

360028

**MATATU PARATRANSIT INDUSTRY IN THE CITY OF NAIROBI,
KENYA: Effects of its reforms on road safety behaviour**

BY

OWAGA GIDEON OMONDI

REG: C50/71081/2009

RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILMENT OF THE
REQUIREMENTS OF THE DEPARTMENT OF SOCIOLOGY FOR THE AWARD
OF THE DEGREE OF MASTERS OF ARTS IN RURAL SOCIOLOGY AND
COMMUNITY DEVELOPMENT

November 2012

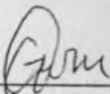
University of NAIROBI Library



0377235 7

Declaration

This is my original work and has never been presented for examination in any other institution. No part of this report may be produced without prior permission of the author and/or university.

Sign 

Date 27/11/12

Owaga Gideon Omondi

This research report has been submitted for examination with approval as the university supervisor:

Prof. Preston O. Chitere

Sign  Date 27/11/12

DEDICATION

This paper is dedicated to my dear parents Mr. Charles Owaga and Mrs. Celline Owaga for their ever loving support and encouragement.

ACKNOWLEDGEMENT

I wish to express my sincere thanks to my supervisor Prof. Chitere for his advice, patience and tireless effort without which I would not have completed this project paper.

Special thanks to all respondents for sacrificing their time to avail the information I need for this study.

Finally I would like to acknowledge the efforts support, guidance, co-operation of numerous people who have made it possible to undertake this study.

ABSTRACT

The focus of the study was on the area of transport reforms in the city of Nairobi. The study endeavored to find out whether the reforms introduced by the government between 2003-2005 have contributed to road safety behaviour. The study takes cognizance of the government's efforts to bring reforms in the transport sub-sector through legal notice No. 161 and other policies. This study utilized both primary and secondary data and the target study area was Nairobi Eastland's. It employed purposive sampling method to sample 17 PSV's from 5 different routes. A total of 86 respondents were interviewed and 4 key informants. The study employed use of questionnaire with both closed and open ended questions and structured interviews. The data obtained both from primary and secondary sources have been analyzed largely qualitatively, and presented in a descriptive manner. The data was analyzed by use of Statistics Package for the Social Sciences (SPSS). The study findings revealed that the level of road safety behaviour continues to be very low despite the transport reforms introduced by the government. The study also observed that there is a high level of awareness by matatu crew with regards to the traffic rules. Also adherence to some of the requirements of Legal Notice No. 161 is relatively high e.g. fitting seatbelts, displaying driver photograph, uniforms e.t.c. however there still continues to be a high disregard to traffic rules. Further the study revealed that most of the drivers had attained some form of driving training in a formal institution. Majority of the matatu drivers worked full time and most of the drivers had a positive perception about the traffic rules but cited working conditions as an obstacle to following them. In conclusion it was evident that there continues to be a gap between introduction of traffic rules and effective implementation. Most of these policies introduced have not effectively captured the aspect of human behavior and attitude which can greatly influence adherence.

The study made several recommendations In order to improve reforms; the need for improved working conditions of drivers, the need to actively involve matatu owners in road safety initiatives, the need for harmonization and unification of the various institutions dealing with PSV transport services, the need to monitored formal training institutions and the need for accurate data to be collected on the various matatu routes.

Table of contents

Declaration	ii
DEDICATION	iii
ACKNOWLEDGEMENT	iv
ABSTRACT.....	v
Abbreviations	ix
CHAPTER ONE: INTRODUCTION	1
1.1 Background	1
1.2 Problem statement	6
1.3 Research Questions	8
1.4 Objectives of the study	8
1.5 Justification of the proposed research	9
1.6 Scope and limitations.....	10
1.7 Definition of terms.....	10
CHAPTER TWO: LITERATURE REVIEW	11
2.1 Introduction	11
2.2 Situation of the Matatu industry before and after the reforms.....	11
2.3 Road safety in Kenya.....	14
2.4 Reforms and compliance in Kenya.....	18
2.5 Level of awareness by stakeholders	21
2.6 Models of transport reforms	22
2.7 Theoretic Framework.....	25
2.7.1 Rational choice theory	25
2.7.2 Theory of reasoned action	27
2.8 Conceptual Framework.....	28
2.9 Operational definitions	29
CHAPTER THREE: METHODOLOGY.....	32
3.1 Introduction	32
3.2 Study Area.....	32
3.3 Units of Analysis and observation.....	33
3.4 Sampling selection and size	33

3.4.1 Sampling of Routes	33
3.4.2 Sampling of PSVs.....	35
3.4.4 Sampling of Key informants	36
3.4.5 Secondary Data	36
3.4.6 Interviewing of respondents.....	36
3.5 Data analysis and presentation	36
CHAPTER FOUR: DATA PRESENTATION AND ANALYSIS.....	37
4.1 Introduction	37
4.2 Types of reforms	37
4.3 Characteristics of respondents	40
4.3.1 Gender	40
4.3.2 Age	41
4.3.3 Occupation	41
4.3.4 Education	42
4.3.5 Marital status.....	43
4.3.6 Number of children.....	43
4.3.7 Type of training.....	44
4.3.8 Training duration	45
4.3.9 Training Institution.....	45
4.3.10 Main Occupation.....	46
4.3.11 Other occupations	46
4.3.12 Income	47
4.3.13 Full time or part-time drivers/owners/operators.....	48
4.3.14 Years of work	49
4.3.15 Conclusion.....	49
4.4 Awareness of reforms.....	50
4.4.1 Conclusion.....	52
4.5 Perceptions of operators about reforms.....	52
4.5.1 Conclusion.....	54
4.6 Compliance	54
4.6.1 Conclusion.....	55
4.7 Road Safety	56
4.7.1 Types of Road Traffic Accidents.....	56

4.7.2 Conclusion.....	57
CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS.....	58
5.1 Introduction.....	58
5.2 Study summary.....	58
5.3 Study conclusions.....	60
5.4 Recommendations.....	60
5.4.1 Policy recommendations.....	60
5.4.2 Recommendations for further research.....	61
REFERENCES.....	62
Appendix 1: Questionnaire.....	66
Appendix 2: Interview guide for Key informants.....	71

Abbreviations

1. *BRT*; Bus Rapid Transit
2. *CBS*; Central Bureau of Statistics
3. *GoK*; Government of Kenya
4. *INTP*; Integrated National Transport Policy
5. *NMITs* Non-Motorized and Intermediate Modes of Transport
6. *MOTC*; Ministry of Transport and Communication
7. *MoH*; Ministry of Health
8. *MoT*; Ministry of Transport
9. *MWA*; Matatu Welfare Association
10. *MOA*; *Matatu* Owners Association
11. *PSVs*; Public Service Vehicles
12. *RTA's*; Road Traffic Accidents
13. *SACCOS*; stands for savings and credit cooperative and extends to any type of industry
14. *TLB*; Transport Licensing Board

CHAPTER ONE: INTRODUCTION

1.1 Background

A challenge facing both developing and developed countries is rapid urbanization and crumbling infrastructure which has resulted in depleted public transport services, leaving a void in urban transport services. To fill this void informal paratransit services have cropped up in cities all over the world, most noticeable in developing worlds. *Matatus* are the informal paratransit industry in Kenya that provide service to millions of people daily and are essentially the backbone of transportation system in Nairobi. Informal transport services have their own characteristics that reflect the environment of the city in which they operate. In Africa for example, the paratransit industry is generally described as dangerous, profit driven, environmental unfriendly but also necessary to be mobile and maintain a daily routine of going to work, to school or to market, (Graeff, 2009. p 1).

The origin of the *Matatu* industry can be traced from the type of transport system that operated in towns in the early 1960's. Initially, the Kenya Bus Service existed since 1934 as the sole legal provider of public transport services (Aduwo, 1972: p.123). It was jointly owned by the United Transport Overseas Ltd, (75%) and the Nairobi City Council (25% of the shares). It operated in major towns such as Nairobi, Mombasa, Kisumu, Nakuru and Eldoret. It was however not able to cope with the increase in demand for its services. By 1990, of the 333,300 vehicles registered in the country, 17,600 were *Matatus* (Bhushan, 1993 cited in Muyia, 1995). By 2003, the number of *Matatus* operating in both urban and rural areas were estimated at 40,000 (Asingo, 2004). They comprised Nissans, mini-buses and pick-ups. (Chitere and Kibua 2004: p 2)

Today, according to the *Matatu* Welfare Association (MWA), it is estimated that there are 15,000 *Matatus* on about 50 routes in Nairobi and 80 per cent of them (about 12,000) are the 14 seater. Overall there are about 80,000 registered Public Service Vehicles in Kenya, with 60 per cent of these, about 48,000, operating in urban centers. Not only do they cause heavy

congestion, but they are also responsible for the high number of road accidents, (Daily Nation 20th October 2010).

However reforms of these systems are occurring all over Africa most notably in the form of Bus Rapid Transit (BRT) for example in South Africa. BRT is an attractive option for cities in the developing world for many reasons but a main reason as demonstrated in Bogota Colombia is its acknowledgement and inclusion of the informal transit industry into the larger transport system. For each city embarking upon a similar transition the challenge is one of understanding the role and organizational capacity of informal transit industry and it is this industry that traditionally resists reform. By understanding the specific networks within the Matatu industry avenues to reform and strategies for bringing key industry stakeholders into a policy network advocating for a reform system can be identified. Recognizing potential pitfalls and engaging with key stakeholders can help foster transport policies networks and an overall framework that can leverage the Matatu industry into being integrated into a larger public transport system. Taxi strikes in South Africa of 2009 that were opposing the BRT demonstrate the importance of always including informal transit system in the discussion and transition process, (Graeff, 2009. p 2).

The government of Kenya made one of the most drastic attempts to bring order in the public transport sector when in October 2003 Kenya's Minister for Transport and Communication issued Legal Notice No. 161 that sought to regulate the Public Service Vehicle Sub-sector. According to the MOTC, Transformation of Road Transport Report of 2004, the objectives of the Legal Notice were to: reduce accidents caused 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. The provisions of the Legal Notice were to be observed with effect from 1st February 2004. These were:

- a) Fitting speed governors in all PSVs and commercial Vehicles whose tare weight exceeded 3,048 Kgs. These are to limit speed to 80 kph;
- b) Fitting seatbelts in all vehicles (public, commercial and private);
- c) Employment of drivers and conductors on permanent basis;
- d) Issuing of badges to PSV drivers and conductors;
- e) Issuing of uniforms to PSV drivers and conductors;
- f) Indicating of route details and painting of yellow bands on Matatus for purposes of easy identification;
- g) Retesting of drivers after every two years;
- h) Driver to display his/her photograph or postcard size of the head and shoulders taken full without a hat. The photograph together with particulars of the driver's identity card shall be approved by a police officer of or above the rank of superintendent.

(Chitere and Kibua, 2004, p.7).

In 2004 in line with the Legal notice No. 161, the then transport Minister John Michuki introduced the so called *Michuki rules* which saw all commercial vehicle owners installing speed governors and seat belts in their vehicle and banning of standing passengers in city buses. Passenger capacity of Matatus was reduced from 18 to 14 passengers, (Daily Nation 23rd December 2010).

Very recently, the Government has again made a drastic attempt to bring reforms in the public transport sector since the famous *Michuki rules* when it issued a formal notice phasing out the 14 seater Matatus from the country's roads. According to the notice, from January 1st 2011, the Transport Licensing Board (TLB) will no longer license new 14 seater Matatus effectively changing the mode of the 14 seater Matatus that are already in the country. 'Fourteen seater Matatus that are already licensed will however continue to operate until they are phased out through natural attrition' said the notice that appeared in the press. The Phasing out of the 14 seater Matatus aims to bring sanity to the chaotic road transport sector as well as reduce congestion. Secondly, since Matatus will be required to join Saccos it is believed that this will

ensure there is collective responsibility since Matatu owners will have to adhere to a strict code of conduct put in place by these organizations. TLB which is a statutory body under the Ministry of Transport which is charged with coordination and control of means and facilities of transport is encouraging migration to high capacity transport vehicles. According to the notice public service vehicle operators were advised to come together and operate either as Saccos or companies. The operators should register either with the Ministry of co-operatives and marketing or the registrar of companies, (Daily Nation 23rd December 2010).

This move is in line with the INTP which proposed the implementation of policies aimed at the consolidation of urban public transport' through encouraging a shift to high occupancy vehicles, (RoK, INTP, p.11, 2010). However, when it comes to transport reforms in Kenya, just like in many other African countries, there has been a gap between the introduction of road safety initiatives and their sustainability, (Olale 2007). Though the need for developing and evaluating countermeasures for accidents should not be neglected, there is no doubt that the main problem is when it comes to the implementation of accident countermeasures rather than a shortage of possible road accident countermeasures that could be effective if implemented, (Assum, p.9, 1997).

Several lessons can be learned from the case study of South Africa which successfully went through an almost similar transition of phasing out the over 1,200 Taxis operating on several routes in the city of Johannesburg. Public transport regulatory reform in South Africa and in the city of Johannesburg can be attributed to the 1996 White Paper on National Transport Policy as well as subsequent Legislation notably the National Land Transport Transition Act (Act 22 of 2000) which was revised to National Land Transport Act (Act 5 of 2009). Among the important regulatory reforms were: The supply of a transport service must be needs driven therefore the government holds the right to limit the number of public transport vehicles and routes, competition between operators will be for the right to operate on the road not on the road itself, therefore the modes of public transport need to be operated as an integrated system as opposed to allowing competition between modes, (UATP p.103, 2010).

The largest ever public transport intervention in the City of Johannesburg is the Bus Rapid Transit (BRT) network which was designed on the back of the city Strategic Public Transport Network; however its implementation was phased. An integrated part of the BRT operations lobbying incumbent minibus taxi operators to support it. The city was successful in convincing some minibus taxi associations to support the BRT system on the condition that they will have a shareholding in the operations. The process leading to the successful implementation of the BRT system can be summarized as follows: Consultation with minibus taxi associations on the strategic plans Transport network, changing the initial design concept of the strategic Public Transport Network to BRT, identification of affected minibus taxi associations in the first phase of the project, signing of memorandum of understanding between the city and the affected minibus taxi associations on the implementation of the BRT, technical visit to Transmillenio system in Bogota and other public transport systems in South America involving the city and the affected minibus taxi associations in the city, establishment of a technical BRT steering committee involving the city and minibus taxi associations. Consultations were financed by the city to provide technical assistance to the minibus taxi associations on a day to day basis and help the associations with technical negotiations, an initial BRT operating scheme was agreed upon by the city and the minibus taxi associations, (UATP p.115, 2010).

A minibus recapitalization process was also initiated with the aim of replacing old minibus taxis with vehicles complying with set minimum standards. Incumbent minibus taxi operators would be given an amount of R 50,000 to return their old vehicles for scrapping and would be provided with an opportunity to either exit the industry or purchase a new vehicle, (UATP p.104-105, 2010).

As Kenya embarks on reforming the transport sector, it is hoped that like South Africa there will be political commitment as well as an active involvement of the informal transit system.

This study highlighted the reforms in the transport sector specifically those that touch on the Matatu Industry, the progress that has been made so far in the implementation of these reforms as well the achievements and limitations.

1.2 Problem statement

Since their inception, Matatus have been marred by chaotic operations that have often lead to road traffic accidents. Road traffic accidents are a global phenomenon that affect both developed and developing countries at a fast rate. The problem is increasing in developing countries at a fast rate while it is declining in all industrialized nations like Western Europe, N. America, Japan, Australia and Newzealand, (Odero et al 2003).

For many years the government of Kenya has been grappling with measures to contain the chaotic transport sector which causes nearly 3000 deaths annually. This translates to approximately 68 deaths per 10,000 registered vehicles which is 30-40 times greater than in highly motorized countries. Road traffic accidents are a third leading cause of death after Malaria and HIV/AIDS. Despite this huge burden, road safety measures in place are ineffective, characterized by procrastination and sporadic, symbolic crackdown on motor vehicles following a tragic road accident, (Odero, Khayesi and Heda 2003. p. 53).

At present, Kenya has one of the highest rates of accidents in the world with 510 fatal accidents for every 100,000 registered vehicles. Between January and September 2010 the Kenya Traffic Police recorded 1,899 fatal accidents on Kenyan roads most of which involved Public Service Vehicles, (CBS 2005).

According to the World Bank report of 2004, road crashes kill at least 1.3 million people each year and injure 50 million a toll greater than deaths from Malaria with up to ninety percent of these road casualties occurring in low and middle income countries. By 2015 road crashes are predicted by the WHO to be the leading cause of premature deaths and disability for children aged 5 and above. A significant proportion of those killed in road accidents are young and productive men and women in the 15 to 45 age bracket. The economic cost of such road accidents and fatalities has been estimated to be in excess of 4 billion Kenyan shillings, (WHO and World Bank, 2004).

One of the measures taken by the government to correct the situation in Kenya was the formation of the National Transport policy committee on 2nd April 2003 to come up with an Integrated National Transport Policy (INTP). The Sessional Paper on Integrated national Transport Policy Identified a number of Challenges inhibiting the transport sector from performing its facilitative role in respect of National and regional economies. These were: Poor quality of transport services, inappropriate modal split, Unexploited regional role of the transport system, Transport system not fully integrated, urban environment pollution, lack of an urban/rural transport policy, institutional deficiencies, inadequate human resource capacities, lack of a vision for the transport sector. To address these challenges several recommendations are outlined in the INTP Paper these include: Integration of transport with National development priorities, increasing investment in transport infrastructure and operations, responding to market needs of transport, enhancing transport services and quality, consumer protection, catering for consumers with special needs, ensuring fair competition and integrating information and communication technologies in transport development and operations, (RoK,INTP, p.7-8, 2010).

The most recent government policy to phase out the 14 seater Matatus was seen by many as a move in a positive direction that will help to reduce road accidents; this is due to the fact that most road accidents are caused by Matatus. It was also seen as a move that will reduce traffic congestion in most of our cities especially Nairobi. Collective responsibility would be enhanced when the Matatu operators form and join Sacco's this is because Matatu operators will have to adhere to a strict code of conduct put in place by these organizations. This would also see an end to constant harassment of passengers by touts and order will be maintained. Revenue will also be increased, (Daily Nation February 16th 2011).

No study has been carried out so far with regards to the current state of road safety behavior by the PSV's since the implementation of the transport reform measures. The study therefore explored the reforms in the transport sector specifically examining those that touch on the Matatu Industry, the progress that has been made so far in the implementation of these

reforms as well the achievements and limitations. In addition the study generated data that could be useful for future prospects in terms of improving awareness of the various stakeholders e.g. matatu operators, crew and commuters towards the various state regulations and policies in the transport sector.

1.3 Research Questions

Drawing from the foregoing discussion, this study will be guided by the following questions:

- i. To what extent have Matatus and other stakeholders complied with the various transport reform measures?
- ii. Does the level of awareness by the various stakeholders with regards to the various reform measures affect road safety behaviour?
- iii. What perceptions do the various stakeholders e.g. Matatu owners, drivers and conductors have towards government policies that aim at reforming the Matatu industry?

1.4 Objectives of the study

Main objective

The main objective of the study is to establish how far the reforms in the road transport sub-sector are being implemented to date.

Specific objectives

- i. To document the types of reforms which were introduced in road transport between 2003 to 2005
- ii. To find out the characteristics of the operators and crew
- iii. To assess the level of awareness by Matatu operators and crew about the reform measures and how it affects road safety behaviour;
- iv. To assess the perceptions by Matatu operators and crew to the road transport reforms;

- v. To establish the level of compliance with the reform measures by the Matatu operators and crew
- vi. To examine the road safety behavior in the city of Nairobi

1.5 Justification of the proposed research

First, this study is important because majority of Kenyans use public transport. Personal transport is still beyond the reach of many people, (Williams 2002). Many people opt for Matatu mode of public transport which is the most predominant but unfortunately the most vulnerable to road accidents. Victims of road accidents fall within the youthful age bracket, (GoK INTP 2010, Mbatia 1998). It is therefore important to exploring the interplay of factors that may affect the compliance of Matatu owners, crew and commuters towards the implementation of the various reforms in the transport sector and this will provide a basis for giving recommendations on how to improve future policy geared toward regulating public transport sector.

Secondly, for academic purposes the study seeks to validate and update existing literature and also capture the emerging issues and challenges in the Matatu mode of transport to date.

Finally, The government of Kenya recognizes the transport sector as a facilitator of rapid economic growth and reconstruction, poverty eradication and wealth creation for the country. In the *'Economic recovery strategy and for wealth and employment creation 2003-2007'*, the transport sector has been identified as a third pillar of the economic recovery effort. It is expected to remain a key component in tackling such challenges as reduction of poverty by half of the year 2015 and overall improvement in the general welfare of the population. The mission of the transport sector is to develop, operate and maintain an efficient, cost effective, safe secure and integrated transport system that links the transport policy with other sectoral policies in order to achieve national and international development objectives in a socially, economically and environmentally sustainable manner and finally the vision outlined in the

INTP which is to have “a world- class transport system that is integrated and responsive to the needs of people and industry”, (RoK INTP, p. 7, 2010).

1.6 Scope and limitations

This study focuses on the reforms in the transport sector that touch on the Matatu industry.

1.7 Definition of terms

MATATU; This is a Swahili word for Public transport vehicles on Kenyan Roads

MICHUKI RULES; Legal Notice 161, which is commonly referred to as the Michuki Rules, after then transport Minister John Michuki, was adopted in 2004. The Michuki Rules were geared towards regulating PSVs

PARATRANSIT; Can be defined as “a service that is not quite full public transit and that has some of the convenience features of private automobile operations. It is often smaller in scale than public transit systems, utilizing smaller vehicles, and it can be legal or illegal as defined by local rules and regulations”

ROAD SAFETY; It refers to methods and measures that are issued to reduce risk of injury, death and harm to drivers passengers and pedestrians

NON-MOTORIZED; Includes any form of transportation that provides personal or goods mobility by methods other than the combustion motor.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This paper will rely on Project reports, published papers and the internet. Other sources will include: Matatu Cooperative Societies (Saccos), Bus dealers, Franchise operators, Kenya Motor Industry association, Matatu Welfare association (MWA), Matatu Owners Association (MOA), Ministry of Transport (MoT), Kenya commuters welfare Association, Registrar of Motor Vehicles, Central Bureau of Statistics (CBS), Traffic police records, Transport Licensing board (TLB) and the print media.

The aim of this chapter is to capture all the relevant literature with regards to reforms in the Matatu sector. The review has dwelt on the factors identified for investigation and is organized under four main headings, namely; situation of the Matatu industry before and after the reforms, Road safety in Kenya, reforms and compliance in Kenya, level of awareness by stakeholders and models of transport reforms.

2.2 Situation of the Matatu industry before and after the reforms

In a study by Asingo and Mitullah (2007), it pointed out that the road safety picture in Kenya was very gloomy by 2003 before the Legal Notice No. 161 was gazetted. The following are some of the challenges faced before the implementation of the legal notice:

- i. Between 2000 and 2003, for example, the annual road accident fatalities averaged 2849. In the year 2003 road accident fatalities increased for the first time in four years and passed the average mark of 2849 to stand at 3004.
- ii. PSV vehicles were not clearly marked and as a result it was difficult to clearly distinguish them from private vehicles.
- iii. The sitting capacity of PSVs was not clearly enforced. Many matatu operators took advantage of this and as a result there was a lot of overloading. Many passengers travelled while standing and in a lot of discomfort
- iv. The number of defective vehicles on the roads was high thus causing pollution and endangering the safety of passengers

- v. There were cartels and other illegal groupings that had taken over most stages and extorted money from matatu operators
- vi. There was a high levels of crime and unqualified drivers on the roads because there was no requirement that they should have certificate of good conduct from the police
- vii. Lack of speed control lead to an increase in fuel consumption and high maintenance costs;
- viii. There was no data on distribution of PSVs on various roads;
- ix. Due to the chaotic nature of the sector, investors were being discouraged and little or no Interest was being shown in the sub-sector by NGOs and private sector players such as insurance firms

However after the implementation of the legal notice, several positive changes were witnessed. A study by Chitere and Kibua (2004) pointed out that in the first six Months after the reforms were implemented between February to July 2004 the following achievements were seen:

- i. Reduction in accidents by about 73% as compared to a similar situation in the previous year as shown below

(GOK, MOTC Report, 2004).

<i>Accidents</i>	<i>Feb-July, 2003</i>	<i>Feb-July, 2004</i>
Fatal accidents	1,047	616
Serious accidents	2,110	1,199
Slight accidents	3,445	2,092

- ii. Restoration of sanity and order in the Matatu industry. The vehicles were clearly marked and their destination and carrying capacity were indicated and people travel in comfort (Daily Nation, August 4, 2004);

- iii. Defective vehicles had been eliminated since all vehicles had to go for inspection. unroadworthy vehicles that did not meet this requirement were removed from the roads;
- iv. Cartels had been eliminated or reduced; that is, the new measures reduced illegal groups and placed management of PSVs in the hands of their owners. The government further directed all local authorities to take over management of stages within their areas to help remove cartels from the routes;
- v. New investors were coming into the industry owing to conducive business environment that has been created.
- vi. Crime rate had reduced owing to the requirement that all PSV drivers and conductors must get certificates of good conduct from the police. The same requirement also led to elimination of unqualified drivers who were major causes of accidents;
- vii. Control of speed lead to reduction in fuel consumption and lowering of maintenance costs;
- viii. Compliance also made possible computerization of data on distribution of PSVs on various roads;
- ix. Interest was being shown in the sub-sector by NGOs and private sector players such as insurance firms that were sponsoring seminars and workshops in safe driving for owners and workers;
- x. TLB had by August, 2004 suspended licenses of 42 vehicles that had flouted the safety regulations (Daily Nation August 28th, 2004). It had also ordered vehicles belonging to the government, tour firms, schools and colleges to be fitted with the gargets.
- xi. Long distance crews were complying with the rules, for example, Molo Line Services with more than 300 vehicles has been observing the regulations (Saturday Nation 11/09/04: page 36).

These new traffic regulations had raised hope of many Kenyans that order would be created within the Matatu sector. However, after Michuki, the then transport Minister was transferred to another Ministry, the measures slowly fizzled out. Six years down the line there has been a

resurgence of behavioral traits such as rudeness, use of abusive and vulgar languages to passengers, overloading, over speeding by drivers, playing of loud music, stopping at undesignated stages and basically blatant disregard for traffic rules among many other negative traits clearly reflecting that there is a gap between the introduction of road safety initiatives and their sustainability, (Daily Nation 23rd December 2010).

2.3 Road safety in Kenya

In a study done by Odero, Khayesi and Heda (2003), on Road Traffic Injuries in Kenya with regard to the magnitude, cause and status of intervention, the paper presented a situational analysis of the problem as well as impediments to intervention. It was found that most traffic crashes occur in Nairobi, Central, Rift valley, Coast and Eastern provinces because these Provinces have a high concentration of human population and socioeconomic activities that demand considerable movements. They also have a high road network density and connectivity about 145 dangerous road locations were identified in Kenya's main rural network. (Odero, Khayesi and Heda 2003. p. 53)

The study also found that there were several underlying causes that contributed to the rising magnitude and burden of road traffic injuries and these included: rapid growth in motorization and human population, increased traffic volume and movement, deficiencies and problems in road user behavior, poor public transport systems especially with reference to busses and Matatus, declining economic conditions in Kenya, deficiencies in road network development and deficiencies in road safety planning, management and interventions, (Odero, Khayesi and Heda 2003, p. 53)

The study also pointed out that the National Road Safety Council of Kenya (NRSCK) was formed in 1982 with an aim of setting national policy on road safety, developing relevant implementation strategies, coordinating the work of all organizations involved in road safety promotion, acquire and monitor the use of sufficient resources and personnel for road safety work and formulate long term programme for effective road safety work in the country, (Odero, Khayesi and Heda 2003, p. 59)

At its inception, its goal was to reduce traffic fatalities by 30% from 1515 deaths in 1983 to less than 1000 deaths in 1993, this was not achieved. To the contrary there was a dramatic increase. The study also noted that over the past years the emphasis has been on primary preventive measures focused on public information through Radio, television, education in primary schools among others but these measures have not achieved the desired impact, (Odero, Khayesi and Heda 2003. p. 60)

The study identified several limitations that rendered NRSCK inefficient and ineffective. These included: lack of coordination mechanisms, limited authority and responsibility, lack of resources, qualified personnel and logistical support and limited capacity for research, monitoring and evaluation of interventions, (Odero, Khayesi and Heda 2003. p. 60).

The study concluded by making several recommendations:

- i. Because causes of road traffic injuries are multifactorial and interrelated (e.g. human, vehicle, physical and social environment) and at different phases (e.g. precrash, crash and post crash), data on causality need to go beyond just listing causes such as vehicle, road environment or human error. There is need to determine underlying multifactorial causes through purposely designed epidemiological and qualitative studies. For example it is not enough to state that speeding caused a road crash or that alcohol lead to a road crash. Explanatory questions need to be addressed e.g. why is there speeding when traffic and speed checks exist? Why do people drink and drive? how effective is the road safety programme? Among other questions
- ii. Greater involvement by all key stakeholders and the public is necessary to increase acceptance of and participation in context specific road safety interventions
- iii. There is need for sustained efforts that go beyond public pronouncements and ad-hoc activities such as setting road blocks or short term crack-downs on Matatus (usually after an important personality is killed in a crush). Such efforts should address broader road safety policy issues and the various underlying causes. For this to happen, it is important to enlist political will and commitment for road traffic injury prevention.

Accurate and reliable traffic injury data can help inform decision maker's stakeholders and the public about the magnitude of the problem and intervention options that have proved effective. An efficient national injury surveillance system is therefore important.

This study was however silent with regards to the level of reform awareness by the various stakeholders and how it has influenced the level of road safety behaviour in Kenya. Secondly, the study was done in 2003 and so there is need to update the existing literature on the current status of road safety behaviour and interventions in Kenya.

In another study that aimed to look at speed and its relation to road safety by Abiero (2007) entitled: *The Role of Speed Control in Prevention of Road Traffic Crashes: Experience from Kenya*, it identified excessive speeding as the most widely blamed cause for accidents. Police records, interviews with survivors of road crashes and interviews with eye-witnesses showed that almost all injury and fatal accidents are linked to excessive speeding. Knowledge that excessive speeding is the main cause of accidents made the previous government to attempt introduction of speed governors in PSVs operated and managed by private sector. Such Government/Presidential orders were given only after grisly road traffic crashes and public outcry; they were soon forgotten and measures stopped. Implementation never even once succeeded due to threats by the PSV operators to withdraw their services to the public, (Abiero, 2007, p. 6)

The study identified several factors that have lead to an increase in Road Traffic accidents in Kenya these include:

- i. There is no proper public education with regards to the dangers of speed
- ii. Tampering of the speed governors and poor monitoring system
- iii. Lack of Political will
- iv. Weak institutional and legal arrangements that hinder sustainability of the traffic rules

- v. Sometimes there is a multiplicity of institutions that create conflicts of interests and make it difficult to effectively implement policies
- vi. Inconsistent implementation of policies inadequate funding for research, monitoring, implementation and interventions.
- vii. Ineffective public education strategy

The study concluded by making the recommendation that given the role speed plays in road traffic crashes, speed control and management if properly and consistently employed with proper legal, institutional, and financial backing, the problem of crashes would be more than 80% solved, (Abiero, 2007, p. 16)

The study however focused only on the aspect of speed in relation to road safety in Kenya. There are other factors that need to be considered and how they influence the level of road safety for example level compliance and awareness of all the stakeholders.

In April 2004, the World Report on Traffic on Road Traffic Injury prevention was release. The report had several objectives: to raise awareness about the magnitude, risk factors and impacts of road traffic collisions globally, to draw attention to the preventability of the problem and present known intervention strategies, to call for a coordinated approach across a range of sectors to address the problem. The report also has several specific objectives which were: to describe the burden, intensity, pattern and impact of road traffic injuries at global, regional and national level, to examine the key determinants and risk factors, to discuss interventions and strategies that can be employed to address the problem, to make recommendation for action at local, national and international level, (WHO report, p. 21, 2004).

The report gave several recommendations to be implemented in Kenya: that there should be a lead agency for road safety with the following components: national road safety strategy and plan of action, allocation of financial and human resources, data assessment of problems, policies and institutional settings, implementation of specific actions e.g. speed, impaired

driving, seatbelts, helmets and roadway design, and international collaboration, (WHO report, 2004).

2.4 Reforms and compliance in Kenya

In a study done by Chitere and Kibua, (2004), that aimed to identify the achievements and limitations of reforms in the Matatu industry, it pointed out several reforms that were introduced that sought to regulate the Public Service Vehicle sub-sector. The Legal Notice No.161 that was introduced in October 2003 had several objectives which were: to reduce accidents caused 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 (see MOTC, Transformation of Road Transport Report, 2004). The provisions that were to be observed with effect from 1st February 2004 were:

- i. Fitting of speed governors in all PSVs and commercial vehicles whose tare weight exceeded 3,048 Kgs. These are to limit speed to 80 kph;
- ii. Fitting of seat belts on all vehicles (both public, commercial and private);
- iii. Employment of drivers and conductors on permanent basis;
- iv. Issuing of badges to PSV drivers and conductors;
- v. Issuing of uniforms to PSV drivers and conductors;
- vi. Indication of route details and painting of yellow band on Matatus for purposes of easy identification;
- vii. Re-testing of drivers after every two years;
- viii. Every driver to display his/her photograph of postcard size of the head and shoulders taken full without a hat. The photograph together with particulars of the driver's identity card shall be approved by a police officer of or above the rank of a superintendent; and

- ix. Vehicles meeting these conditions were to be inspected by the government motor vehicle inspection centers in different parts of the country for testing and certification.

The study however identified the following limitations with regards to the implementation of the reform measures:

- i. Tampering with speed governors had been done by some dishonest operators to enable them drive the vehicles beyond the authorized speed of 80 km/h;
- ii. Seat belts fitted by some PSVs were substandard and did not guarantee safety in the event of accidents. In some vehicles, they were not cared for and some commuters decline wearing them owing to their being dirty. Often the crew did not emphasize their importance until they were about to encounter the police;
- iii. Hiking of fares had been done by all operators and compelled commuters to appeal to the government to control them
- iv. Inadequate public transport had been a problem owing to elimination of Unroadworthy vehicles and standing passengers in buses and mini-buses. It was estimated that demand would be met by an additional 10,000 vehicles although there was an emerging trend of increasing investment in higher occupancy vehicles with 25 or more seats.
- v. Laxity in law enforcement was still a problem. Many police officers were still reluctant to enforce the laws. Whereas the government has been fighting corruption, many police officers were still extorting bribes from PSVs;
- vi. Re-emergence of cartels has been reported on some routes;
- vii. Corruption had also been reported by the media among key government officials in relation to issuance of PSV licenses and inspection certificates. For example, poor quality road licenses that did not meet security test and that could easily be produced by local dealers had been released by the Kenya Revenue Authority (Daily nation 30/08/04:page 1); and
- viii. Overloading had been reported in towns such as Nakuru where some Matatus still carry 18 instead of the required 14 passengers (Saturday Nation, 11/09/04: page 36).

The study made a number of recommendations:

- i. Need for reducing the large number of institutions dealing with PSV services by unifying them under one or two major institutions such as the Kenya Transport Licensing Board
- ii. Need for comprehensive and efficient enforcement of law through enhancement of capacity of the traffic police and their better training and remuneration. Consideration needs to be given to possibility of removing the traffic police from the generally corrupt police force and seconding them to the major institution dealing with PSV services;
- iii. Need for involvement of Matatu owners and crew through their civil society organizations in discussions and decisions relating to their industry as well as strengthening their capacity to manage the industry and to self-regulate. Some of the Saccos were effectively managing their routes, providing credit to their members for purchase of vehicles or repairs—one had established a fueling station for its members' vehicles
- iv. Need to consider ways of enhancing competitiveness in the industry through reduction of costs of purchase and operation of PSVs, reduction of their age limit from 8 to 5 years, and reduction of insurance costs;
- v. Need for strengthening training of PSV drivers through regulation of activities of commercial training schools and support of initiatives being taken by the vehicle owners associations, NGOs and insurance firms in training of the drivers in road safety. In addition, there is need for all driving schools to have a common curriculum under a central body which will oversee examination and certification including standards;
- vi. Need for improvement of the terms and conditions of work for employees in the industry through collective ownership and operation of PSVs; and Need for collection and documentation of data on routes, number of vehicles, number and characteristics of owners and workers, fares and so on.

A study of progress being made in implementation of the legal notice No. 161 is yet to been carried out. There is also need for a study to be carried out with regards to other reform measures apart from the Legal Notice No.161 that have been introduced since then.

2.5 Level of awareness by stakeholders

A few studies have been carried out with regards to the level of awareness by the stakeholders of the reform measures. Many of the studies focus on the level of education of the different stakeholders. For example Chitere and Kibua, (2004) noted that:

- i. A majority of the owners had reasonable educational and training qualifications and occupational experience in fields such as banking, accountancy and teaching, and were well informed about problems of the industry.
- ii. A majority (80%) of the drivers and conductors had good educational qualifications (upper primary and secondary school education), and had several years work experience in the Matatu industry.
- iii. A large number of drivers (80%) had been trained in driving, mechanics and a few in customer care. The training was basic, provided by the profit-oriented commercial schools and did not effectively impart skills and practices about safe driving. None had attended any refresher courses provided by Automobile Association of Kenya (AAK) and the Kenya Bus Services Company (KBS) in safe driving. A few of the drivers had not attended basic training in driving and some had obtained their licenses fraudulently.

There is need however for studies to go further to identify the level of awareness and understanding of the Matatu operators, crew and commuters with regards to the different types reform measures that are in force .

Other research themes on the *Matatu* sector in Kenya have been on: Origin, growth and legal status (Aduwo 1990; Kapila et al. 1982; Muchira et al. 1994); Efficiency and quality of service (Aduwo 1990); Employment (Kapila et al. 1982); Role in secularism (Shorter and Onyancha 1997);Conditions of work (Muyia 2001; Khayesi 1997); Risk faced by school girls using *Matatus*

(Chege, Rimbui and Olemba 1994); Economic costs, benefits and policy concerns (Kimani, Nzioka and Masinde 2004); Terms and conditions of work in the Matatu Industry (Khayesi 1997); and analysis of route management (King'oina 2010)

2.6 Models of transport reforms

Kenya can learn several lessons from Brazil and South Africa who have successfully went through reforms in their public transport sector.

The Bus system of Curitiba, Brazil, exemplifies a model Bus Rapid Transit (BRT) system, and plays a large part in making this a livable city. The bus runs frequently- some as often as every 90 seconds- and reliably, and the stations are convenient, well designed, comfortable and attractive. Consequently Curitiba has one of the most heavily used yet low cost transit systems in the world. It offers many features of a subway system- vehicle movements unimpeded by traffic signals and congestion, fare collection prior to boarding, quick passenger loading and unloading- but it is above ground and visible. Around 70 per cent of Curitiba's commuters use the BRT to travel to work, resulting in congestion -free streets and pollution free air for the 2.2 million inhabitants of greater Curitiba. The evolution of the Curitiba began over 30 years ago when forward thinking and cost conscious planners integrated public transportation into all the other elements of urban planning system. They initiated a system that focused on meeting the transportation needs of all people- rather than those using private automobiles- and consistently followed through with a staged implementation of their plan. They avoided large scale and expensive projects in favor of hundreds of modest initiatives. A previously comprehensive plan for Curitiba, developed in 1943, had experienced exponential growth in automobile traffic with wide boulevards radiating from the core of the city to accommodate it. Right of way for the boulevards were acquired but more other parts of the plan never materialized. Then in 1965, prompted by fears among city officials that Curitiba's rapid growth would lead to unchecked development and congested streets, they adopted a new Master Plan. Curitiba's Master Plan integrated transportation with land use planning, calling for a cultural, social and economic transformation of the city. It limited central area growth while encouraging commercial growth along the transport arteries radiating from the city centre. The city centre

was partly closed to vehicular traffic and pedestrian streets were created. Linear development along the arteries reduced the traditional importance of the downtown area as the primary focus of day-to-day transport activity thereby minimizing congestion and the typical morning and afternoon flow of traffic. Instead rush hour in Curitiba has heavy commuter movements in both directions along the public transportation arteries. Other policies have also contributed to the success of the transit system. Land within two blocks of the transit arteries is zoned for high density, since it generates more transit ridership per square foot. Beyond the two blocks, zoned residential densities taper in proportion to distance from transit ways. Planners discourage auto oriented centers and channel new retail growth to transit corridors. Very limited public parking is available in the downtown area and most employers offer transportation subsidies especially to low-skilled and low paid employees. The popularity of Curitiba's BRT has effected a modal shift from automobile travel to bus travel. Based on 1991 traveler survey, it was estimated that the introduction of BRT had cause a reduction of about 27 million auto trips per year, saving about 27 million liters of fuel annually. In particularly 28 per cent of BRT previously travelled by car compared to eight other Brazilian cities of its size, Curitiba uses about 30 per cent less fuel per capita, resulting in one of the lowest rates of ambient air pollution in the country. Best of all Curitibaanos spend only about 10 per cent of their income on travel- much below the national average, (Goodman, Laube and Schwenk, p. 2-3, 2006).

What lessons can Kenya learn from Brazil when it comes to transport sector reforms? First the city's urban planners in Brazil recognized that even if growth in a population cannot be controlled, the development of infrastructure in the city can guide the city's expansion. By approaching transportation as a tool used to attain a greater solution rather than as a solution to an advancing problem it is possible to implement an efficiently constructed cost effective transportation system that finances itself. Secondly the reduction in the number of cars used compensates, if not surpasses the difference in carbon monoxide emissions. By making bus travel fast and convenient effectively creates demand for bus use in the same way that the infrastructure of traditional cities creates demand for private motor vehicles, thirdly like in Brazil, the transport ticket system as a subsidy model for urban public transport means a

representative transfer wealth from the enterprises to support the urban transport operation and enable real tariff increases, (Mario and Sergio, p. 6, 2011)

Another example is that of South Africa and how they were able phase out the over 1,200 Taxis operating on several routes in the city of Johannesburg. Public transport regulatory reform in South Africa and in the city of Johannesburg can be attributed to the 1996 White Paper on National Transport Policy as well as subsequent Legislation notably the National Land Transport Transition Act (Act 22 of 2000) which was revised to National Land Transport Act (Act 5 of 2009). Among the important regulatory reforms were: The supply of a transport service must be needs driven therefore the government holds the right to limit the number of public transport vehicles and routes, competition between operators will be for the right to operate on the road not on the road itself, therefore the modes of public transport need to be operated as an integrated system as opposed to allowing competition between modes, (UATP p.103, 2010).

The largest ever public transport intervention in the City of Johannesburg is the Bus Rapid Transit (BRT) network which was designed on the back of the city Strategic Public Transport Network; however its implementation was phased. An integrated part of the BRT operations lobbying incumbent minibus taxi operators to support it. The city was successful in convincing some minibus taxi associations to support the BRT system on the condition that they will have a shareholding in the operations. The process leading to the successful implementation of the BRT system can be summarized as follows: Consultation with minibus taxi associations on the strategic plans Transport network, changing the initial design concept of the strategic Public Transport Network to BRT, identification of affected minibus taxi associations in the first phase of the project, signing of memorandum of understanding between the city and the affected minibus taxi associations on the implementation of the BRT, technical visit to Transmillenio system in Bogota and other public transport systems in South America involving the city and the affected minibus taxi associations in the city, Establishment of a technical BRT steering committee involving the city and minibus taxi associations. Consultations were financed by city

to provide technical assistance to the minibus taxi associations on a day to day basis and help the associations with technical negotiations, an initial BRT operating scheme was agreed upon by the city and the minibus taxi associations, (UATP p.115, 2010).

A minibus recapitalization process was also initiated with the aim of replacing old minibus taxis with vehicles complying with set minimum standards. Incumbent minibus taxi operators would be given an amount of R 50,000 to return their old vehicles for scrapping and would be provided with an opportunity to either exit the industry or purchase a new vehicle, (UATP p.104-105, 2010).

Kenya can draw several lessons from the case of South Africa as it embarks on transport reforms; first it is important to formalize the informal public transport sector. Without formalization of the informal sector in the city of Johannesburg many of the interventions would have been unsuccessful. Secondly, political commitment is of fundamental importance- the city of Johannesburg as well as other spheres of government had a unified vision, guiding policy at a national level is important to ensure sustainability of interventions, an integrated transport plan at a city level is required to guide systematic implementation of interventions. Thirdly, to actively involve the informal Transit system-in the case of Kenya, the Matatu Industry-in the transition process through among other things a broad policy dialogue involving key stakeholders in the industry, (UATP p.117, 2010).

2.7 Theoretic Framework

The study will be explained using the following theories:

- i. Rational choice theory
- ii. Reasoned action theory.

2.7.1 Rational choice theory

This theory attempts to explain all (conforming and deviant) social phenomenon in terms of how self-interested individuals make choices under the influence of their preferences. It looks at social exchange in a similar way to economic exchange where an individual will try to maximize their gain or profit and minimize their loss. The basic principles in this theory are:

- i. Human beings base their choices on rational calculations
- ii. They act with rationality when making those choices
- iii. Their choices are aimed at optimizing their profit

The rational choice theories hold that individuals must anticipate the outcomes of alternative courses of action and calculate that which will be best for them. Rational individuals choose the alternative that is likely to give them the greatest satisfaction (Heath 1976: 3; Carling 1992: 27; Coleman 1973).

Basic to all forms of rational choice theory is the assumption that complex social phenomena can be explained in terms of the elementary individual actions of which they are composed. This standpoint, called methodological individualism, holds that: 'The elementary unit of social life is the individual human action. To explain social institutions and social change is to show how they arise as the result of the action and interaction of individuals' (Elster 1989: 13) Where economic theories have been concerned with the ways in which the production, distribution and consumption of goods and services is organised through money and the market mechanism, rational choice theorists have argued that the same general principles can be used to understand interactions in which such resources as time, information, approval, and prestige are involved.

The matatu industry aims at delivering services to clients in such a manner that they can realize profits. The environment in which they operate can have an impact on the level of compliance, for example if matatu operators feel that by complying with a certain traffic act they will suffer financial loss, then there will be a tendency for non-compliance. As the study findings also showed, though most of the matatu crew agreed that the traffic rules if followed can lead to road safety, they cited poor working environment as an obstacle in following such rules. Most of them for example pointed out that pressure from their employers in which they are given unreasonable targets force them to try and make several trips per day. With the heavy traffic

congestion, overlapping, driving on embankments, over speeding and other traffic offense become the order of the day.

2.7.2 Theory of reasoned action

This theory was formulated by Ajzen and Fishbein in 1980. The theory explains individual behavior as being influenced by his/her attitude towards that behavior and subjective norms surrounding that behavior. Attitude towards a behavior is the individual's positive or negative feelings towards the behavior. This is determined by an individual's assessment of the desirability of the consequences of such a behavior. If the consequences are negative, then such a behavior tends to be avoided. Formally, overall attitude can be assessed as the sum of the individual consequence x desirability assessments for all expected consequences of the behavior. The theory of reasoned action has several core assumptions:

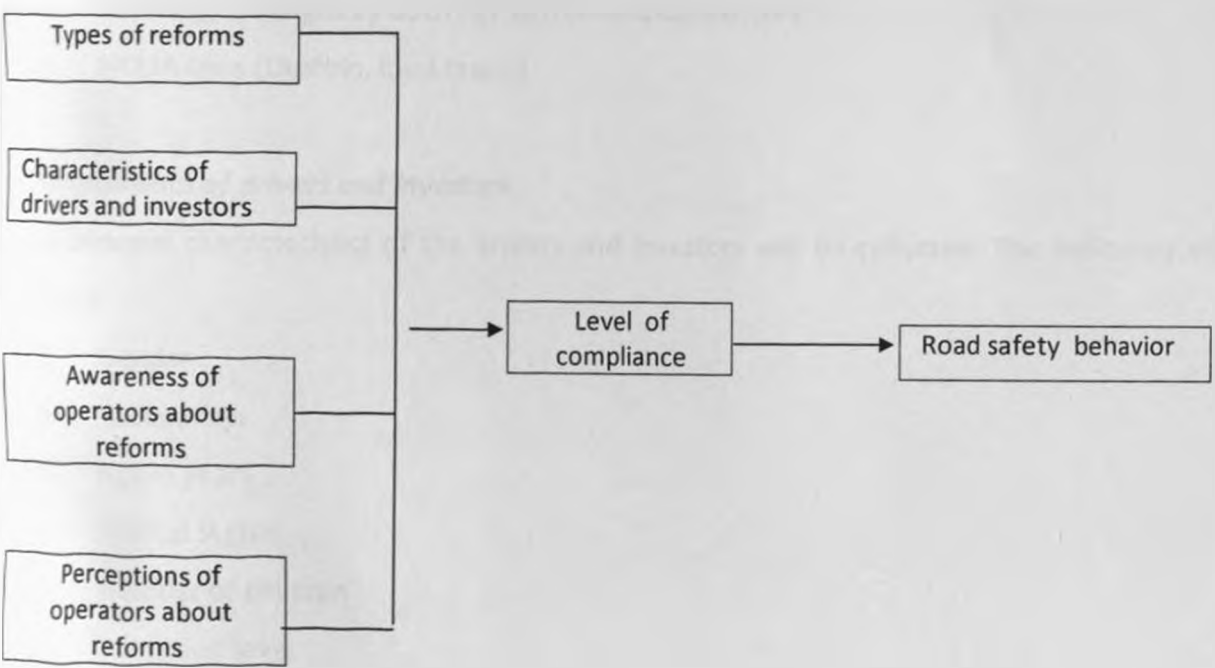
- i. Theory of Reasoned Action suggests that a person's behaviour is determined by his/her intention to perform the behavior and that this intention is, in turn, a function of his/her attitude toward the behaviour and his/her subjective norm.
- ii. The best predictor of behaviour is intention. Intention is the cognitive representation of a person's readiness to perform a given behaviour, and it is considered to be the immediate antecedent of behaviour.
- iii. This intention is determined by three things: their attitude toward the specific behaviour, their subjective norms and their perceived behavioural control.
- iv. The theory of planned behaviour holds that only specific attitudes toward the behaviour in question can be expected to predict that behaviour. In addition to measuring attitudes toward the behaviour, we also need to measure people's subjective norms – their beliefs about how people they care about will view the behaviour in question.

In light of this study the attitude and perceptions of the matatu operators was looked at in order to understand their compliance. The study findings showed that despite the fact that most of the matatu operators did not have a negative attitude towards the reforms, their behavior when it came to following traffic rules was very low. Most of them cited the fact that whether they obeyed such rules or not, the police will still subject them to harassment.

2.8 Conceptual Framework

The figure below shows the relationship between the independent variables and the dependent variable. From the figure, the independent variables include: Types of reforms, characteristics of drivers and investors, awareness of operators about reforms, perceptions of operators about reforms and Institutional factors. The dependent variables include: Level of compliance and Road safety behavior.

Figure 1: Conceptual framework of the study



Independent variables

Dependent variables

2.9 Operational definitions

Types of reforms

The various types of reforms introduced between 2003 to 2005 will be sourced from documents e.g. Gazette Notices and other documents. Types of reforms will include:

- i. Fitting of speed governors
- ii. limiting speed at 80 kph
- iii. Fitting of seatbelts
- iv. Employment of drivers and conductors on a permanent basis
- v. Indicating of route details
- vi. painting of yellow bands for purposes of easy identification
- vii. Retesting of driver after every two years
- viii. Driver display of his/her photograph
- ix. Wearing of uniforms by both PSV drivers and conductors
- x. Wearing of badges by both PSV drivers and conductors
- xi. NEMA laws (Dustbin, loud music)

Characteristics of drivers and investors

The personal characteristics of the drivers and investors will be collected. The indicators will include:

- i. Gender
- ii. Occupation
- iii. Age in years
- iv. Marital Status
- v. Number of children
- vi. Education level
- vii. Training received in driving
- viii. Training received in mechanics
- ix. Income level
- x. Type of employment (permanent or temporary)

- xi. Years of work

Level of road safety awareness

Several items of road safety will be picked to find out how far respondents are aware of them.

These will include the following indicators:

- i. Sitting capacity of PSV's
- ii. Speed limit of PSV's
- iii. Safety Belts requirement
- iv. Traffic signs
- v. Speed governors
- vi. NEMA laws (Dustbin, loud music)
- vii. Maintenance and inspection of PSV's
- viii. Danger of driving under influence of alcohol
- ix. Fatigue

Perception of operators

This is how the PSV operators view these reform measures. Several reform items will be picked to find out respondents perceptions of them in relation to road safety. These items will include:

- i. Sitting capacity of PSV's
- ii. Speed limit of PSV's
- iii. NEMA laws (Dustbin, loud music)
- iv. Safety Belts requirement
- v. Traffic signs
- vi. Speed governors
- vii. Maintenance and inspection of PSV's

Level of compliance

This is how far the reform measures have been adhered to or applied e.g.

- i. Fitting of speed governors

- ii. limiting speed at 80 Kph
- iii. NEMA laws (Dustbin, loud music)
- iv. Fitting of seatbelts
- v. Whether employment of drivers
- vi. Indicating of route details
- vii. Painting of yellow bands
- viii. Retesting of driver after every two years
- ix. Driver display of his/her photograph
- x. Wearing of uniforms by both PSV drivers and conductors
- xi. Wearing of badges by both PSV drivers and conductors
- xii. Whether there has been overtaking, overlapping, driving on embankments or outside road, obstruction

Level of Road safety behaviour

The level of road safety will be measured with the following indicators:

- i. Number of accidents caused
- ii. Number of fatalities caused
- iii. Number of injuries caused
- iv. Condition of PSV vehicle

CHAPTER THREE: METHODOLOGY

3.1 Introduction

This section will look at the methods that will be used in the study. It also describes the proposed study sites or sources of data and reasons for their selection, types of data to be collected, sampling methods to be used and techniques of data collection.

3.2 Study Area

The Matatu has almost a 50% share of the modal split in Nairobi. Matatu is central in the movement of people and goods in both rural and urban areas of Kenya (Khayesi 1993, Omwenga et al 1994)

Nairobi is the most populous city in East Africa with an estimated urban population of about 3.5 million. The current traffic situation is as follows; there are 7.5 million person trips per day translating to 2.5 trips per person. By purpose of trips, home bound trips command 46.5%, work 25% and school 9.8% while other trips e.g. hospital commands 18.7%. The Matatu is the most frequently used mode of transport in Nairobi with 29% followed by buses 3.7%, private cars Taxi and truck 15.3%, two wheel mode 1.2%, railways 0.4%, school or college bus 3.1%, (Irungu, 2007 p.3).

The study will be conducted in Nairobi because main traffic flows and problems are concentrated into the central areas of Nairobi from Westland (West area of Nairobi and Kasarani and Embakasi (Eastland area of Nairobi). A big chunk of the trips from the West also emanate from Athi River and Kitengela areas which border Nairobi and have lately harbored big proportion of people working or trading daily in Nairobi. From the East large trips also emanate Thika area. About 93% of traffic at Nairobi boundary originate or arrive at Nairobi while 7% pass through traffic, (Irungu, 2007 p.4).

There are about 15,000 Matatus on about 115 routes in Nairobi and about 80% of them (12000), are the 14 seater Matatus. Overall there are about 80,000 registered public service vehicles in Kenya with 60% (48,000) operating in urban centers, (Daily Nation 20th October 2010).

3.3 Units of Analysis and observation

The unit of analysis denotes the phenomenon being investigated. It is basically what the researcher is seeking to understand. According to Mugenda (1999) and Mugenda, units of analysis refers to the units that the researcher will describe for the purpose of aggregating their characteristics in order to generalize to larger groups or abstraction.

Nachmias and Nachmias (1996:53) conceptualized the unit of analysis as the most elementary part of the phenomenon to be studied, the ultimate subject matter of inquiry in behavioral science. The authors mentioned further outline the unit of observation a subject, object, item, entity or event from which we measure the characteristics or obtain the data required for the purpose of the study. The unit can be a natural person, business entity or any property or event however described.

Based on these definitions therefore, the units of analysis for this study will be the effects of reforms on Matatu industry on road safety and the units of observation will include Matatu operators, crew and Key informants.

3.4 Sampling selection and size

According to Mugenda and Mugenda (1999:10) sampling is the process of selecting a number of individuals for a study in such a way that the individual selected represent the large group from which they were selected. Sampling refers to the process of selecting a number of items from the universe to constitute a sample for study (Kothari 2004:56)

3.4.1 Sampling of Routes

There are about 15,000 Matatus in Nairobi alone that are plying over 115 routes. In this study due to time, budgetary and human resource constrains, all the elements in the population will not be interviewed. Probability and non-probability sampling techniques will be employed to select units of observation that will form the sample population. The study will also apply cluster sampling in selection of the routes of study within Nairobi. Kumar (2005) explains that cluster sampling involves the researcher dividing the sampling population into groups called clusters and then selecting elements within each cluster. Main traffic flows and problems are concentrated into the central areas of Nairobi from the West area i.e. WESTLANDS and East area i.e. EASTLANDS area of Nairobi e.g. Kasarani and Embakasi. Because of time and budgetary

constraints, the study will focus on Matatus from the *Eastern* suburbs of Nairobi which operate from Muthurwa bus station are shown in the table below:

Table 1: Matatu route destinations and descriptions

Route	Destination	Route Description
17B	Kikomba& Kayole	Kikomba, Isili, Mathare, Huruma, Outering, Umoja, Kayole
19/60	Kayole	Jogoo Road, Donholm roundabout, Outer Ring Rd, Donholm, Savannah, Jacaranda, Kayole, Komarock
23 (Outer Ring)	Outer Ring	Jogoo Road, Makadara, Rabai Road, Jericho, Harambee, Buruburu Phase 1, Outer Ring Estate, Pioneer Estate
33 (Embakasi)	Embakasi Village	Jogoo Road, Donholm roundabout, Outer Ring Rd, Quarry, Tumaini, Tassia, Avenue Park, Fedha, Pipeline, North Airport Rd, KQ Base, Embakasi Village
33 (Pipeline)	Pipeline	Jogoo Road, Donholm roundabout, Outer Ring Rd, Quarry, Tumaini, Tassia, Avenue Park, Fedha, Pipeline, Karbanas
34B	Greenfield	Jogoo Road, Donholm roundabout, Outer Ring Road, Donholm, Savannah, Greenfield
35/60	Umoja	Jogoo Road, Donholm roundabout, Outer Ring Road, Tena, Mutindwa, Umoja
36	Dandora	Jogoo Road, Makadara, Rabai Road, Mumias South Road, Buruburu, Outer Ring Estate, Pioneer Estate, Mutarakwa Road, Kariobangi South, Komarock Road, Dandora Phase4, city stadium
39	Ruai	Jogoo Rd, Donholm, Outer Ring Rd, Umoja, Kangundo Rd, Komarock, Njiru, Ruai
58	Buruburu	Jogoo Road, Makadara, Rabai Road, Mumias South Road, Buruburu Phase 5 till Phase 1
71/72	Industrial Area (via Likoni Rd)	City Stadium, Jogoo Rd, Likoni Rd, BAT, Lunga Lunga Rd, Donholm
unnumbered	Industrial Area (via Enterprise Rd)	City Stadium, Lusaka Rd, Enterprise Rd, General Motors

3.4.2 Sampling of PSVs

In this cluster, 5 routes were sampled and 17 PSV's were purposively sampled from each route making a total of 85 PSV's.

In this cluster, the following 5 routes were purposively sampled because most of them operate in the eastern suburbs though the main Jogoo road where there is often high traffic flow:

- a) **19/60 (Kayole):** Jogoo Road, Donholm roundabout, Outer Ring Rd, Donholm, Savannah, Jacaranda, Kayole, Komarock
- b) **23 (Outer Ring):** Jogoo Road, Makadara, Rabai Road, Jericho, Harambee, Buruburu Phase 1, Outer Ring Estate, Pioneer Estate
- c) **33 (Embakasi):** Jogoo Road, Donholm roundabout, Outer Ring Rd, Quarry, Tumaini, Tassia, Avenue Park, Fedha, Pipeline, North Airport Rd, KQ Base, Embakasi Village
- d) **35/60 (Umoja):** Jogoo Road, Donholm roundabout, Outer Ring Road, Tena, Mutindwa, Umoja.
- e) **58 (Buruburu):** Jogoo Road, Makadara, Rabai Road, Mumias South Road, Buruburu Phase 5 till Phase 1

3.4.3 Sampling of respondents

Each matatu entering the station had a designated parking/waiting stage based on the route they operated on. On average each of the 5 routes that were purposively sampled had about 100 matatus. Using systematic sampling the formula $K = N/n$ was used where K represented the sampling interval, n represented the sample size, and N is the population size. Using this formula, the sampling interval for the study was 6 i.e. $100/17 = 5.88$. The random starting point was 4. For every 6th PSV vehicle entering the station, 1-2 respondents (Drivers or Owners) was interviewed making a total of 86 respondents.

3.4.4 Sampling of Key informants

The study will also use purposive sampling method while carrying out key interviewing to get the key informants interviewed were: Matatu owners and officials from Matatu Cooperative Societies (Saccos)

3.4.5 Secondary Data

This data will be collected from the internet, publications, reports from concerned government ministries and relevant books and journals.

3.4.6 Interviewing of respondents

For each of the 86 PSV respondents (driver and owners) were interviewed by use of a semi-structured questionnaire. The target site was Muthurwa bus station because most of these Matatus plighting these routes operate from there.

3.5 Data analysis and presentation

The used Statistical Package for Social Science (SPSS) to analyze quantitative data. The qualitative data was coded thematically and analyzed statistically. Themes were developed as per the study objectives and data from the various tools synthesized and triangulated. The presentation will be in form of statistical techniques such as frequency tables.

CHAPTER FOUR: DATA PRESENTATION AND ANALYSIS

4.1 Introduction

This chapter will present analysis and the findings of the study as set out in the research methodology. The main objective of the study was to establish how far the reforms in the road transport subsector were being implemented. The first section of this chapter covers the types of reform, demographic characteristics of respondents, level of road safety awareness, perception of operators, level of compliance and level of road safety. The analysis proceeds according to the specific objectives in the questionnaire.

4.2 Types of reforms

The first objective of this study was to: "Document the types of reforms introduced in road transport between 2003 to 2005."

In 2003, under Legal Notice No. 161 the then Ministry of Transport and Communications (MOTC), in order to address the issue of road safety introduced the Legal Notice No. 161 of October 2003, which amended the Traffic Act Cap 403 of the Laws of Kenya.

Chitere and Kibua, (2004) pointed out the provisions that were to be observed with effect from 1st February 2004 which were:

- a) Fitting of seat belts on all vehicles (both public, commercial and private);
- b) Fitting of speed governors in all PSVs and commercial vehicles whose tare weight exceeded 3,048 Kgs. These were to limit speed to 80 kph;
- c) Indication of route details and painting of yellow band on Matatus for purposes of easy identification;
- d) Employment of drivers and conductors on permanent basis;
- e) Issuing of badges to PSV drivers and conductors;
- f) Issuing of uniforms to PSV drivers and conductors;
- g) Re-testing of drivers after every two years;

- h) Every driver to display his/her photograph of postcard size of the head and shoulders taken full without a hat. The photograph together with particulars of the driver's identity card shall be approved by a police officer of or above the rank of a superintendent; and
- i) Vehicles meeting these conditions were to be inspected for testing and certification by the government motor vehicle inspection centers in different parts of the country.

To begin with, the Notice provides that every motor vehicle was to be fitted with seatbelts in every sitting position. Driving a motor vehicle without a safety belt was therefore an offence under the Act, which attracts a penalty of Kshs.500 for each seat lacking a safety belt. It was equally an offence for any one including the driver not to put on a safety belt while inside a moving vehicle. The Act prescribes a fine of Kshs.100 for every person inside a moving vehicle who did not put on a safety belt. While seatbelts do not prevent crashes from occurring, they lessen the severity of the impact of crashes. This measure specifically aimed at reducing the magnitude of injuries sustained, and the number of passengers who died in road crashes, (Asingo and Mitullah p.26).

Secondly, the Notice provides that all public service and commercial vehicles with tare weight exceeding 3,048 kilograms shall be fitted with a speed governor. The speed governor shall be of the type approved by the minister for transport, and must be adjusted in such a way that at no time can the vehicle fitted with it move at a speed exceeding 80 km /hr. The measure aimed at ensuring the safety of both the passengers and pedestrians and enabling the drivers to be firmly in control of the vehicle at all times, (Asingo and Mitullah p.27).

Thirdly, every public service vehicle shall be painted with a continuous yellow band on both sides and on the rear. The band should be 150 millimeters in width and clearly visible within a distance of at least 275 meters. Where the main body of the vehicle is so colored that the yellow band does not contrast significantly, then the main body or so much of it as runs parallel to both sides of the yellow band, shall be painted a dark color of sufficient contrast as to allow

the continuous yellow band to be visible at the said distance. While at the surface value this requirement might sound aesthetical, it aimed at making public service vehicles clearly distinguishable, and ensuring that unauthorized vehicles did not carry passengers as this exposes such passengers to risk of accident, (Asingo and Mitullah p.28).

Fourth, Public Service Vehicle owners were required to indicate their names and address on the body of the vehicle. In addition, they were required to indicate the registered route plied by the vehicle, licensed passenger carrying capacity, and tare weight. IPAR Working Paper No. 545, Fifth, Public Service Vehicle drivers and conductors were required to wear uniforms as well as special identification badges issued by the Registrar of Motor Vehicles. The drivers were supposed to display their photographs where all passengers can see them. Prior to employment as driver or conductor, one has to receive a certificate of good conduct from the police to certify that they have no criminal records. Furthermore each driver of a Public service vehicle was required to undergo testing after every two years to certify their medical and professional fitness to continue driving, (Asingo and Mitullah p.28).

Finally, every Public Service Vehicle owner was required to employ a driver and a conductor on permanent basis and to pay them monthly salaries as opposed to daily wages that they were receiving prior to these regulations. It was hoped that this would prevent vehicle owners from imposing unrealistic daily targets that force the vehicle crew to make many trips and work late into the night to meet. It is this setting of targets that explains the tendency by Matatus for example to always be in a hurry, carry excess passengers, and defy established traffic rules in their mad rush for passengers, (Asingo and Mitullah p.31).

The Legal Notice identified over speeding as a cause of road crashes, and prescribed speed governors as its remedy. It should be noted that Section 42 of the Traffic Act Cap 403 already limits PSV vehicle speed to 80 km/hr even before the issuance of the Notice. The enforcement of this speed limit was however impaired by several factors. To begin with, the traffic police are blotted with corruption. Indeed, the 2002 and 2003 reports by Transparency International-

Kenya, ranked the Working Paper No. 545 police as the most corrupt government agency. Studies have also shown that some traffic police officers own or protect certain PSV vehicles, which then defy traffic rules with impunity. Similarly, the traffic police are short of personnel and generally ill equipped to enforce the speed limits. The introduction of speed governors was in fact an admission by the government that the traffic police officers have been unable to enforce traffic rules particularly speed limits, (Asingo, 2004).

4.3 Characteristics of respondents

The first objective of the study was to find out the characteristics of the Matatu operators and crew. The characteristics were: Gender, occupation, age, marital status, number of children, education level, training received, income level, type of employment and years of work.

4.3.1 Gender

Table 2 shows that the Matatu industry is highly dominated by males who make 98.8% as compared to females who make only 1.2%. This is probably because of the perception that being a Matatu driver is a man's work.

Table 2: Distribution of respondents according to their gender

Gender	Frequency	Percent
Male	85	98.8
Female	1	1.2
Total	86	100

4.3.2 Age

Table 3 shows that at least 50% of those interviewed were between the ages of 35-49 years while 46.5% were below 34 years and only 3.5% were above 50 years. A big chunk of the age distribution is in the young and middle and is also nearly split equally. This probably has to do with the competitive nature of the industry that tends to suite the young and middle age groups.

Table 3: Distribution of respondents according to their Age

Age	Number	Percent
Young <34 years	40	46.5
Middle 35-49 years	43	50
Old >50 years	3	3.5
Total	86	100

4.3.3 Occupation

Table 4 shows the occupational distribution among the respondents. A large percentage of those interviewed, at least 96% worked as drivers, 2% were owners and only 1% were both owners and drivers. This shows that most of those who own Matatus rarely engage in the day to day running operations.

Table 4: Distribution of respondents according to their Occupation

Occupation	Number	Percent
Owner	2	2.3
Driver	83	96.5
Driver/Owner	1	1.2
Total	86	100

4.3.4 Education

Table 5 shows that majority (84.9%) of those interviewed had attained secondary education while 7% had attained upper primary education. About 6% had attained lower primary education and 2.3% had attained Diploma. This shows that most of the drivers in the industry had good educational qualifications and levels of literacy. The findings also point to the fact that Matatu industry is a major employer of those who may not have been able to attain tertiary education.

Table 5: Distribution of respondents according to their level of education

Education level	Number	Percent
Lower primary	5	5.8
Upper primary	6	7.0
Secondary	73	84.9
Diploma	2	2.3
None	0	0
Total	86	100

4.3.5 Marital status

Table 6 shows majority (96.5%) of the operators interviewed were married to one wife, about 2% were single and 1.2% widowed. It was important to establish the drivers marital status to see how it affected their work performance. Drivers who are married tend to be more responsible and committed to their work as compared to those who are single.

Table 6: Distribution of respondents according to their marital status

Marital status	Number	Percent
Single	2	2.3
Married	83	96.5
Widowed	1	1.2
Separated	0	0
Divorced	0	0
Total	86	100

4.3.6 Number of children

Table 7 shows that all the drivers interviewed had children. A fairly high proportion (84%) of them had 2-3 children while 13.9% had 4-5 children and 1.2% of them had 6 children. The number of dependants can play a role in terms of work commitment. It is expected that drivers who have children to support may tend to be more committed as compared to those without any family responsibilities.

Table 7: Distribution of respondents according to the Number of children

Number of children	frequency	Percentage
1-2	50	58.1
3-4	33	38.4
Above 5	3	3.5
None	0	0
Total	86	100

4.3.7 Type of training

As shown in table 7, 94.2% of those interviewed had received training in driving while 4.7% had received training in both driving and mechanics and 1.2% had not received any training in either driving or mechanics. Given that there are so many accidents in Kenya caused by Matatus, the fact that a high number of drivers had received training, it brings into question the quality of training they received and how they received it.

Table 8: Distribution of respondents according to their type of training

Training type	Number	Percentage
Driving	81	94.2
Both Driving and Mechanics	4	4.7
None	1	1.2
Total	86	100

4.3.8 Training duration

Table 8 shows that 80.2% of those interviewed had received training in driving between 3-5 months while 5.8% had received training for more than 6 months, 4.7% had received training for a few days while 9.3% had not received any type of training. Given there is a lot of information taught in the driving schools, the duration will have an impact on the driving skills. Because a large number of drivers had spent several months training it should be expected that their performance and discipline should be high.

Table 9: Distribution of respondents according to the received training duration

Training duration	Frequency	Percentage
3-5 months	69	80.2
More than 6 months	5	5.8
A few days	4	4.7
None	8	9.3
Total	86	100

4.3.9 Training Institution

Table 9 shows that 68.8% of drivers went to a commercial driving school, Automobile Association School (AA) accounted for 11.6%, National Youth Service accounted for 7%, Ministry of Public Works 2% and Ministry of Roads 1%. At least 9.3% of the drivers did not attend any driving school. From this data it shows that in total, a high number (over 90%) of the drivers went to formal training institutions. This number is significant although we still have a high number of road accidents.

Table 10: Distribution of respondents according to the training Institutions

Institution	Frequency	Percentage
AA school	10	11.6
Commercial Driving school	59	68.6
National Youth Service	6	7
Ministry of Public works	2	2.3
Ministry of Roads	1	1.2
None	8	9.3
Total	86	100

4.3.10 Main Occupation

Of the 86 drivers interviewed, all of them, (100%), stated that driving was their main occupation. This shows that the drivers depended fully on Matatu for livelihood. There are currently over 15,000 Matatus in Nairobi alone that are plying over 115 routes. This makes it very competitive and drivers may have to be aggressive to survive in the industry which in turn may lead to high number of accidents

4.3.11 Other occupations

As shown in table 10 , a high number (89.5%) of the drivers interviewed did not have any other occupation, about 2% said they had a small business, 3% engaged in farming, 1% did painting and selling spares respectively. Those with other occupations are able to compliment the income earned from driving. Those who did not have any other occupation depended primarily on driving as a source of livelihood.

Table 11: Distribution of respondents according to their other occupations

Type of occupation	Frequency	Percentage
Business	2	2.3
Farming	3	3.5
Mechanics	2	2.3
Painting	1	1.2
Selling spare parts	1	1.2
None	77	89.5
Total	86	100

4.3.12 Income

Table 11 shows that 3.5% of the drivers earned less than Kshs 10,000, while about 65.1% earned between Kshs 11,000-15,000, about 24.4% earned between Kshs 16,000-20,000 and another 2.3% earned between Kshs 21,000-25,000 and 4.7% earned above Kshs 30,000. The findings show that Matatu drivers earn fairly well and this may be a reason as to why the industry attracts a large number of people. Many of the drivers were paid on a day to day basis thus making it difficult to save or raise capital so as to venture into other businesses. Many drivers went into drinking or drug abuse since they will always expect to get money the next day. This in turn affected the level of road safety.

Table 11: Distribution of respondents according to their other occupations

Type of occupation	Frequency	Percentage
Business	2	2.3
Farming	3	3.5
Mechanics	2	2.3
Painting	1	1.2
Selling spare parts	1	1.2
None	77	89.5
Total	86	100

4.3.12 Income

Table 11 shows that 3.5% of the drivers earned less than Kshs 10,000, while about 65.1% earned between Kshs 11,000-15,000, about 24.4% earned between Kshs 16,000-20,000 and another 2.3% earned between Kshs 21,000-25,000 and 4.7% earned above Kshs 30,000. The findings show that Matatu drivers earn fairly well and this may be a reason as to why the industry attracts a large number of people. Many of the drivers were paid on a day to day basis thus making it difficult to save or raise capital so as to venture into other businesses. Many drivers went into drinking or drug abuse since they will always expect to get money the next day. This in turn affected the level of road safety.

Table 12: Distribution of respondents according to their income categories

Income per month (Kshs)	Number	Percentage
Less than 10,000	3	3.5
11,000-15,000	56	65.1
16,000-20,000	21	24.4
21,000-25,000	2	2.3
Above 30,000	4	4.7
Total	86	100

4.3.13 Full time or part-time drivers/owners/operators

As shown table 12, the study found that about 82.6% of those interviewed worked as fulltime drivers while 17.4% worked part time. This means that a large number of drivers do not engage in any other income generating activity and depend primarily on income generated from the Matatu business. This may have the effect of aggressive competition in order to survive in the industry

Table 13: Distribution of respondents according to their type of employment

Type of employment	Number	Percentage
Full time driver/owner/operator	71	82.6
Part time driver/owner/operator	15	17.4
Total	86	100

4.3.14 Years of work

According to table 13, only 8.1% of the Matatu drivers had worked in the industry for less than 2 years, 37.2% had worked between 3-5 years, 31.2% had worked between 6-9 years and 23.3% had worked above 10 years. The long number of years worked by majority of the drivers show the stability of the industry in terms of retaining drivers.

Table 14: Distribution of respondents according to the years of work

Years	Number	Percentage
Less than 2 years	7	8.1
3-5 years	32	37.2
6-9 years	27	31.2
Above 10 years	20	23.3
Total	86	100

4.3.15 Conclusion

The social demographic findings can have an impact on the level of road safety. For example, the age and number of years worked in the industry have a bearing on the experience and nature of competition. Young drivers tend to be more aggressive and competitive than old ones and it may be the reason why a big chunk of the age distribution lies in the young and middle age. The marital status and number of children all had a bearing on the level of commitment at work. The level of education and training are very important when it comes to job performance and productivity at work it helps to make an individual more rational in decision making.

4.4 Awareness of reforms

The third objective of this study was to: "Assess the level of awareness by Matatu operators and crew about the reform measures." The table 14 shows that a high number of the drivers were aware of the various types of reforms. At least 100% were aware on the reforms of: fitting of speed governors, limiting speed at 80 Kph, fitting of seatbelts, Indicating of route details, painting of yellow bands for purposes of easy identification, driver display of his/her photograph, wearing of uniforms by both PSV drivers and conductors, wearing of badges by both PSV drivers and conductors and NEMA laws (dustbin, loud music). When it came to the area of employment 94% were aware and retesting 77% were aware. However when it came to awareness with regards to the road signs and rules a number of key informants pointed out that working conditions and stiff competition made it a challenge to obey such rules. They cited vandalism of road signs, high traffic and ignorance as some of the factors that made it difficult to obey road rules.

Table 15: Distribution of respondents according to their level of awareness

Item <i>Type of Reform</i>	Awareness			
	Yes		No	
	<i>Number</i>	<i>Percentage</i>	<i>Number</i>	<i>Percentage</i>
a) Fitting of speed governors	86	100	0	0
b) limiting speed at 80 kph	86	100	0	0
c) Fitting of seatbelts	86	100	0	0
d) Employment	81	94.2	5	5.8
e) Indicating of route details	86	100	0	0
f) painting of yellow band	86	100	0	0
g) Retesting every two year	77	89.5	9	10.5
h) Displaying driver photograph	86	100	0	0
i) Uniforms	86	100	0	0
j) Badges	86	100	0	0
k) Sitting capacity of PSVs	86	100	0	0
l) PSV inspection duration	86	100	0	0
m) Alcohol consumption	86	100	0	0
n) NEMA laws (dustbin, loud music)	86	100	0	0

4.4.1 Conclusion

From the findings it was clear that there was a high level of awareness by Matatu drivers with regards to the reform measures. It was expected that this should influence the level of compliance which was not the case in the public transport sector. The high level of awareness therefore may not necessarily influence compliance.

4.5 Perceptions of operators about reforms

The third objective of this study was to: "Assess the perceptions by Matatu operators and crew to the road transport reforms." This is in a way wanting to find out whether the respondents are satisfied that the reforms can contribute to road safety if implemented. A total of 7 statements on reforms were put to the respondents to indicate their level of satisfaction by indicating whether they agree or not agree with the statements. Table 16 there was a strong agreement 76.9% (464) by most of the drivers that adherence to sitting capacity, speed limit, use of seatbelts, obeying traffic signs and installing and use of speed governors would contribute to road safety.

This was also supported by a number of key informants who said that most of the Matatu crew and operators recognize the benefits of the traffic rules but cited police harassment as an obstacle to following them. One of the key informants who was a Matatu operator and managed several Matatus pointed out that irrespective of whether they comply or not, traffic police will always find a way of extorting money from them. He pointed out that there seemed to be a large chain of how the bribe money is distributed to the top and most of the traffic police in the ground were even given targets. He termed most of the crackdowns as simple government projects to extort money from them which they termed 'domestic borrowing.' On average the Matatu operators stated that they loose at least Kshs 1,500 daily to bribing traffic police.

Table 16: Distribution of respondents according to their perceptions

ITEM	STRONGLY AGREE	AGREE	NEITHER /DISAGREE	DISAGREE	STRONGLY DISAGREE	Total
a. Adhering to the sitting capacity can contribute to road safety	7 (10.4%)	75 16.2%	2 (22%)	0 (0%)	2 (3.5%)	86
b. Adhering to the speed limit of 80 kph can contribute to road safety,	13 (19.4%)	72 (15.5%)	1 (11.1%)	0 (0%)	0 (0%)	86
c. Using of seatbelts can contribute to road safety	6 (8.9%)	76 16.4%	2 (22%)	0 (0%)	2 (3.5%)	86
d. Painting of yellow bands can contribute to road safety	2 (2.9%)	23 (5%)	2 (22%)	6 (100%)	53 (93%)	86
e. Obeying all traffic signs can contribute to road safety	14 (20.9%)	72 (15.5%)	0 (0%)	0 (0%)	0 (0%)	86
f. Installing and using a speed governor can contribute to road safety	13 (19.4%)	73 (15.7%)	1 (11.1%)	0 (0%)	0 (0%)	86
g. Regular inspection and maintenance of PSVs can contribute to road safety	12 (17.9%)	73 (15.7%)	1 (11.1%)	0 (0%)	0 (0%)	86
Frequency	67	464	9	6	57	

Scale:

Strongly Agree- 1 Agree-2 neither agree/disagree-3 Disagree-4 Strongly disagree-5

4.5.1 Conclusion

The findings show that most of the Matatu drivers are aware of the benefits of obeying the traffic requirements and it is expected that it should translate to a reduction in the number of road traffic accidents. However they point out the working environment e.g. police harassment, corruption, high fines by courts etc as an obstacle to obeying traffic rules. It is therefore not necessarily the case that the high positive perceptions can influence adherence.

4.6 Compliance

The fifth objective of this study was to: "To establish the level of compliance with the reform measures by the Matatu operators and crew." Table 17 shows that most of the Matatus had complied with the requirements to install several items. At least 98% had installed speed governors, seatbelts, indicated route details, painted yellow band, displayed drivers photo, had PSV uniforms and badges. However the study findings show that there is very poor compliance when it came to obeying the traffic rules. For example, only 15% adhered to the speed limit of 80 Kph and only 12% had gone for retesting, at least 100% of those interviewed said that they regularly engaged in overtaking at the wrong side or place, overlapping, driving on embankments, obstruction and failure to signal. One of the key informants interviewed pointed out some of the things that made compliance a challenge included: police harassment, unreasonable targets set by employers, uneven playfield where some Matatus are left to pick passengers from town others are not, very high fines in court encourage corruption, poor customer relations among others.

Table 17: Distribution of respondents according to the level of compliance

Reform Type	compliance			
	Yes		No	
	Number	Percentage	Number	Percentage
a) Speed governor	85	98.8	1	1.2
b) Seatbelts	86	100	0	0
c) Route details indicated	85	98.8	1	1.2
d) Painted yellow band	85	98.8	1	1.2
e) Display of driver photograph	86	100	0	0
f) PSV uniform	86	100	0	0
g) Badges	86	100	0	0
h) Adherence to speed of 80 kph	15	17.4	71	91.1
i) Gone for retesting	12	14	74	86
j) Overtaking wrong side/place	86	100	0	0
k) Overlapping	86	100	0	0
l) Driving on embankments	86	100	0	0
m) Obstruction	86	100	0	0
n) Failure to signal	86	100	0	0

4.6.1 Conclusion

According to the findings, despite the fact that many drivers having complied with the requirements needed to reduce accidents by fitting the various items in their vehicles, there is very little obedience when it comes to obeying the traffic rules on the roads. This may come as a result of high competition to meet targets especially during the rush hours. Despite the good

perceptions that the Matatu drivers have with regard to the traffic rules, the working conditions may force them to disobey them. Most of the items may have been put in place just as a way to avoid being arrested for non compliance.

4.7 Road Safety

The sixth objective of this study was: "To establish the level of road safety in Nairobi."

As shown in table 18, the study found that at least 90% of the matatus drivers had been involved in road accidents while 9.3% had not.

Table 18: Number of road traffic accidents

Accident	Frequency	Percent
Yes	78	90.7
No	8	9.3
Total	86	100

4.7.1 Types of Road Traffic Accidents

Table 19 shows that a high number of drivers (89.5%) were involved in minor road accidents while 10.5% were involved in major road accidents.

Table 19: Distribution of respondents according to the type of road traffic accidents

Types of Accidents	Frequency	Percent
Major	9	10.5
Minor	77	89.5
Total	86	100

4.7.2 Conclusion

The findings show that the level of road safety is very low in Nairobi. Most of the accidents were minor and this shows that most Matatu drivers do not obey traffic rules likely because they are in a hurry to pick or drop passengers. The frequent traffic jams witnessed in Nairobi may be a very likely cause for the high number of such accidents.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

In this chapter, the main findings of the study are summarized and conclusions made. These help in filling the gap and meeting the objectives, expressing the observations made during the study. Recommendations and further research areas are suggested.

5.2 Study summary

The following is a summary of the study findings:

- i. From the study, it was established that most of those who own matatus are not the operators. They manage their Matatus from a distance. Because they are not involved in the day to day running of their Matatu they may not be fully aware of all the work challenges and pressure that the drivers face. They may put targets on expected return to the drivers which in turn may contribute to reckless driving and high number of road traffic accidents.
- ii. It was also established that most of the drivers have good education qualifications i.e. secondary and above and thus showing they were literate and were able to understand or comprehend issues and challenges that they face. It also shows matatu business is a major employer for those who are not able to pursue tertiary education.
- iii. The study findings also indicated that majority of the drivers were married and had children. The level of family responsibilities had an impact on work discipline and pressure. Because of the different responsibilities associated with having a family many drivers may have to struggle to make ends meet by meeting their daily targets. This may impact on the level of road safety
- iv. Furthermore the study findings revealed that majority of the drivers had attained some form of driving training in a formal institution mostly for months. It was expected that this would have a positive impact on road safety.

- v. It was also established that majority of the Matatu drivers worked full time and did not have any other occupation. Driving was their main income generating activity and this may have had an influence on the level of competition in the industry
- vi. The study also found that most of the drivers had worked in the industry for more than 5 years without changing careers and this showed that it was a stable source of employment to the many youthful age groups
- vii. The study also found that there was a high level of awareness with regards to the various reforms introduce. Despite this, high numbers of road traffic accidents have continued and this shows that the level of awareness did not necessarily influence compliance
- viii. The study also found that most of the drivers have a positive perception about the traffic rules. Many acknowledged the benefits of obeying traffic rules and how it can contribute to a reduction of road traffic accidents but cited working conditions as an obstacle to following them. Corruption and harassment by police made most of the drivers 'routinely' obey the rules.
- ix. The study also found that compliance was very high when it came to fitting of items like speed governors, seatbelts e.t.c. but it was very low when it came to obeying traffic rules. This may have been as a result of the poor working conditions that Matatu drivers faced
- x. Finally the study found that most of the drivers were involved in minor road accidents. This shows that many drivers engage in traffic offenses such as overlapping, driving on embarkments etc. This may occur very likely during the rush hours when traffic volume is highest

5.3 Study conclusions

It is apparent from the study findings that the various measures taken by the government to improve road safety are commendable. However they have not achieved the desired effect of improving road safety. It is evident from the study findings that the level of awareness by matatu drivers with regards to the traffic rules is high. Most of the Matatu drivers also have a positive perception of the traffic rules. Despite these, road traffic accidents continue to be high. Human behavior has significantly contributed to this. The policies that have been put in place do not adequately address this area. Legal notice No. 161 of October 2003 and Road Safety Action Plan of 2006 put a lot of emphasis on speed reduction and passenger safety measures but little on human behavior and attitudes. Unless road users respect and observe such traffic rules and regulations, the goal of reducing road traffic accidents will not be achieved.

5.4 Recommendations

In light of the findings, the following policy and further research recommendations were made:

5.4.1 Policy recommendations

- i. The government should harmonize the roles and responsibilities of various government departments and agencies in order to effectively manage and regulate the industry.
- ii. The government should work closely with Matatu Welfare Association (MWA) to ensure the working conditions of drivers are improved. The drivers should be given fixed monthly salary and this will prevent vehicle owners from imposing unrealistic daily targets that force the vehicle crew to make many trips and work late into the night to meet which in turn leads to road traffic accidents.
- iii. The government should introduce a probationary period for all drivers, during which time there will be zero-tolerance attitude to speeding, alcohol use and other serious violations of the law. Firm and decisive action should also be taken to root out corruption in the sub-sector
- iv. The government should actively involve Matatu owners in road safety initiatives. Because most owners manage their Matatus from a distance they may not know exactly

what takes place on the ground and put undue pressure to the drivers on expected returns

- v. The government should set up mechanisms to regularly monitor and inspect the formal training institutions to ensure that they offer quality training that fits the road safety needs of the country. The training they offer should go beyond driving instructions. Emphasis should be put on discipline and obedience of traffic rules.
- vi. The government through the relevant ministry should introduce system of driver re-training and testing and strict monitoring to reduce repeat violations.
- vii. The government should collect accurate data on the various matatu routes. This will ensure better planning and management by the regulatory institutions
- viii. Finally the government should provide funding for matatu drivers to enable them venture into other income generating activities e.g. small business. This will help them to have a broad source of income as opposed to depending solely on income from Matatu business. In turn this will help to reduce aggressive competition that can lead to road traffic accidents

5.4.2 Recommendations for further research

- i. Because human behavior is a key aspect on improving road safety, more studies need to be carried out on what drives Matatu drivers to flout regulations and traffic rules.
- ii. More research needs to be carried on the working conditions of Matatu crew and how this affects compliance
- iii. More studies on transport reforms and compliance need to be carried out that go beyond the PSV Matatus

REFERENCES

- Ablero, Z. (2007), The Role of Speed Control in Prevention of Road Traffic Crashes: Experience from Kenya. Paper presented at the Africa Road Safety Conference Accra-Ghana 5th-7th February, 2007
- Assum, T. (1997), Road Safety in Africa: Appraisal of Road Safety Initiatives in Five selected Countries in Africa. Working paper No.33 February 1998. SSATP
- Asingo, P , Mitullah V.,(2007), Implementing Road Transport Safety Measures in Kenya policy Issues and Challenges. Working Paper No. 545 Institute for Development studies
- African Development Bank. (1999), African Development Report 1999: Infrastructure development in Africa. Oxford University Press.
- Chitere P.O., Kibua T.N. (2004), Efforts to Improve Road safety in Kenya: Achievements and limitations of reform by the Matatu Industry. Institute of Policy Analysis and Research (IPAR)
- Fayol .H. (1967), Management Theory. London: Pitman Publishers.
- Galcano C. Mulaku and Kariuki, L. W. (2001), Mapping and Analysis of Air Pollution in Nairobi, Kenya. Paper presented at the International Conference on Spatial Information for Sustainable Development Nairobi, Kenya 2-5 October 2001.
- Graeff, J. (2009), The Organization and Future of the Matatu Industry in Nairobi, Kenya. Center for Sustainable Urban Development – Earth Institute Columbia University, New York, New York 10025.
- Goodman, J., Laube, M. and Schwenk, J., 2005/2006., Curitiba's Bus System is a Model for Rapid Transit. Schwenk Race, Poverty & the Environment

Halsall, P., (1998)., Modern History Source book: Fredrick W. Taylor

Irungu Z (2007)., Decongesting Nairobi-Urban Transportation Challenges. Learning From Japan
JICA Training Course Comprehensive Urban Transportation Planning and Project.

Khayesi, M. (1993), Rural Household Travel Characteristics: The Case of Kakamega District., In
Journal of Eastern African Research & Development, Vol. 23, pp. 88-105.

Khayesi, M. (1997), Analysis of Terms and Conditions of Work in the Matatu Industry: A Study
of Nairobi, Thika and Ruiru Towns in Kenya, Research Report submitted to the Institute
for Development Studies, University of Nairobi.

Khayesi, M. (1998), An Analysis of the Pattern of Road Traffic Accidents in Relation to Selected
Socio-economic Dynamics and Intervention Measures in Kenya: Ph. D Thesis, Kenyatta
University.

Khayesi, M. (1998), Terms, Conditions of Work and Career Patterns in the Matatu Industry in
Kenya: A Case Study of Workers in Nairobi, Thika and Ruiru Towns, Revised Paper submitted to
The Institute for Development Studies, University of Nairobi

Kombo D.K and Tromp D.L.A (2006), Proposal and Thesis Writing- An introduction, Paulines
Publications, Africa, Nairobi, Kenya.

Kothari C.R. (2007), Research Methodology- Methods and Techniques, New Age International,
Limited Publishers, New Delhi.

Weber M.,(1997), The theory of social and economic organization. Translated by A.M.
Henderson and Talcott Parsons. The free Press.

Mario, J., Sergio, F. (2011), The Transport Ticket system in Brazil for urban public transport.

Ministry of Health and The Task Force for Global Health Nairobi, Kenya--May 29, 2009

McCormick, D. (1997), Stakeholder Analysis, Paper Presented in REME Training Workshop.

Mugenda, O. and A. Mugenda, (1999). Research Methods: Quantitative and Qualitative Approaches. African Center for Technology Studies (ACTS) Press, Nairobi, pp: 233

Nafukho Muyia (2004), The forgotten works, social research series no. 18

Odero W. Khayesi, &Heda. (2003), Road Traffic injuries in Kenya: Magnitude, causes and status of Intervention.

Oale, C. (2007), Matatu workers compliance to the new traffic regulations: A case study of selected routes in Nairobi. Institute of Policy Analysis and Research (IPAR)

Paula Moen, (2003), Transport and Regional Development. Goodbody Economic Consultants
Ballsbridge Park, Ballsbridge, Dublin

Jeffrey P., (1997), New directions for organization theory: problems and prospects. Oxford:
Oxford University Press.

Ritzer G (1991), Contemporary Sociological Theory. Toronto: Oxford University Press

Roberts, M. and M. Setterfield (2007), Endogenous regional growth: a critical survey.
Centre for Economic and Public Policy, University of Cambridge, UK and Trinity College,
Hartford, USA.

Republic of Kenya (2004), Ministry of Transport: Draft Integrated National Transport Policy,
Nairobi: Government Printer.

Republic of Kenya 2005-2011 National Road Safety Plan

Republic of Kenya 2004 Legal Notice No. 161

Republic of Kenya 1982 gazette Notice No. 1281

Republic of Kenya 2005 Central Bureau of Statistics

Republic of Kenya 2010 Integrated National Transport Policy: Sessional Paper

Taylor W.F (1997), Principle of Scientific Management Efficiency and Dehumanization.
Newyork. Harper and Row Publishers

Union Africaine des (2010), Reports on Statistical Indicators of Public Transport Performance
Transport Publics (UATP) in Africa

WHO and World Bank (2004), World report on road traffic injury prevention

World Bank (2002), Cities on the move: A World Bank Urban strategy Review

Yitambe, A., (2004), Disaster Avoidance Strategies in Kenya: The Case of Road Traffic Accidents

Daily Nation Newspapers see issue of 20th October, 20th December, and 23rd December 2010
and 16th February 2011.

MATATU PARATRANSIT INDUSTRY IN THE CITY OF NAIROBI, KENYA: EFFECTS OF ITS REFORMS ON ROAD SAFETY

Introduction

My name is..... from University of Nairobi, Department of Sociology and social Work. I am conducting a study on the effects of Matatu reforms on road safety in Nairobi, Kenya. Your participation is completely voluntary. I kindly request you to give me you honest response to the question asked to enable me collect authentic data. The interview will be strictly confidential so your responses will not be shared with anyone. Your name cannot be linked with your response and no major risk is expected for participating in this study.

1.0 Personal characteristics

(a) Gender

Male [] Female []

(b) Age in years _____

(c) Please state your occupation

Owner [] Driver [] Driver/Owner []

(d) (i) What education level did you attain in years?

- Lower Primary []
- Upper Primary []
- Secondary []
- Diploma []
- University []

(ii) If you did not complete upper primary or secondary, why? _____

(e) What is your marital status?

Single [] Married [] widowed [] Divorced/separated []

(i) If married, how many wives do you have? []

(ii) How many children? []

(f) Which training in driving/mechanics have you attended?

Type	Duration (Months/years)	Institution

(g) Currently which is your main occupation? _____

(h) Which other occupation/s do you have _____

(i) Approximately how much income do you have in Kshs _____

(j) Would you say you are:

(a) Full time Driver/owner/operator _____

(b) Part time Driver/owner/operator _____

2.0 Awareness of reforms

Which types of reforms do you know? (Tick appropriate)

Item	Awareness		If no why?
	Yes	No	
a. Fitting of speed governors			
b. limiting speed at 80 kph			
c. Fitting of seatbelts			
d. employment			
e. Indicating of route details			
f. painting of yellow band			

g	Retesting every two year			
h	Displaying photograph			
i	uniforms			
j	badges			
n	Sitting capacity of PSVs			
s	PSV inspection duration			
t	Alcohol consumption			
v	NEMA laws (dustbin, loud music)			

3.0 Perceptions of operators about reforms

What are your perceptions about the following?

ITEM		STRONGLY AGREE	AGREE	NEITHER AGREE NOR DISAGREE	DISAGREE	STRONGLY DISAGREE
a.	Adhering to the sitting capacity can contribute to road safety					
b.	Adhering to the speed limit of 80 kph can contribute to road safety,					
c.	Using of seatbelts can contribute to road safety					
d.	Painting of yellow bands can contribute to road safety					
e.	Obeying all traffic signs can contribute to road safety					
f.	Installing and using a speed governor can contribute to road safety					
g.	Regular inspection and maintenance of PSVs can contribute to road safety					

4.0 Level of compliance

(a) For how many years have you worked in the Matatu industry or owned a matatu? _____

(b) For how many years have you worked on this route? _____

(c) Which route were you operating before you moved to this one? _____

d) Do you have the following items?

Item	Level of compliance		If no, why
	Yes	No	
a. Speed governor			
b. seatbelts			
c. Route details indicated			
e. Painted yellow band			
f. Displayed photograph			
g. PSV uniforms			
h. badges			

e) Have you done the following in the past few months/years?

Item	Level of compliance		If no, why
	Yes	No	
a. Adhered to speed of 80 kph			
b. Gone for retesting			
c. overtaking			
e. Overlapping			
f. Driving on embankments			
g. obstruction			
h. Failure to signal			

5.0 Level of Road safety

(a) In the past year, have you been involved in a road accident? Yes [] No []

If yes Indicate:

Type of Accident	Year	Level of severity				If not why?
		very severe	severe	not so severe		

(b) If accident(s) were very severe and severe, what was the level of damage to?

(i) Vehicle; Written off [] Badly damaged [] Not so badly damaged []

(ii) Fatalities: Yes, [] some [] (specify number____) None []

(iii) Injuries: Yes, [] some [] (specify number____) None []

Appendix 2: Interview guide for Key informants

1. What are the characteristics of:
 - a) Matatu crew
 - b) Matatu operators

2. What types of reforms have been introduced since 2003?

3. What is the level of Road safety awareness in Nairobi?

4. What are the perceptions of Matatu operators and crew about the reforms?

5. Describe the level of compliance with regards to the reform measures?