in road crashes in Kenya, little effort has been made to develop and implement interventions. Odero and Khayesi (2006) argues that overloading in vehicles is the order of the day whereby police are given some token as a bribe (ranging to as low as Kshs 50 and above) to allow standing passengers with a claim that the vehicle owner has put a target and the crew would like to put food on the table. The research will investigate whether overloading contributes to road accidents in transport sector in Nairobi County.

Asingo (2007) states that coherent road policy has resulted into weak institutions incapable of facilitating efficient road transport arguing that there are weak institutional frameworks and inadequate public sector participation in road transport development and funding in Kenya and therefore support for public transport is weak thus leading to poor regulation and coordination of public transportation, lack of road safety mechanisms and lack of motorized modal linkages in road transport. The research will investigate whether introduction of the Michuki rules on transport sector addressed the above problems and whether overloading as one of the provision in the Legal Notice No. 161 helped in reducing road accidents in the transport sector in Nairobi County.

Madinda and Mfinaga (2010) carried out a survey in Tanzania on Analysis of Minibus Transport Operational Problems in Dar es salaam and established that due to the fact that Dar es salaam is the capital city its highly populated and there is insufficiency is service supply leading to vehicle overloading particularly during peak hours whereby a 15 passenger capacity minibus carries 22 passengers while 25 passenger capacity carries 34 passengers. The survey noted that the situation is worsened by concentration of supply on main routes and ineffective enforcement of regulations by police and the poor. The study also found out that operators complained of traffic police officers having made a scheme of imposing high unofficial payments to them resulting to increased operational costs making the operators to maximize revenue by overloading passengers and speeding. The study proposed strategies to improve the bus transport operation in Dar es salaam city.

Govender and Allopi (2002) conducted a survey in South Africa on A Safer Minibus Taxi Industry in South Africa and noted that most of road accidents were caused

by speeding and overloading whereby a 16 seater minibus carried 20 occupants violating traffic regulations. Exceeding the allowed seating capacity in a vehicle puts occupants at risk for injury in a crash and increases the risk for a crash. The study noted that in the effort of dealing with the problem of overloading the seating capacity was increased from 10 seater to 16 seater or more and traffic regulations strengthened.

Chitere (2006) in his study on "Public Service Vehicle (PSV) drivers in Kenya, their Characteristics and Compliance with Traffic Regulations and Prospects for the Future, indicates that there is high rate of non compliance of drivers with road safety regulations despite enforcement of laws by the Police and recommends that in order to improve compliance, there is need for gradual transformation of the ownership and management of PSVs from individual investors and associations to company ownership and management and road safety awareness efforts targeting various stakeholders but the study has the limitation of being confined to driver behavior. The researcher will investigate whether overloading is for the driver's benefit or there are other circumstances surrounding it and how overloading contributes to road accidents in transport sector in Nairobi County.

2.7 Use of Defined Routes and Road Accidents in Transport Sector

According to Gicheru and Migwi (2010), public transport is the main mode of transport for people and goods in Kenya, it has been asserted that this is because majority of citizens cannot afford to buy and maintain their own private vehicles. Studies indicate that from the 1900s until 1973, the public transport landscape in Kenya was dominated by a few multinational bus companies such as the Overseas Trading Company (OTC) and Kenya Bus Services (KBS) which had their roots in Britain, the colonial power. During

this time, public transport system was well organized, well coordinated and regulated. Bus companies were licensed and paid taxes to the government. Buses were assigned specific routes and travelled on a strict time-table.

Kibua (2006) established that the Registrar of Motor Vehicles, who determines and fixes passenger and luggage capacity for all vehicles, was under the Ministry of Finance, while the Driving Test Unit is under the Office of the President thus leading to disjointed handling of transport issues. Although the Transport Licensing Board (TLB) is supposed to license all public vehicles, allocate them routes and regulate their operation timetables. There was no data on vehicle requirements by route. Matatu owners therefore decided which route to operate on. In October 2033, Kenya's Minister for Transport and Communications issued Legal Notice No. 161 that sought to regulate the Public Service Vehicle sub-sector by facilitating identification of vehicles and restrict their operation to authorized routes (Kibua, 2006).

In 2011, the Surface and Marine Transport Regulatory Authority (SUMATRA) did a study on User Needs and Management of Public Transport Services in Dar es salaam, Tanzania and noted that both bus drivers and owners were involved in route selection. Criteria used in route selection included availability of passengers, state of the road infrastructure, route length, proximity to owners' premises and operational experience on the route. The study noted that knowledge of the route reduces the occurrence of traffic road accidents by over 50% as the bus crew are familiar with physical road infrastructure like potholes, bumps, junctions, zebra crossings, sharp corners and black spots if any (SUMATRA report, 2011).

Asingo and Mitullah (2007) conducted a study on Implementing Road Transport Safety Measures in Kenya and noted that the Government of Kenya had made an effort through the Ministry of Transport and Communications to address the issue of road safety in Kenya and introduced the Legal Notice No. 161 of October 2003 which amended the Traffic Act Cap 403 of the laws of Kenya. One of the provisions of Notice No. 161 was that public service vehicle owners were required to indicate the registered route plied by their vehicle. The study also noted that the implementation of the Legal Notice No. 161 significantly reduced cases of road crashes in Kenya and particularly between January 2004 and May 2004 compared to 2003.

Introduction of paratransit mode of transport in Kenya operated by individual entrepreneurs operated parallel to the organized public transport system (informal) and had low operating costs, charged low fares, had no strict travel schedules, travel faster on both designated and non-designated routes, pick up and drop passengers anywhere along the road becoming the popular mode of transport especially in urban and peri-urban areas. Paratransit vehicles are therefore known as matatus in Kenya, dala dala in Tanzania and taxi in South Africa as per Gicheru and Migwi. Due to mismanagement and completion from the private public service vehicle operators in paratransit industry, operators started to come together to manage routes, save and borrow money through matatu Savings and Credit Cooperatives (SACCOs) and in the process restoring some order, self-regulation and safety although majority were reluctant to join . Government attempt to regulate the public transport sector was the implementation of the Legal Notice No. 161 of 2003, popularly referred to as “Michuki Rules” but after John Michuki enforced it by 2009 it was business as usual, just a few years after Michuki left the

Ministry for Transport (Gicheru and Migwi, 2010). The researcher will investigate why stakeholders were reluctant to comply with the rules and if use of defined routes had any influence on road accidents in transport sector in Nairobi County.

According to Chitere (2006) the Transport Minister, John Michuki introduced the tough laws in February 2004, which required matatu and bus operators to install speed governors, passenger safety belts, operate on clearly defined routes, carry a specified number of passengers and have well disciplined crew. Operating on defined routes means that the driver understands the road infrastructure well that is knows where there are bumps, roundabouts, potholes as well as familiarization with the customers plying the route. The intention of the Legal Notices No. 161 of 2003, No, 83 of 2004 and No. 65 of 2005 was to regulate the public sector as part of the integrated National Transport Policy (INTP) while the National Road Safety Action Plan (NRSAP) was meant to restore order, reduce accidents, increase passenger safety, reduce conflicts and safeguard private investment in the public transport sector and not to punish anybody. The study will investigate whether the use of defined routes by PSVs was successful and whether it helped in reducing road accidents. The study will also investigate why matatu operators fail to adhere to their defined routes.

2.8 Theoretical Framework

This research was anchored on two theories namely;

2.8.1 Institutional Theory Framework

Institutional theory framework contends that institutions set the rules that govern the internal operations of business firms as well as their wider business environment. Clemens and Cook (1999) who are the proponents of the institutional theory states that

institutional arguments rely not only on aggregations of individual action, or on patterned inter-action games between individual, but on institutions that structure action. It is within this institutional framework that the government of Kenya introduced the National Integrated Transport Policy in 2003 to tame the matatu sector and bring back order, predictability and reduce accidents within the paratransit sector.

2.8.2 Farralle's Human Factors Theory

The human factor theory tends to attribute accidents to a chain of events ultimately caused by human error. Farrell and Catchpole (1990) who are human factors theory experts defined human factors theory as an understanding of the effects of teamwork, tasks, equipments, workspace, culture, organization on human behavior and abilities and application of that knowledge in a given setting. Human factors encompass all those that can influence people and their behavior and it has been indicated that human factor is a major contributor to traffic accidents. Farrell and Catchpole (1990) identified three factors that lead to human error; overload, inappropriate response and inappropriate conduct in road traffic accidents as studies indicate that about 85% of road traffic accidents are caused by human error such as dangerous driving, disregard for existing laws, corruption and laxity in enforcement of laws.

2.9 Knowledge Gap

The study was guided by the knowledge gap as follows.

Variable	Author	Key Findings	Knowledge Gap
Use of Seat Belts	Chitere (2006)	He emphasized of importance and effectiveness of seat belts	He did not focus of stakeholders compliance and thus need for further research.
Use of Speed Governors	Sprattler (2012)	Noted that speeding is the most prevalent factors contributing to serious and fatal crashes. Speed limit vary from one state to another	Despite that fact that speed governors are mandatory in all vehicles as well as other traffic rules there are still road accidents thus need for further research.
Overloading	Odero and Khayesi (2006)	They emphasized on traffic police being corrupt and PSVs crew meeting the target of the amount given by the owner thus leading to overloading.	The traffic rules and regulations are very clear to all stakeholders and all PSVs have specified numbers of passengers to be carried but overloading is the order of the day and therefore there is need for further research.
Use of defined Routes	Gicheru and Migwi (2010)	They stressed on the public transport being the main mode of transport for people and system organization as well as selection of routes.	Although the transport licensing Board is mandated to allocate routes and regulate their operation, matatu owners decides on which route to operate on and can change depending on the season and therefore there is need for further research.

2. 10 Conceptual Framework

The institutional theory tends to focus on the human behavior and its obligation to adhere to the laid down regulations or laws. This theory borrows a lot from the behavioral theory by Scott Geller. It was revealed that one of the causes of road accidents in Kenya is poor remuneration and working conditions forcing the drivers and conductors to

overload, overlap and overspeed in the effort of making more trips than the matatu owners target in order to have an extra money because the salary in not enough and therefore the theory fits well with the study.

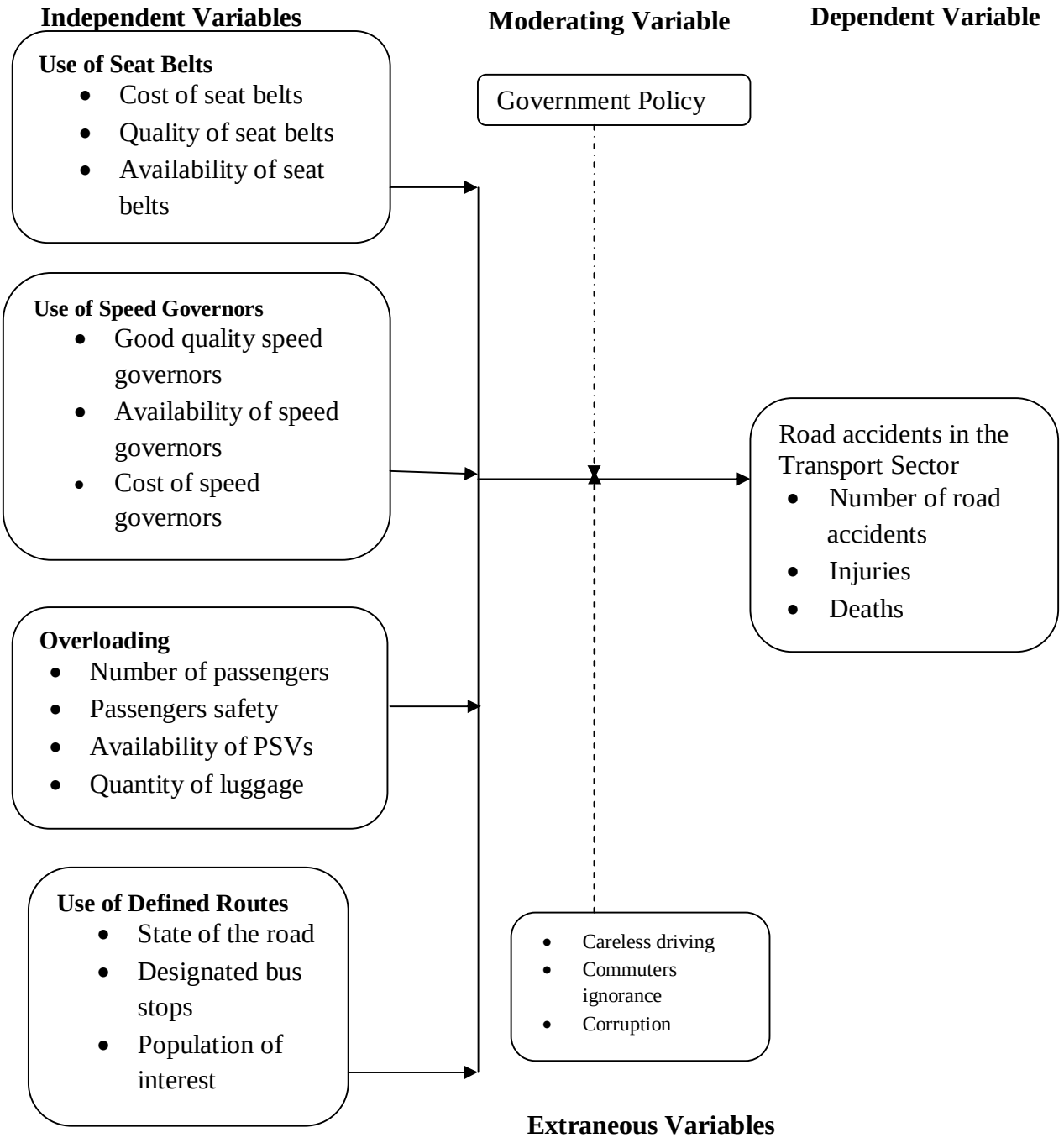

Figure 1: Conceptual Framework

The Human Factors Theory is relevant to this study as it deals with the three (3) factors which affects human concentration on the road as a driver and other road users whereby noise and distraction (environmental factors) emotional stress, worry, sickness and personal problems (internal factors) and poor roads, unclear instructions (situational factors). When a driver detects a problem in a vehicle and does nothing to correct it thus leading to accident, it is automatically inappropriate response while inappropriate attitude applies like when unqualified conductor drives a vehicle in the name of a squad causing a fatal accident.

Revised traffic rules are the dependent variable. Revised traffic rules refers to the road safety laws which were introduced by the late Hon. John Michuki who was then the Minister of Transport which required matatu and bus operators to install speed governors, passenger safety/seatbelts, operate on clearly defined routes, carry a specified number of passengers and have well disciplined crew. These road safety laws were captured in the Legal Notices No. 161 of 2003, No. 83 of 2004 and No. 65 of 2005 with an intention of regulating the public transport sector as part of the Integrated National Transport Policy (INTP) while the National Road Safety Action Plan (NRSAP) was meant to restore order, reduce road accidents, increase passenger safety, reduce conflicts and safeguard private investment in the public transport sector.

Traffic road accidents are the independent variable. Traffic road accidents are accidents which are caused by vehicles on the road. The study helps in emphasizing road safety measures on curbing traffic accidents which has become the most common causes of death and injury proving to be a matter of concern. Inappropriate driver's behavior, lack

of law enforcement and poor traffic management, in combination with deteriorating road conditions makes road safety a very serious problem. It is evident that road accidents consume a significant share of the country resources and that measures need to be taken to reduce accidents and their consequences as soon as possible.

2.11 Summary of Literature

In summary the literature review showed that the enforcement of Michuki rules in Kenya would have reduced road accidents on our roads. The literature reviewed has shown that where such laws were implemented, fatal accidents reduced. Such laws brought sanity on the roads by considering the quality of road vehicles, drivers, operators, pedestrians, road traffic operations, the road environment and interaction in the traffic network. The literature showed that the seat/safety belts are designed to secure the occupant of the vehicle against harmful movement that may result during collision or sudden stop. The literature has also shown that speeding is one of the most prevalent factors contributing to traffic crashes around the world. Speeding plays out a big percentage of all fatal crashes which translates to huge loss of lives in speeding-related crashes and therefore speed governors regulate the speed of machine.

The literature indicated that overcrowded and unsafe modes of public transport contribute to road traffic injuries and deaths which affect socioeconomic status of the affected. Generally this section concludes by briefly assessing the literature on road safety. The literatures have shown that consistent with keeping rules reduces accidents. Thus, there is a need for respect of the traffic rules. Finally, using the gaps found in this literature, a case study on the influence of Michuki rules on accidents in Nairobi was done.

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the research methodology that was used during the conduct of this research. This section comprised of target population, Sample size and sampling procedure and research instruments themes. Pilot testing was conducted to detect weaknesses in design and instrumentation. Validity and reliability of instruments are captured in this chapter. Data collection methods used to gather information and data analysis techniques as well as ethical considerations and operational definition of the variables.

3.2 Research Design

Research design is defined as the work plan and structure of investigation so conceived as to obtain answers to research questions (Cooper and Schindler, 2006). The study uses mixed model design as it integrates quantitative and qualitative data through a transformative process. In this context the function of a research design ensures that the evidence that would be obtained enables the researcher to answer the initial question as unambiguously as possible. Obtaining relevant evidence entails specifying the type of evidence needed to answer the research question, to evaluate a programme or to accurately describe some phenomenon. A survey gathers data at a particular time with the intention of describing the nature of existing conditions, hence identify standards against which existing conditions can be compared and determine the causal relationship between specific events (Cooper and Schindler, 2006).

3.3 Target Population

Target population is defined as to all the members or a real hypothetical set of people, events or objects to which the researcher wishes to generalize the results of the research (Borg and Gall, 1989). The first thing is deciding what kind of people to interview. The researcher used a target population of people with the required knowledge in order to get the right information and successfully meet the study goals. Because of financial and time constraints, the researcher considered knowhow or knowledge on traffic rules. The following respondents were interviewed, 45 traffic police officers serving on different routes in Nairobi, 55 PSV drivers and 55 conductors, 30 leaders of Matatu Owners Association, 18 leaders of Matatu Welfare Association, 75 pedestrians, 80 Ministry of Transport officials and 85 commuters who are frequent users of the Nairobi roads. This is shown in table 3.1.

Table 3.1: Target Population

Category	Population Size	Sample Size
Traffic Police Officers	735	45
PSV Drivers	25,000	55
PSV Conductors	25,000	55
Matatu Owners Association Leaders	30	30
Matatu Welfare Association Leaders	18	18
Nairobi Pedestrians	5,000	75
Ministry of Transport Officials	100	80
Nairobi Commuters	1,800000	85
Total	**1,856618**	**443**

3.4 Sample Size and Sampling Procedure

A sample size is a sub-set of the population to which the researcher intends to generalize the results (Wiersma, 1986). By use of simple random sampling technique and systematic sampling respondents are were selected as per their categories; 45 traffic police officers serving on different routes in Nairobi, 55 PSV drivers and 55 conductors, 30 leaders of Matatu Owners Association, 18 leaders of Matatu Welfare Association, 75 pedestrians, 80 Ministry of Transport officials and 85 commuters who are frequent users of the Nairobi roads.

3.4.1 Sample Size

The sample size comprises 443 respondents drawn from a target population of 1856618 through the simple random sampling technique.

3.4.2 Sampling Procedure

The quota sampling technique was used to collect data from the traffic police officers, commuters, pedestrians, drivers and conductors. Quota sampling is a method for selecting survey participants where, a population is first segmented into mutually exclusive sub-groups, just as in stratified sampling. Then judgment is used to select the subjects or units from each segment based on a specified proportion. In this case 45 represents Traffic Police Officer, 55 represents PSV Drivers, 55 represents PSV Conductors, 30 represents leaders of Matatu Owners Association, 18 represents leaders of Matatu Welfare Association, 75 represents Nairobi Pedestrians, 80 represents Ministry of Transport Officials and 85 represents commuters who use Nairobi roads frequently. The sample size of the study was arrived at through systematic sampling where for each group, by selecting an integer less than the total number of individuals in the group's population which corresponded to the first subject then picked another integer serving as the

constant difference between any two consecutive numbers in the progression. Integers are typically selected to ensure that correct sample size is obtained. The nature of the respondents' working environment contributed a lot towards the choice of the sampling technique that is the drivers and conductors of matatus who are always on the move.

For the remaining groups, the Yamane's formula was employed. Yamane (1967:886) provided a formula for calculating sample sizes. The formula is as follows:

$$\left[n = \frac{N}{1 + N(e)\text{^}2} \right]$$

where n is the sample size, N is the population size, and e is the level of precision. At 95% confidence level, p=.5 (maximum variability) and $\pm 5\%$ precision assumptions, the resulting sample sizes were 30 for matatu owners association leaders, 18 for matatu welfare association leaders and 80 ministry of transport officials. These yields were representative samples for proportions. A maximum variability of 0.5 was used to determine a more conservative sample size than that obtained using the true variability of the population attribute.

Finally the study used data obtained from Traffic police records on the number of accidents between 2000 and 2013 to reveal the trends and levels of accidents.

3.5 Research Instruments

Questionnaires were used in data collection. Questionnaires are good instruments to use when collecting quantitative data because the respondents give their views. Adequate time was given to the respondents to enable them read the questions carefully and give appropriate answers. The study employed questionnaires constructed by the researcher and administered them to respondents. The study used three questionnaires, one for the PSV drivers and conductors, matatu welfare leaders and Ministry of Transport Officers, the second questionnaire was for Nairobi commuters and pedestrians while the third questionnaire was for the traffic police officers. The response to the questionnaires was used to validate the effectiveness of the revised traffic rules. The questionnaires were in Likert Scale format, 1-5 whereby 1- strongly disagree, 2- disagree, 3-neutral, 4- Agree and 5-strongly agree.

3.5.1 Pilot Testing

Pilot testing was conducted to detect weaknesses in design and instrumentation as well as providing proxy data for selection of an appropriate sampling design. It drew subjects from the target population and simulate procedures and protocols that have designed for data collection. By use of theory-based or theoretical sampling, the researcher selected five people from the transport sector whereby interviews and observation method was used. Simple random sampling was used to administer the questionnaires to the selected respondents who was not part of sample size but of the population by hand and collected them after one week to check whether all the questions were satisfactorily answered. This is because it would influence the later behavior of research subjects if they had already been involved in the research.

3.5.2 Validity of Instruments

Validity of instruments shows whether the item measures what they are supposed to measure (Borg and Gall, 1989). Validity also refers to the appropriateness, meaningful and usefulness of the inferences a researcher makes. Pre-test of the instruments was conducted in order to assess the validity of the instruments. Pre-testing of the questionnaires helped in detecting weaknesses in the instruments. Some questionnaires were administered to five staff members in the transport sector to ensure that they had construct, content and criterion-related validity. The received comments and suggestions were considered and necessary adjustments made on the questionnaires to ensured that the instruments were clear, precise and comprehensive enough to collect the required information in relation to the objectives of the study.

3.5.3 Reliability of Instruments

Reliability is defined as a measure of the degree to which the research instrument yields consistent results or data, after repeated trials (Mugenda, 2003). In this study, reliability of the research instruments was censured by correct coding, wording and sequencing of the interview questions in the questionnaire and by the use of precise and unambiguous questions or instruments to the study subjects. Test-retest method was used by the researcher, whereby the time interval of administering several samples of questionnaires was a difference of one week after collecting the first filled questionnaires. This was to avoid longer interval which could lower the reliability coefficient. Further, a statistical test for reliability using Cronbach's Alpha was carried out. Reliability for the overall instrument was estimated at 0.96 which is higher than 0.70 indicating that internal consistency levels of the variables are sufficiently reliable.

3.6 Data Collection Methods

Once the study was approved by the University of Nairobi, the process of data collection begun whereby the questionnaires were administered to the respondents by hand delivery through drop and pick method. After the specified time which was one week, the researcher went back to collect them and analyzed the data. The researcher explained the contents in the questionnaires for the respondents who would have difficulties while filling them. After the approval of the proposal, the researcher sought an authority letter to conduct research from the National Council of Science and Technology in the Ministry of Science and Technology.

3.7 Data Analysis Techniques

Levine (1997) defined data analysis as a process of inspecting, cleaning, transforming and modeling data with the goal of highlighting useful information, suggesting conclusions and supporting decision making. The collected questionnaires were thoroughly checked then coded and entered the data into statistical package for social sciences (SPSS) software version 20 after assigning responses meaningful numbers at interval or ratio scales. The data was then sorted mathematically and organized for easy analysis. Analysis of data presented essential features and relationships in the data such as observing emerging patterns and particular outcomes with graphs. Descriptive method was used in analyzing the data collected. The data was then processed, coded and analyzed using Statistical Package for Social Sciences (SPSS). The data results were presented in descriptive form, percentages and cross tabulations in tables.

3.8 Ethical Considerations

The research sought to determine the influence of implementation of revised traffic rules on road accidents in the Transport Sector in Nairobi County, Kenya. During the period of administering the questionnaires, respondents were assured of confidentiality of the information given hence treating them with respect as well as explaining the importance of the study to the respondents.

3. 9 Operationalization of Variables

Operationalization of variables is a process of finding a measurable, quantifiable and valid index for both independent and dependent variables. Using the objectives of the study the table shows both independent and dependent variables and the measurements scales as well as types of data analysis used to make it measurable, empirically and quantitative.

Objectives	**Variables Independent**	**Tools of Analysis**	**Measurement scale**	**Types of Data Analysis**
To assess the extent to which use of seat belts influences road accidents in transport sector, Nairobi County	**Use of seat belts** • Cost of seat belts • Quality of seat belts • Availability of seat belts	Percentages	Interval	Descriptive: frequencies
To establish how use of speed governor influences road accidents in transport sector, Nairobi County	**Use of speed governors** • good quality speed governors • availability of speed governors • cost of speed governors	Percentages	Interval Ordinal	Descriptive: frequencies

To establish how overcrowding influences road accidents in transport sector, Nairobi Count	**Overloading** • number of passengers • passengers safety • availability of PSVs	Percentages	Interval Ordinal	Descriptive: frequencies
To assess how use of defined routes influences road accidents in transport sector, Nairobi County	**Use of defined routes** • state of the road • designated bus stops • population of interest	Percentages	Interval	Descriptive: frequencies
	Dependent **Traffic road accidents** • Number of accidents • Injuries • Number of deaths	Percentages	Ordinal	Descriptive

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

The study was done to establish influence of implementation of the revised traffic rules popularly known as Michuki Rules on road accidents in the transport sector in Nairobi County, Kenya. The study sought to examine the extent to which use of seat belt, speed governors, overloading and the use of defined routes by public service vehicles influence road accidents in transport sector in Nairobi County, Kenya. A sample of 443 was used in the study. The data was gathered exclusively from questionnaires as the research instrument. To enhance quality, the collected data from all the respondents, was analyzed using the Statistical Package for Social Sciences (SPSS) version 20 for Windows. Results are presented in this section using descriptive statistics. The analyzed findings were presented in frequency tables and percentages.

4.2 Questionnaire Response Rate

The data to support the study was collected from 45 traffic police officers serving on different routes in Nairobi, 55 PSV drivers and 55 conductors, 30 leaders of Matatu Owners Association, 18 leaders of Matatu Welfare Association, 75 pedestrians, 80 Ministry of Transport officials and 85 commuters who are frequent users of the Nairobi roads. After a thorough analysis of the returned questionnaires, the data was captured and cleaned before being analyzed using SPSS. The response rate is tabled as shown in Table 4.1

Table 4.1 Questionnaire Response rate

Respondents	Sample Size	Response	%
Traffic Police Officer	45	35	7.9%
PSV Drivers	55	49	11.1%
PSV Conductors	55	47	10.6%
Matatu Owners Association Leaders	30	23	5.2%
Matatu Welfare Association Leaders	18	18	4.1%
Nairobi Pedestrians	75	70	15.8%
Ministry of Transport Officials	80	60	13.5%
Nairobi Commuters	85	80	18.0%
Total	**443**	**382**	**86.2%**

The overall response rate was 86.2% as shown in table 4.1. This was obtained after scrutinizing the questionnaires. According to Mugenda and Mugenda (1999) a sample size of between 10% and 30% is a good representation of the target population hence the 86.2% was adequate for analysis. Babbie (2002) states that any response of 50% and above is adequate for analysis and therefore 86.2% is even better.

4.3 Demographic characteristics of the Respondents

The study sought to find the demographic characteristics of the respondents in order to understand the population dynamics. The findings are presented in the table 4.2

Table 4.2 Demographic characteristics of the respondents

	Study group	Variable	Frequency	Percentage
Gender	**Drivers, Conductors and leaders**	Male	97	70.8%
		Female	40	29.2%
	Pedestrians, Commuters and officials	Male	148	70.5%
		Female	62	29.5%
	Police	Male	30	66.6%
		Female	15	33.3%

Table 4.2 shows that 97 (70.8%) of the drivers, conductors and association leaders were male and 40 (29.2%) were females. Of the pedestrians, commuters, and ministry of transport officials, 148 (70.5%) were males while 62 (29.5%) were females. 30 (66.6%) of the police were males and 15 (33.3%) were females. The findings show that women can also take on any job as such jobs as conductors, and drivers were considered to be done by men. The trend is changing slowly as more women are striving to become independent as they fight for equality. Also unemployment is another factor causing women to take on the jobs. However, most of the respondents were from the matatu welfare and owners associations which are likely to be having more women. The ages of the respondents were also assessed and the results tabulated as shown in table 4.3.

Table 4.3 Mean age of Respondents

Respondents	Mean age
Conductors, drivers and leaders	30
Pedestrians, commuters and officials	34
Police officers	38
Overall mean of respondents	**34**

Table 4.3 shows that the drivers, conductors and matatu owners and welfare associations had a mean age of 30 years; that of pedestrians, commuters and ministry of transport officials had a mean age of 34 years and that of the police was 38 years with a range of 30-45 years.

4.4 Seat belts Influence on Road Accidents in the Transport Sector

Road safety regulations were introduced in February 2004 with a purpose of restoring sanity on Kenya's troubled public transport sector, particularly the notorious matatus that break laws with abandon. The revised traffic rules was thought to be the only way to restore sanity on the road through playing tough on the law breakers, imposing heavy penalties and suspension of motor vehicles (especially matatus) for more than six months if found not compliant with the rules. The researcher sought to find out whether the introduction of the famous Michuki rules brought change in the transport sector especially in Nairobi County which is highly congested and vulnerable to traffic accident dangers. One of the rules introduced in the law required all passengers to wear seat belts which could help retain people in their seats, and so prevent or reduce injuries suffered in a crash. Respondents were therefore asked to indicate whether all PSVs were fitted with

quality seat belts and are being used by passengers while traveling in Nairobi County. The results are tabulated as shown in Table 4.4 and Table 4.5.

Table 4.4: Presence of safety belts in PSVs

		Conductors, drivers and matatu welfare leaders		**Passengers, commuters and ministry officials**	
Factor	**Variable**	**Frequency**	**%**	**Frequency**	**%**
All PSVs fitted with quality seat belts in Nairobi County	Strongly agree	0	0%	17	8.2%
	Agree	23	16.7%	10	4.9%
	Neutral	28	20.8%	124	59%
	Disagree	51	37.5%	48	23 %
	Strongly disagree	35	25%	11	5.2%
	Total	**137**	**100%**	**210**	**100%**

Table 4.4 shows that most of the respondents disagreed that all PSVs were fitted with quality seat belts in Nairobi County. This is represented by 25% and 37.5% of respondents of group of conductors, drivers, leaders of matatu owners association and matatu welfare association strongly disagreed and disagreed respectively. 20.8% of the same were neutral while 16.7% agreed. For the passengers, commuters and ministry of transport officials, most (59%) of them were for the neutral opinion that quality seat belts were fitted in all PSVs. 23% disagreed, 4.9% strongly disagreed, 5.2% agreed and 8.2% strongly agreed. Therefore it is clear that the rule was not well implemented as most of the vehicles were not fitted with quality seat belts.

Table 4.5: Usage of the seat belts

		Conductors, drivers and leaders		Passengers, commuters and ministry officials	
Factor	**Variable**	**Frequency**	**%**	**Frequency**	**%**
All PSV passengers use seat belts while traveling in Nairobi County	Strongly agree	0	0%	9	6.6%
	Agree	0	0%	2	1.5%
	Neutral	28	20.4%	47	34.3%
	Disagree	80	58.3%	67	48.9%
	Strongly disagree	29	21.2%	12	8.8%
Total		**137**	**100%**	**210**	**100%**

Table 4.5 on whether the passengers used seat belts while traveling in Nairobi County, shows that the most respondents were disagreeing. For the drivers and conductors, 28 (20.8%) were neutral, 80 (58.3%) disagreed while 29 (21.2%) strongly disagreed. For the passengers and commuters, 12 (8.8%) strongly disagreed, 67 (48.9%) disagreed, 47 (34.3%) were neutral while a mere 2 (1.5%) agreed and 9 (6.6%) strongly agreed. This might be a sign of disobedience among the passengers and commuters on using the safety belts while traveling. This can also be attributed to the lack of the seat belts in the vehicles or ignorance despite the vigorous campaigns on the introduction of the rules before being fully implemented as shown in Table 4.6.

Table 4.6: Public awareness of seat belts, speed governors, overloading and defined routes

		Conductors, drivers and leaders		Passengers, commuters and ministry officials	
Factor	**Variable**	**Frequency**	**%**	**Frequency**	**%**
There were enough public awareness campaigns about revised traffic rules before they were introduced	Strongly agree	11	8.0%	52	24.8%
	Agree	86	62.8%	120	57.1%
	Neutral	0	0%	24	11.4%
	Disagree	40	29.2%	14	6.7%
Total		**137**	**100%**	**210**	**100%**

Table 4.6 shows that the drivers, conductors and matatu welfare association leaders agreed at 86 (62.8%) and strongly agree at 11 (8.0%) that the public awareness campaigns were enough. 40 of the respondents (29.2%) disagreed. The same was supported by the pedestrians and commuters as 52 (24.8%) strongly agreed, 120 (57.1%) agreed, 24 (11.4%) were neutral while 14 (6.7%) disagreed. Therefore the public were either ignorant of the campaigns, or they just decided to break the law by not wearing the seat belts assuming the vehicles were fitted with the quality seat belts as outlined in the rule. The study then assessed the impact of the use of the safety seat belts on the reduction of traffic road accidents in Nairobi County, which had risen to alarming rates. The results are shown in Table 4.7.

Table 4.7 Seat belts on road accidents in Nairobi County

		Conductors, drivers and leaders		Passengers, commuters and ministry officials	
Factor	**Variable**	**Frequency**	**%**	**Frequency**	**%**
Use of seat belts reduced road accidents in Nairobi County	Strongly agree	11	8.0%%	7	3.3%
	Agree	34	24.8%	7	3.3%
	Neutral	40	29.2%	114	54.3%
	Disagree	40	29.2%	82	39.0%
	Strongly disagree	12	8.8%	0	0%
Total		**137**	**100%**	**210**	**100%**

Table 4.7 shows that quite a large number of the respondents disagreed that use of seat belts reduced road accidents in Nairobi County. This is portrayed by 11 (8.0%) strongly agreeing, 34 (24.8%) agreeing, 40 (29.2%) neutral, 40 (29.2%) disagreeing and 12 (8.8%) strongly disagreeing among the respondents in group consisting of drivers, conductors and leaders. In the group consisting of passengers, commuters and officials frm the Ministry of transport, 7 (3.3%) strongly agreed, 7 (3.3%) agreed, 114 (54.3%) were neutral while 82 (39.0%) disagreed. The disagreements that use of seat belts reduced road accidents can be attributed to the above realization that the safety belts were rarely used by most of those traveling by the PSVs especially due to their absence from the vehicles as found out on table 4.7.

The researcher employed the use of correlations to investigate the existence of relationships between the variables and the following was realized.

Table 4.8 Correlations between the variables

	High road traffic before	Matatu owners reacted angrily on introduction of Michuki rules	All PSVs fitted with quality seat belts	All passengers use seat belts
High road traffic before	**1**	**0.534**	**0.530**	**0.367**
Matatu owners reacted angrily on introduction of revised traffic rules	**0.534**	**1**	**0.136**	**0.059**
All PSVs fitted with quality seat belts	**0.530**	**0.136**	**1**	**0.510**
All passengers use seat belts	**0.367**	**0.059**	**0.510**	**1**

The table 4.8 shows that at 0.01 level of significance, there existed relationships between high road traffic accidents before the introduction of Michuki rules and Matatu owners reaction (angrily) upon the introduction. Matatu owners really felt the proposed change since it was aimed at reducing their continued use on the roads unless owners agree to the set rules and regulations. Positive relations also existed between all PSVs being fitted with quality seat belts and high road traffic before since the use of quality seat belts helped greatly to reduce road accidents on the roads. This was emphasized by the existence of a positive relationship between the usage of seat belts by all passengers and the fitting of quality seat belts in all PSVs. This showed that there's a high chance of passengers using the seat belts if they are available and in good conditions in the vehicles.

4.5 Speed Governors Influence on Road Accidents in the Transport Sector

The researcher then sought to know the influence of speed governors on road accidents in Nairobi County. This was necessary since some of the road accidents were as a result of careless driving and over speeding. Speed governors could help measure and regulate the speed of the vehicles. The measures taken to understand this included wanting to know whether all PSVs were fitted with good quality speed governors to help regulate speed of PSVs and its influence on road accidents that is whether it helped reduce the road accidents or not. The findings are shown in Table 4.9.

Table 4.9 Presence of speed governors in the vehicles

		Conductors, drivers and leaders		**Passengers, commuters and ministry officials**	
Factor	**Variable**	**Frequency**	**Percentage**	**Frequency**	**Percentage**
All PSVs are fitted with good quality speed governors	Agree	11	8.0%	10	4.8%
	Neutral	74	54.0%	48	22.8%
	Disagree	29	21.2%	145	69%
	Strongly disagree	23	16.8%	7	3.3%
Total		**137**	**100%**	**210**	**100%**

Table 4.9 shows that conductors, drivers and matatu association leaders disagreed to some extent that all PSVs were fitted with good quality speed governors. This is due to only 11 (8.0%) agreeing, 74 (54.0%) neutral, 29 (21.2%) disagreeing and 23 (16.8%) strongly disagreed. This was contrary to the passengers, commuters and ministry officials who disagreed with quite a large percentage that is 145 (69%); 48 (22.8%) were neutral

while 10 (4.8%) agreed. This also shows the lack of commitment from the respondents towards implementing the revised traffic rules.

Table 4.10 Impact of speed governors' usage

		Conductors, drivers and leaders		**Passengers, commuters and ministry officials**	
Factor	**Variable**	**Frequency**	**%**	**Frequency**	**%**
Speed governor use reduced road accidents in Nairobi County	Strongly agree	34	24.8%	0	0%
	Agree	40	29.2%	3	1.4%
	Neutral	34	24.8%	100	47.6%
	Disagree	29	21.2%	107	51.0%
Total		**137**	**100%**	**210**	**100%**

In the assessment of whether speed governors used reduced road accidents in Nairobi county, the responses among conductors, drivers and leaders were varied as 6 (25%) strongly agreed, 7 (29.2%) agreed, 6 (25%) neutral and 5 (20.8%) disagreed. On the contrary, more that is 31 (50.8%) of the group pedestrians, commuters and officials disagreed on the same, 29 (47.5%) were neutral while a mere 1 (1.6%) agreed. This is despite of the speed governors being fitted in the PSVs as specified in legal Notice No. 83 in July, 2004 issued by the Minister, which stated that "Every owner of a public service vehicle shall be liable for non-compliance or tampering with speed governor fitted in his/her vehicle". Another reason could be use of faulty speed governors as was reported in East African Standard 14/09/04: Page 13.

Table 4.11 Correlation between public awareness campaigns and all PSVs being fitted with good quality speed governor

	Enough public awareness campaigns	All PSVS fitted with good quality speed governor
Enough public awareness campaigns	**1**	**0.372**
All PSVS fitted with good quality speed governor	**0.372**	**1**

Correlations done in the table 4.11 show that there existed a positive relationship between enough public awareness campaigns and all PSVs being fitted with good quality speed governors. Therefore the campaigns were successful and they helped.

4.6 Overloading Influence on Road Accidents in Transport Sector

The researcher sought to establish the influence of overloading of public service vehicles has on road accidents in Nairobi County. This has been a major problem and has been reported in most areas within and without Nairobi County. The matatus specifically carry 18 passengers instead of the required 14.

Therefore this was assessed by measuring the level of agreement on whether all PSVs in Nairobi County carry the specified number of passengers and that overloading is a thing of the past; and whether the stoppage has reduced traffic road accidents in the County. The results are as shown in the table 4.10.

Table 4.12 PSVs Passenger carriage

		Conductors, drivers and leaders		Passengers, commuters and ministry officials	
Factor	**Variable**	**Frequency**	**Percentage**	**Frequency**	**Percentage**
All PSVs carry specified number of passengers in with no overloading	Strongly agree	0	0%	0	0%
	Agree	0	0%	7	3.3%
	Neutral	23	16.8%	83	39.5%
	Disagree	85	62.0%	113	53.8%
	Strongly disagree	29	21.2%	7	3.3%
Total		**137**	**100%**	**210**	**100%**

The table 4.12 shows that the respondents disagreed that all PSVs carry specified number of passengers. This is revealed by the 23 (16.8%) neutral, 85 (62%) disagreeing and 29 (21.2%) strongly disagreeing for conductors, drivers and leaders. Among the pedestrians, commuters and officials from Ministry of Transport 7 (3.3%) agreed, 83 (39.5%) were neutral, 113 (53.8%) disagreed while 7 (3.3%) strongly disagreed. This is a major setback in the push to stop the vice since it contributed to the rise in traffic road accidents along the roads in Nairobi County and other parts of the country.

Table 4.13 Impact of stopping overloading in PSVs

		Conductors, drivers and leaders		**Passengers, commuters and ministry officials**	
Factor	Variable	Frequency	Percentage	Frequency	Percentage
Stoppage of overloading reduced road accidents	Strongly agree	23	16.8%	0	0%
	Agree	23	16.8%	17	8.1%
	Neutral	40	29.2%	110	52.4%
	Disagree	28	20.4%	83	39.5%
	Strongly disagree	23	16.8%	0	0%
Total		**137**		**210**	**100%**

Table 4.13 shows the impact of stopping overloading on road accidents. It is revealed that the stoppage somehow reduced road accidents as indicated in Table 4.13 that is 23 (16.8%) of conductors, drivers and leaders strongly agreed, 23 (16.8%) agreed, 40 (29.2%) neutral, 28 (20.4%) disagreed while 23 (16.8%) strongly disagreed. For the pedestrians, commuters and officials from the Ministry of Transport, 17 (8.1%) agreed, 110 (52.4%) were neutral, and 83 (39.5%) disagreed. These results indicate that the stoppage of overloading somehow didn't have a great impact on road accidents reduction in Nairobi County. This is mainly due to the failure by drivers, conductors and matatu welfare association leaders to implement the law.

4.7 Use of Defined Routes Influence on Road Accidents in Transport Sector

The final objective under study was to establish how the use of defined routes influenced road transport sector in Nairobi County. This was measured by asking the level of agreement on whether all PSVs follow their defined routes and whether use of defined routes by PSVs reduced traffic road accidents in Nairobi County. The results are presented in the table 4.14.

Table 4.14 Usage of defined routes by the PSVs

		Conductors, drivers and leaders		**Passengers, commuters and ministry officials**	
Factor	**Variable**	**Frequency**	**Percentage**	**Frequency**	**Percentage**
All PSVs follow their defined routes in Nairobi County	Strongly agree	12	8.7%	0	0%
	Agree	12	8.7%	21	10%
	Neutral	51	37.2%	86	41%
	Disagree	28	20.4%	96	45.7%
	Strongly disagree	34	24.8%	7	3.3%
Total		**137**	**100%**	**210**	**100%**

Table 4.14 shows that 12 (8.7%) of the conductors, drivers and leaders strongly agreed, 12 (8.7%) agreed, 51 (37.2%) were neutral, 28 (20.4%) disagreed while 34(24.8%) strongly disagreed that all PSVs followed their defined routes. These results were in support of pedestrians, commuters and officials which showed 21 (10%) agreed, 86 (41%) were neutral, 96 (45.7%) disagreed while 7 (3.3%) strongly disagreed. Therefore the use of defined routes was also not taken seriously and law breakers were taking advantage of the situation to work from different parts of the County.

Table 4.15 Impact of using defined routes

		Conductors, drivers and leaders		Passengers, commuters and ministry officials	
Factor	**Variable**	**Frequency**	**Percentage**	**Frequency**	**Percentage**
Use of defined routes reduced traffic road accidents	Strongly agree	23	16.8%	0	0%
	Agree	34	24.8%	31	14.8%
	Neutral	40	29.2%	120	57.1%
	Disagree	28	20.4%	59	28.1%
	Strongly disagree	12	8.8%	0	0%
Total		**137**		**210**	**100%**

On whether the use of defined routes reduced traffic road accidents, 23 (16.8%) of conductors, drivers and leaders strongly agreed, 34 (24.8%) agreed, 40 (29.2%) were neutral, 28 (20.4%) disagreed while 12 (8.8%) strongly disagreed as shown in Table 4.13. The results varied greatly for conductors, drivers and leaders though more were in agreement on the same. This was contrary to pedestrians, commuters and officials from the Ministry of Transport of which 31 (14.8%) agreed, 120 (57.1%) neutral and 59 (28.1%) disagreed. Like in the conductors, drivers and leaders of matatu associations, the undecided were many though the disagreement side had a little higher percentage than the agreement side. This is also a show of non-compliance among the public on the implementation of the rules. That's the main reason why the implementation of rules didn't succeed hence not bringing the much yearned for change on Kenyan roads. This wasn't in support of police responses concerning the changes immediately felt after the introduction of the rules. The results from the interviews with them showed that they agreed that introduction of the revised traffic rules brought sanity in the Kenyan roads

and that road accidents reduced immediately after introduction of the famous Michuki rules. They also revealed that traffic law breakers were punished accordingly and that all traffic road accidents were captured in traffic police data from accident registry traffic Nairobi County.

From the table 4.16, it can be clearly seen that both the number of accidents, number of critical injuries and number of deaths were generally on the rise from the year 2000 to 2013.

However, studying the table in detail shows that the number of deaths was on the rise from 2004 up to around 2009 after which there was a sharp decrease to mid 2010 and the reduction diminished in mid 2012 after which the number of deaths started to increase once again. There were also short decreases and increases in the process and this included the decrease in the period from 2009 to 2011/2012 after which the accidents continued to decrease slowly. This trend shows that the introduction of the revised traffic rules brought a change in the transport sector by reducing the number of deaths from the highest level of 893 in 2009 to 723 in 2012. This trend was short lived because of the rejection of the laws by all stakeholders including the government. Also the government concentrated on other ways of curbing road accidents for instance by employing the use of the alcohol - blow to test for drunkenness of drivers to ensure they drive safely and keenly on the roads.

CHAPTER FIVE

SUMMARY OF FINDINGS, DISCUSSIONS, CONCLUSIONS AND RECOMMEDATIONS

5.1 Introduction

This chapter presents the summary of the findings of the study, discussions, conclusions and recommendations arrived at. The study assessed the various factors influencing implementation of the revised traffic rules on road accidents in transport sector, Nairobi County, Kenya. The following factors were studied and their weight on the study purpose. First the extent to which use of seat belts influence road accidents in transport sector. Second factor of investigation was how use of speed governors influences road accidents. Third factor of study was the establishment of the influence of overloading on road accidents. Last factor the researcher studied how use of defined routes by public service vehicles influences road accidents in transport sector in Nairobi County, Kenya. Suggestions for further studies are also given.

5.2 Summary of Findings

The study found that the rule on the use of seat belts on road accident reduction was not well implemented as most of the vehicles were not fitted with quality seat belts hence their reduced usage as indicated by the respondents of whom 20.4% (of the drivers and conductors) were neutral, 79.5% disagreed. For the passengers and commuters, 57.7% disagreed, 34.3% were neutral while a mere 8.1% agreed. The use of seat belts had little impact on reducing road traffic accidents as indicated by 38% and 39% of conductors, drivers and leaders; and pedestrians, commuters and Ministry of Transport officials respectively.

The study findings also show that speed governors were rarely found in vehicles. This was indicated by an agreement of only 8.0%, 54.2% were neutral, 38% disagreement of the presence of speed governors in vehicles by conductors, drivers and leaders. This was also reflected from the passengers, commuters and ministry of transport officials' views as 72.3% of them disagreed. Therefore the use of speed governors helped reduce road accidents to some extent as supported by 54% of the conductors, drivers and leaders who agreed, 24.8% were neutral and 21.2% disagreed. On the contrary, more that is 50.8% of the group of pedestrians, commuters and officials disagreed on the same, 47.6% were neutral while a mere 1.4% agreed.

The findings also shows that most of the respondents disagreed that a specified number of passengers were being carried by the PSVs at 83.2% disagreement and 16.8% neutral for the conductors, drivers and leaders while for the pedestrians, commuters and officials from Ministry of Transport, 57.1% disagreed, 39.5% were neutral while only 3.3% were in agreement. The stoppage of overloading had a little impact on reducing road accidents as indicated by 33.6% of conductors', drivers' and leaders' agreement on the same, 29.2% neutral, and 37.2% in disagreement. For the pedestrians, commuters and officials from the Ministry of Transport 8.1% agreed, 52.4% were neutral while 39.5% disagreed that the stoppage of overloading reduced road accidents.

The study findings shows that most of the PSVs in Nairobi County do not follow their defined routes at 45.2% disagreement by conductors, drivers and leaders; 37.2% were neutral and only 8.7% agreed on the same. These results were supported by the pedestrians, commuters and officials as indicated by 49% disagreement; only 10% agreed, and 41% were neutral on the same. The use of defined routes therefore had a

profound impact on reducing road accidents as indicated by 41.6% of conductors, drivers and leaders who agreed.

5.3. Discussions

The study found that the rule on the use of seat belts on road accident reduction was not well implemented as most of the vehicles were not fitted with quality seat belts hence not used mostly by the passengers. According to Chitere (2006) seat belts fitted in some public vehicles are substandard and do not guarantee safety in the event of accidents. The study realized that most passengers rarely used seat belts while traveling in Nairobi County mainly due to the fact some were broken while others are dirty and therefore the use of seat belts didn't help much in reducing road accidents as was said by the respondents. On the contrary, the police records showed that the road accident cases reduced for some time before increasing again.

This concurred with Dissanayake and Indike, 2007, who found that before the introduction of the mandatory traffic law that all passengers should wear seat belts, fatal accidents were high in the State of Kansas, USA translating to 428 deaths and 22, 723 serious injuries in 2006. After the introduction of the mandatory seat belts, the fatal accidents reduced by 56% in 2007. Graham (1997) also studied the effect of seat belt use on fatalities and noted that direct effect of using seat belts reduced fatality risk by 40% to 50% in Europe.

The study also showed that good quality speed governors were not fitted in all PSVs as required by the law and even those which were of good quality were tempered with. The use therefore didn't have a profound influence on the reduction of road accidents as specified by the respondents. However, this was not supported by the police

who said that immediately after the introduction of the revised traffic rules, road accidents reduced in Nairobi County. This concurs with Global road safety commission, 2009 which did a survey in Uganda on road safety and established that in 2000, road safety condition in Uganda was still unsatisfactory whereby 14,390 road accidents were reported with 1,438 fatalities and 12,946 injuries but after introduction of mandatory road safety laws including use of speed governors in all vehicles, although the number of vehicles on the roads doubled, the fatalities per 10,000 vehicles reduced from 88% in 2000 to 64% in 2007.

The study also found that all PSVs in Nairobi County did not carry the specified number of passengers and that overloading was still a major challenge in road transport sector in Kenya. It was also found that stoppage of overloading in PSVs wasn't implemented fully hence didn't reduce traffic road accidents by a great extent. This concurred with research done by Odero and Khayesi (2006) which asserted that current road safety interventions in Kenya are sporadic, uncoordinated and ineffective arguing that road safety measures in Kenya have not made measurable impact in reducing the numbers, rates and consequences of road traffic crashes and that despite the marked increase in road crashes in Kenya, little effort has been made to develop and implement interventions. This also concurred with Asingo (2007) that coherent road policy has resulted into weak institutions incapable of facilitating efficient road transport arguing that there are weak institutional frameworks and inadequate public sector participation in road transport development and funding in Kenya and therefore support for public transport is weak thus leading to poor regulation and coordination of public

transportation, lack of road safety mechanisms and lack of motorized modal linkages in road transport.

Finally the study findings showed that most of the PSVs in Nairobi County didn't follow their defined routes. Also the findings showed that defined routes usage did not succeed in reducing traffic road accidents in Nairobi County since the rule was not being implemented fully. This was due to the stakeholder's perception over the whole issue which was highly politicized. This was in support of Chitere (2006) that the Transport Minister, John Michuki reviewed the tough laws in February 2004, which required matatu and bus operators to install speed governors, passenger safety belts, operate on clearly defined routes, carry a specified number of passengers and have well disciplined crew.

5.4 Conclusion

The study found that the rule on the use of seat belts on road accident reduction was not well implemented as most of the vehicles were not fitted with functional seat belts hence their reduced usage as indicated by the respondents.

The study findings also shows that speed governors were rarely used by the public service vehicles and most of them were tempered with therefore the use of speed governors didn't help much in reducing road accidents.

The findings shows that matatus did not carry a specified number of passengers in Nairobi County and the rule therefore did not help in reducing road traffic accidents to a great extent.

Furthermore, most of the PSVs in Nairobi County did not follow their defined routes as shown by the findings. The use of defined routes therefore did not succeed in

reducing traffic road accidents in the County. Therefore the use of quality seat belts, quality speed governors, defined routes and stoppage of overloading had a possibility of providing a long lasting solution to the road carnage problem but unfortunately the issue was politicized and lacked enough government support hence not fully implemented.

5.5 Recommendations

The study confirms that the implementation of the revised traffic rules, popularly known as 'Michuki rules' could help reduce road traffic accidents. The researcher therefore recommends that:

The government should take measures to show its commitment and determination to address the increased deaths on the Kenyan roads especially by fully implementing the revised traffic rules.

In the implementation of the rules and regulations, the government should ensure all stakeholders especially matatu owners and leaders of the welfare associations, the drivers and conductors plus the public are involved in making decision relating to the industry.

Vehicle standards should be developed and enforced through regular inspection of the PSVs to ensure they meet them in order to operate especially within the highly congested city of Nairobi.

In addition, the government should find ways of enhancing competitiveness in the industry through the reduction of costs of purchase and operation of safety belts, speed governors and other requirements hence make it easy for the vehicle owners to adhere with the rules and reduce non compliance.

The PSV drivers and conductors should be trained on safety rules especially those being introduced to improve on the awareness and use of the related tools and equipments hence improve their knowledge on road safety.

5.6 Suggestions for Further study

Road safety is an important factor that needs to be considered by all stakeholders to ensure the lives of the people involved are protected. The study, due to time and financial constraints could not exhaust all the factors causing road accidents not only in Nairobi County but other parts of the country for generalizations and better management methods to curd the increased injuries deaths on the roads. Research should be conducted to discover other factors causing road accidents, and ways in which the deaths can be reduced.

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APPENDICES

APPENDIX I: INTRODUCTION LETTER

Gladys K. Kitheka
University of Nairobi
P.O. Box 30197 - 00100
Nairobi

18th June 2014

Dear Respondent

RE: REQUEST TO FILL-IN QUESTINNAIRE

The researcher whose name is indicated above wishes to kindly request you to assist in filling the questionnaire administered to you for research purpose. The researcher is a Master of Arts (Project Planning and Management) student in the University of Nairobi. The research aims at assessing factors influencing adoption of revised traffic rules on road accidents in Transport Sector in Nairobi County, Kenya, 2008-2013. The data to be collected will be used mainly for research purpose. Your kind contribution and participation will be highly appreciated.

Thanking you in advance.

Yours faithfully,

Gladys K. Kitheka
M.A student (Project Planning and Management)
University of Nairobi

APPENDIX II: QUESTIONNAIRES FOR PSV DRIVERS AND CONDUCTORS, MATATU WELFARE LEADERS AND MINISTRY OF TRANSPORT OFFICERS

NAME_____ (Optional) AGE_____RESIDENCE _____

ROUTE_____DATE_____GENDER_____

Nairobi is a highly urbanized society. This makes it congested and vulnerable to traffic accident dangers. In your opinion:

The scale of measuring the statements below is 1-5 whereby 1- strongly disagree, 2- disagree, 3- Neutral, 4-Agree and 5- Strongly Agree.

Circle one response for each of the following questions.

Statements	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. There was enough public awareness campaigns about the revised traffic rules(Michuki rules) before they were introduced.	5	4	3	2	1
2. Traffic road accidents rate was very high in Nairobi County before the introduction of the Michuki rules.	5	4	3	2	1
3. On the introduction of revised traffic rules (Michuki Rules), the matatu owners and Other stakeholders reacted angrily and called for a nationwide strike.	5	4	3	2	1
4. All PSVs are fitted with quality seat belts in Nairobi County.	5	4	3	2	1
5. All PSV passengers use seat belts while travelling in Nairobi County	5	4	3	2	1
6. Use of seatbelts reduced traffic road accidents in Nairobi County.	5	4	3	2	1

7. All PSVs are fitted with good quality speed governor.	5	4	3	2	1
8. Use of speed governor reduced traffic road accidents in Nairobi County.	5	4	3	2	1
9. All PSVs in Nairobi county carry the specified number of passengers and that overcrowding is a thing of the past.	5	4	3	2	1
10. Stoppage of overloading in PSVs reduced traffic road accidents in Nairobi County.	5	4	3	2	1
11. All PSVs in Nairobi County follow their defined routes.	5	4	3	2	1
12. Use of defined routes by PSVs reduced traffic road accidents in Nairobi County.	5	4	3	2	1

APPENDIX II: QUESTIONNAIRES FOR NAIROBI COMMUTERS AND PEDESTRIANS

NAME_____ (Optional) AGE_____RESIDENCE _____

ROUTE_____DATE_____GENDER_____

Nairobi is a highly urbanized society. This makes it congested and vulnerable to traffic accident dangers. In your opinion:

The scale of measuring the statements below is 1-5 whereby 1- strongly disagree, 2- disagree, 3- Neutral, 4-Agree and 5- Strongly Agree.

Circle one response for each of the following questions.

Statements	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. There was enough public awareness campaigns about the revised traffic rules(Michuki rules) before they were introduced.	5	4	3	2	1
2. Traffic road accidents rate was very high in Nairobi County before the introduction of the Michuki rules.	5	4	3	2	1
3. Matatu conductors reminds passengers to wear seat belts when travelling	5	4	3	2	1
4. All PSVs are fitted with functional seat belts in Nairobi County.	5	4	3	2	1
5. All PSV passengers use seat belts while travelling in Nairobi County	5	4	3	2	1
6. Use of seatbelts reduced traffic road accidents in Nairobi County.	5	4	3	2	1

7. All PSVs are fitted with good quality speed governor.	5	4	3	2	1
8. Use of speed governor reduced traffic road accidents in Nairobi County.	5	4	3	2	1
9. All PSVs in Nairobi county carry the specified number of passengers and that overloading is a thing of the past.	5	4	3	2	1
10. Stoppage of overloading in PSVs reduced traffic road accidents in Nairobi County.	5	4	3	2	1
11. Use of defined routes by PSVs reduced traffic road accidents in Nairobi County.	5	4	3	2	1

APPENDIX II: QUESTIONNAIRES FOR TRAFFIC POLICE OFFICERS

NAME_____ (Optional) AGE_____DIVISION_____

STATION_____ DATE_____GENDER_____

Nairobi is a highly urbanized society. This makes it congested and vulnerable to traffic accident dangers. In your opinion:

The scale of measuring the statements below is 1-5 whereby 1- strongly disagree, 2- disagree, 3- Neutral, 4-Agree and 5- Strongly Agree.

Circle one response for each of the following questions.

	Statements	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1.	Introduction of the revised traffic rules (Michuki Rules) brought sanity in the Kenyan roads.	5	4	3	2	1
2.	Immediately after introduction of the Revised traffic rules (Michuki Rules), Traffic road accidents reduced in Nairobi County	5	4	3	2	1
3.	Traffic law breakers are punished accordingly	5	4	3	2	1
4.	All traffic road accidents in Kenya are captured in traffic police data.	5	4	3	2	1

5. In the table provided please indicate the number of accidents which occurred in Nairobi County, people who were critically injured and people who died in those accidents.

Year	Number of accidents occurred	Number of people who were critically injured	Number of people who died
2000			
2001			
2002			
2003			
2004			
2005			
2006			
2007			
2008			
2009			
2010			
2011			
2012			
2013			

6. What role did the Traffic Police Officers perform in the implementation of the revised traffic rules (Michuki rules) in Nairobi County?

   _____

   _____

   _____

7. In your opinion do you think implementation of the revised traffic rules (Michuki Rules) had challenges in achieving road sanity in Nairobi?

   _____

   _____

   _____