FACTORS INFLUENCING COMMERCIAL MOTORCYCLE ACCIDENTS IN KENYA: A CASE OF BUNGOMA SOUTH SUB COUNTY.

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A RESEARCH PROJECT REPORT SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF MASTER OF ARTS DEGREE IN PROJECT PLANNING AND MANAGEMENT OF UNIVERSITY OF NAIROBI

2017

DECLARATION

This research project is my original work and has not been presented for the award of degree in any university.

Signature.....Date.....

Kipngetich Maritim Shadrack

L50/86744/2016

This research project has been submitted with my approval as the university Supervisor.

Signature.....Date.....

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DEDICATION

I dedicate my research project to my dear wife Teresa and children namely Javan, Mishelle and Marlon.

ACKNOWLEDGEMENT

I wish to register a heartfelt gratitude by acknowledging the support, advice and profound efforts of my supervisor Mr. Vincent Marani whose wise guidance, counsel and encouragement that make this study to succeed.

Special thanks to the course Lecturers for the knowledge imparted to me especially Dr. Cheben who taught me Research Methods, Dr. Stephen Okello, Mr. Elias Owino and professor Toili.

I also acknowledge the University of Nairobi for giving me the opportunity to study including making Lecturers available to teach.

Without forgetting the staff of Bungoma extra mural centre who facilitate the teaching/learning materials at the library. Special thanks to my classmates' namely Bonny Maloba, Phanice Wepukhulu, Emmanuel Masakhe among others in the various class discussions.

I also acknowledge the support of my colleagues namely:Galma Happi; Base Commander Bungoma, Lydia Melly,Samwel Kioko and Thomas Kegode for their understanding, moral support throughout the entire process including making police documents available.

Lastly, am grateful to all my respondents who helped me get the required information and helped in analysis of data.

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LIST OF ABBREVIATIONS AND ACRONYMS

(MOT)	Ministry of Transport
(NTSA)	National Transport and Safety Authority
(RTI)	Road Traffic Injuries
(WHO):	World Health Organization

ABSTRACT

The acute shortage of formal employment has forced many Kenyans to venture into Boda boda business which has in turn caused many accidents. This study investigated factors influencing commercial motorcycle accidents in Bungoma south sub county. The objective of this study was to assess the extent to which environmental factors influence commercial motorcycle accidents in Bungoma South sub county, to evaluate how personal characteristics influence commercial motorcycle accidents in Bungoma South sub county, to investigate the extent to which ownership status influence commercial motorcycle accidents in Bungoma South sub county and to determine how riding skills influence commercial motorcycle accidents in Bungoma South sub county. A descriptive research design was used to allow researcher to gather information, summarize, present and interpret data for the purpose of clarification. The target population for this research was 1739 comprising of 1724 registered commercial motorcycles in the study region and 15 traffic police officers with a sample size of 313 determined from Krejcie and Morgan table. Proportional allocation was used to compute the exact number of subjects in each location which was a correct representation in each region. The received data was classified, summarized, coded, sorted and SPSS software was used. The findings were presented in form of tables and narrative forms. The study found out those legal factors does not affect motorcycle accidents while corruption and condition of road do influence. They found that overloading, over speeding and use of drugs influenced motorcycle accidents. On ownership of motorcycle most of the respondents agreed that company motorbike influenced commercial motorcycle accidents. On riding skills was that lack of driving license and experience influenced motorcycle accidents in Bungoma south sub county. The study recommended an inclusive transport policy which encompasses all transport stakeholders. Also designing of roads to take care of motorcycle operators including riders wearing helmets and reflector jackets, undergoing driving test and insuring motorcycles against risks and forming companies to the industry and thus it reduce motorcycle accidents in Bungoma sub-county the researcher recommended riders for refresher courses.

CHAPTER ONE

INTRODUCTION

1.1. Background to the study

World Health Organization (WHO) in 2006 revealed that the use of motorcycles has increasingly become a popular means of transport in low and middle-income countries. The report revealed that 69% of the total numbers of motor vehicles in India were motorized two-wheelers (WHO, 2006). Furthermore, in Iran where motorcycles are manufactured, there was an increase in its production from 50,599 in 1986 to 8,334,552 in 1996 (Janmohammadi et al, 2009). This implied that many more people are using motorcycles as a means of transport. Again in 1996, a report on the prevalence of motorcycles in Malaysia revealed that about 50.6% of all registered vehicles were motorcycles (Royal Malaysia Police, 1997).

Road traffic accidents are the leading causes of death by injury and the tenth-leading cause of all deaths globally. An estimated 1.2 million people are killed in road traffic accidents each year, and as many as 50 million are injured, occupying 30 percent to 70 percent of orthopedic beds in developing countries hospitals, (World Health Organization. 2002, in Worley. 2008. Motorcycles are the primary means of motorized transport today. In overseas countries for instance Asia, China, Indonesia, Vietnam motorcycle transport overrides automobile transport due to its reliability and efficiency. These are the four largest motorcycle markets in the world. According to World Economic Survey, (2010) in Taiwan for instance the number of motorcycles is twice the number of automobiles for every ten thousand population (Taiwanese Government, 2007). The rise in number is attributed to low income levels, high pump prices that bar many to acquire

automobiles. There has generally been an increase in the use of motorcycles in recent years globally. According to Bangladesh Road Transport Authority (2012), Dhaka, which is the capital city of Bangladesh, is one of the most vulnerable cities both in terms of total number of accidents and accident rates. A total number of 2,720 accidents occurred during 2007-2011. This caused a total of 1,481 numbers of pedestrian fatal accidents with 1,562 pedestrian fatal casualties

According to the national study by the Australian Transport Safety Bureau (ATSB) found that Motorcycle sales in Australia have increased consistently in recent years and indications are that this trend may continue for the foreseeable future Nyatundo, (2014). As motorcycling activity, has increased, so too has the number of serious and fatal motorcycle crashes, though this is not observed as a simple linear relationship. Among the commonly cited risk factors for motorcycle crashes are excessive speed, alcohol and drug use, road conditions, inexperience and unlicensed riding, Nyatundo, 2014. A range of modifiable behaviors have also been cited to contribute to motorcycle crashes and injuries including riding speed (Horswill and Helman, 2003; Lin and Kraus, 2009), traffic errors (e.g., being distracted or pre-occupied resulting in a near collision), control errors (e.g., trouble handling the bike) (Elliott et al., 2007), alcohol and/or drug use (Haworth et al., 1997; Lin and Kraus, 2009), and risk-taking (e.g., driving with too little headway) (Lin and Kraus, 2009; Sexton et al., 2004).

In Brazil, most of the population makes use of motorcycles to move around. Motorcycles are also used as a work vehicle for taxi motorcyclists and delivery men. Moreover, this means of transport has lower cost compared to others and is accessible to low -income people who use it as locomotion vehicle (Cavalcanti et al., 2011). Considering that motorcycle accidents are a major cause of injuries related with fatalities and disabling injuries (MacLeod et al. , 2010) ,

several studies have attempted to identify how individual (sex, age, licensing), behavioral (over-speed, alcohol use), geophysical (structure of roads) and situational factors (impact objects) may be linked to the greater involvement of motorcyclists in traffic accidents (Nunn, 2011; Savolainen& Mannering, 2007; Haquea et al., 2008; Oluwadiyaa et al., 2009;Albalate &Fernàndez-Villadangos, 2010)

The use of motorcycles is also highly patronized in Africa. The Federal Road Safety Commission (FRSC) of Nigeria in 2009 revealed that between 2004 and 2005, 52% of all motor vehicle license plates were for motorcycles. Statistically, there were 259,757 registered motorcycles in 2004 and this rose to 263,163 in 2005 (FRSC, 2009).In Tanzania 181 lives were claimed due to motorcycle accidents during the first quarter of 2010 (Nkwame, 2010). This is partly due to the rapidly increasing number of motorcycles from 6,700 in 2007 to 85,000 in 2009, a 13-fold increase in the period of 2 years (Nkwame, 2010). The reason behind the reported increase in number of commercial motorcycles is the fact that motorcycles are sold at relatively cheaper prices than other vehicles and good earnings from the motorcycle taxi business which encourages more people especially youths to join this business (Solagberu et al., 2006). According to the then Acting Chairman for Road Safety Committee, Dares Salaam alone, in the period from January to June 2010, has witnessed 64 deaths and 615 casualties due to motorcycle related accidents, involving both drivers and passengers (Mustapha, 2010). Motorcycle accidents have drawn great attention from the Tanzanian government authorities. For example, 2010 Road Safety Week had a theme of "Discourage High Speed; Cyclists Wear Helmets; Accidents Kill, Injure Safety Week had a theme of "Discourage High Speed; Cyclists Wear Helmets; Accidents Kill, Injure"" (Mustapha, 2010).

In Kenya, a recent study by National Transport Safety Authority (NTSA), 2017 reported that between 2015 and February 2017, there was a total of 274,865 registered motor cycles in the country; the same study reported that in the past two years alone, there have been a total of 1399 fatalities, 1956 serious injuries and 634 slightly injured in by the Bodaboda. The sight of as many as four million passengers on Bodaboda are familiar and drunken riding rate is too high as Githinji, (2011) puts it. He says that this could be the reason as to why road traffic injuries represent as much as 60% of all admissions to surgical wards. In fact, in 2010 the police traffic department reported that motorcycles had overtaken matatus as bearing the greatest traffic responsibilities for accidents. The police say that the rising deaths and Bodaboda accidents have raised fears that the risks associated with this tremendously expanding yet inadequately regulated means of transport could be a national disaster, Githinji, (2011). According to WHO, between 3,000 and 13,000 Kenyans lose their lives in road traffic crashes annually. The majority of these people are vulnerable road users, pedestrians, motorcyclists, and cyclists. In addition, nearly one-third of deaths are among passengers many of whom are killed in unsafe forms of public transportation (WHO 2013; Global Status Report on Road Safety). This situation is attributed to lack of laws for helmet wearing, riding under the influence of alcohol and where road safety laws do exist they are poorly enforced.

In Western Kenya, A study by Nabende, Maurice S, 2010 on factors contributing to Bodaboda taxi related traffic accidents in Kakamega Municipality found a significant relationship between the Behavior of cyclist and motorbike taxi operators and occurrence of these taxis related road traffic accidents. Accidents also result from the operators being young and not well equipped to operate the taxis, poor roads infrastructure and a general lack of strict regulation of the bodaboda taxi industry. This study recommended intensifying control and regulation of the bodaboda taxi industry; strict enforcement of traffic rules and regulations; improving collection and storage of accident data information; development of the bodaboda taxi transport support facilities in urban areas and increased investment in the improvement of roads infrastructure and roads environment.

1.2Statement of the Problem

Pedestrians, cyclists, and motorcyclists are vulnerable road users and constitute nearly half the victims of road traffic accidents worldwide. 65% percent of these accidents involve pedestrians. Of these pedestrian deaths, thirty five percent are children, (WHO, 2011). This is, in part, as a result of rapid increases in motorization without sufficient improvement in road safety strategies and lack of implementation of preventive measures. A recent study by NTSA, 2017 reported that in the past two years alone, there have been a total of 1399 fatalities, 1956 serious injuries and 634 slightly injured in the country .Literature has it that motorcycle related accidents is and remain the major cause of morbidity and mortality among the productive age in the developing world (Solagberu et al., 2006). According to Matheka et al., (2015), RTIs costs Kenya's economy approximately Ksh. 14 billion (5% of country's Gross Domestic Product). This is a huge social and economic cost to the country. The number of motorcycle deaths in

Kenya has been increasing in the last 10 years, from as low as 44 in 2005 to 394 in 2014 (NTSA, 2014). The trend is expected to continue if no preventive measures are done to reduce these accidents. This study sought to investigate how environmental factors, ownership status, personal characteristics and riding skills factors influence the commercial motorbike accidents in Bungoma south sub county.

1.3.Purpose of the Study

The purpose of the study was to investigate factors influencing commercial motorcycle accidents in Bungoma south sub county

1.4 Objectives of the Study.

This study was guided by the following research objectives:

1. To assess the extent to which environmental factors influence commercial motorcycle accidents in Bungoma south sub county
2. To evaluate how personal characteristics influence commercial motorcycle accidents in Bungoma south sub county
3. To investigate the extent to which ownership status influence commercial motorcycle accidents in Bungoma south sub county
4. To determine how riding skills influence commercial motorcycle accidents in Bungoma south sub county

1.5 Research Questions

The study was guided by the following research questions.

1. To what extent does environmental factors influence commercial motorcycle accidents in Bungoma South Sub County?
2. How does personal characteristics influence commercial motorcycle accidents in Bungoma South Sub County?
3. To what extent does ownership status influence commercial motorcycle accidents in Bungoma South Sub County?
4. How does riding skills influence commercial motorcycle accidents in Bungoma South sub county

1.6 Significance of the study

The finding of this study is helpful to law enforcers as it informed on the best way to handle people of different personality. The study also is useful to leaders who are tasked with funding youth projects in the county for them to ensure that these youths are provided with funds to engage them in appropriate activities in motorcycle businesses. The study is expected to help policy makers to formulate policies meant to help protect the youth who are productive group contributing the country's economy. The findings of this study add to the body of knowledge to scholars in the area of project management especially on the factors influencing accidents among the commercial motorists

1.7 Delimitation of the Study

The study covered commercial motorist in Bungoma south sub county. The study investigated how environmental factors, ownership status, personal characteristics and riding skills influenced commercial motorbike accidents.

1.8 Limitations of the Study

The research was affected by financial constraints, in travelling from different locations and this was mitigated by early savings. Language barrier was also a problem when administering the questionnaire. Illiteracy level among some of the targeted population is expected because some of the Bodaboda riders were not able to communicate in English due to low level of education. This was mitigated by use of local interpreters to guide the respondents to understand the questions.

1.9 Basic Assumptions

The study was based on the following assumptions: That the respondents would cooperate with the researcher and the research assistants, that all respondents would give their views and information, more objectively, and sincerely.

1.10 Definition of Significant Terms

Commercial motorists: These are profit-oriented motorists/motorists for profit

Environmental factors: These are social, economic and political factors that influence commercial motorists

Ownership status: This is the state of control of the motorcycle/the responsibility for the motorcycle

Personal Characteristics: This is the behavior portrayed by the motorist including the age distinctive

Riding skills: These are the skills and experiences acquired.

Commercial motorcycle Accidents: This is the extent to which motorcycles involve in unexpected events resulting from collision hence causing negative consequences; injuries, death and high treatment costs

1.11 Organization of the Study

This study was organized in chapter; chapter one (introduction) which included; background of the study, the statement of the problem, the purpose of the study, the research objectives, research questions, significance of the study, delimitations, limitation of the study, definitions of significant terms and organization of the study. Chapter two (literature review) includes; environmental factors, personal characteristics, ownership status and riding skills, theoretical framework, conceptual framework, summary of literature review and knowledge gap. Chapter three (research methodology) which includes; research design, target population, sample size and sampling procedures, data collection instruments, data collection procedure, piloting instruments, validity of instruments, reliability of instruments, data analysis techniques, ethical considerations and operational definition of variables. Chapter four; data analysis, presentation and interpretation of the findings and chapter five; summary of findings, discussion, conclusions and recommendations

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter contains discussions from related literature on how environmental factors, personal characteristics, ownership status and riding skills influence commercial motorcycle accidents in Bungoma south sub county. Also, a theoretical framework explaining the variables and how it influence it is in this chapter. This chapter also has a conceptual framework that shows all variables and their indicators in the study objectives. Finally, the chapter also contains summary of literature and a knowledge gap.

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2.2. Environmental Factors and Commercial Motorcycle Accidents

There was high non-compliance by drivers in general with the traffic rules and regulations despite enforcement by the police and some policing by passengers as Chitere(2006). On Policy, legal and regulatory framework, Chitere indicates that the main governance problem in the transport sector is that the policy and legal framework as well as the regulations have been unilaterally formulated and enforced by the government without consultations with key stakeholders. Un-roadworthy vehicles also contribute to motorist accidents (MOT, 2006). Mitullah and Asingo (2007) indicate that the implementation of the legal notice No.161 significantly reduced cases of road crashes in Kenya in the first part of 2004 compared to 2003. However, from June 2004, road crashes began to escalate as people started reverting to the old business as usual syndrome of non-compliance to the traffic rules and regulations. The begging

question in this case is why this state of non-compliance to the traffic rules and regulations emerged after the initial compliance situation led to reduction of fatalities from RTAs.

Literature also reveals that introduction of traffic laws and effective enforcement of these laws are some of the key factors to be considered in road safety programmers for reduction of RTAs as implied by Mitullah and Asingo (2007). However, attempts in Kenya to enhance road safety through road safety programmers have been proven inefficient and ineffective due to limited authority and responsibility, lack of resources, qualified personnel and logistical support. The GOK introduced legal notices to streamline the road traffic operations in order to curb RTAs but enforcement problems seem to still persist.

In many countries, motorcycle taxi operators have organized protests against governments to protect their interests. This has demonstrated a failure by regulatory agencies to control them. Such protests have been conducted in various cities as seen in Douala and Kampala (Konings 2006; Goodfellow&Titea 2012 as cited by Nasong'o, 2015). In Kampala for example, the city council introduced a licensing tax on all public motorcycle taxis in 2002 but the tax was abandoned in 2004 after the "Boda Boda" operators rejected it. Implementation of other control measures failed in Kampala like operators required to operate outside the central business district, operators to have two helmets, reflective jacket, and gloves and driving permits (Good fellow &Titea 2012, as cited by Nasong'o, 2015).

Graft and corruption has been mentioned as one of the causes of taxi motorcycle accidents. In developed countries like Canada, USA, UK, Sweden law enforcement is taken seriously, (West, 1993) but in developing countries like Zambia, Nigeria, Uganda, Tanzania and Kenya traffic police corruption is rife. In Nigeria, a number of accidents are blamed on graft and corruption among road safety officials and Nigerian police who are easily induced into condoning traffic misdemeanors (Ayodele, 2009). In Zambia, from Mumbwa to Lusaka, one can see overloaded trucks without lights on, moving on roads, but when they reach Lusaka West checkpoint, they just bribe the police, but these trucks frequently cause accidents.

In Tanzania, corruption in traffic police has made taxi motorcycle accidents to be 20 times more than those in Sweden. Aloyce, (2010) reported in JUSTA-AFRICA that he knows of a young man who trained for five days and was given a class 'C' license for driving all vehicles. In Uganda, 2300 people die yearly for accidents due to traffic police corruption. In Kenya, traffic police often ignore motorcycle operators breaking traffic laws, when they stop them; they only take bribes (Moss, 2000). Corruptible licensing system was found to be a sub-factor under law enforcement; while on the road, bribery and corruption is a sub factor under defective motorcycles and vehicles (Mwanachingwala, 2011). In Zambia, one policeman is reported to have seen a motorcyclist drinking and the policeman only had the guts of asking for his bribe as the man continued enjoying himself, Mwanachingwala, (2011) adds. In Bungoma south sub county, corruption by traffic police is just as high as in other towns and traffic rules are flouted even as the police watch without taking any action.

In most of developed countries, like in the UK, USA, Sweden and Canada, bad roads are not a major contributor to the motorcycle accidents. However, major motorcycle accidents are attributed to other causes like right of way violations (ROWV), overlapping between lanes or lack of oncoming motorists to detect oncoming motorcycle (Cervero, 2001). In developing countries like Nigeria, Tanzania, Zambia, Uganda and Kenya, bad roads contribute to up to 12.5% motorcycle accidents as noted by Chalya, (2009). In Nigeria for instance, most taxi motorcycle accidents occur because of the poor state of Nigerian roads which are typically riddled with potholes, (Ayodele, 2009). It is said that severity of road traffic accident injuries in Africa is higher because of very bad road conditions which contribute to increased motorcycle injuries. Because of bad roads and negligence in repairing them, number of taxi motorcycle accidents continues to increase and this is blamed on the gaping potholes.

2.3. Personal characteristics and Commercial Motorcycle Accidents

Accident toll in Kenya continues to be a problem on our roads in spite of the road safety campaigns by the Government and other organizations. A nationwide traffic enforcement returns compiled by the Ministry of Transport (MOT) jointly with the Traffic Police Department from July-November 2006 show that at the beginning of the year 2006 more than 1,900 people were killed in RTAs. The reported 1,930 deaths were blamed on drunken driving, speeding, overloading and un-roadworthy vehicles. The accident toll figures reported in this return indicated that there was on average about 873 road accidents, 175 deaths and 932 seriously injured people per month from January to November 2006 (MOT, 2006).

Alcohol and drugs always make people do just the opposite of what sober people would do on roads, (Sashoo, 2012). In Congo, Kinshasa, Equatorial Guinea, Gabon, Rwanda, Nigeria, drug abuse is high among taxi motorcycle riders as reported by Safety Net, (2009). Motorcyclists in these countries are more prone to crashes. Riding under the influence of alcohol is one of the most deadly impairment. The rate of drunken driving among the youths has surpassed any other means as noted by Robber and Dunpoint (2011). In Kenya the sight of as many as four pillion passengers on boda boda are familiar and drunken driving rate is too high as Githinji (2011) puts it. In Bungoma south sub county drunken riding among the boda boda riders is high as noted by NTSA report, 2017.

Over speeding is one of the most prevalent factors contributing to traffic crashes around the world. Thompson et.al, (2002) explain in risk compensation theory that people who are given protective devices such as reflector jackets and motorcycle helmets tend to perceive that their risk levels have been lowered hence behave in a riskier way than those who doesn't have these devices because they tend to think that in the event of accidents they will not get much injuries. He further states that those wearing protective devices engage in risky behavior of careless riding that include over speeding, which in most cases causes accidents on the roads. According to Adams (1999), encouraging helmet use will have an impact in cyclist's behavior which influences them to ride carelessly because of the safety guaranteed by wearing helmet. He further said that careless riding behavior causes accidents hence ribs off the guaranteed safety of helmet use. Perugini&Bagozzi (2001) suggests that in building Theory of Planned Behavior, we come up with a new type of behavior which shows that desires are the main causes of intentions and intentions eventually give rise to behavior. He further states that desires have an effect on

behavioral control, attitudes, norms and emotions. Speeding in motorcycles arises from a desire to do that and later become a behavior of some riders who end up in risking their lives. According to traffic act chapter 403 laws of Kenya section 42 there is no prescribed speed limit for motorcycles but a normal speed of 60-70km/hr is appropriate where one can control it.

According to Hosseinian&Torghabeh (2012), the causes of accidents in H.W.Heinrich's Domino theory are the mistakes that people make. These mistakes are; carelessness of a person, unsafe activities, injuries due to accidents, social environment and ancestry and accidents. If little caution is exercised by the careless riders and drivers, accidents could greatly reduce. According to Petersen (2003), the major causes of accidents in incident theory are decision to err, overload and ergonomic traps. Decision to err can be due to improper judgment of risks and the decisions that a person make. Ergonomic traps occur when the place where people work in and what people expect are matching their views while overload is caused by any kind of pressure and abuse of substances or alcohol. Hosseinian&Torghabeh (2012), explained in one of the accident causation theories which shows that accidents are caused by various human mistakes and risky behavior. These factors include; the way people are not responding well to safety measures and hazards, overload caused the surrounding environment or personal pressure and inappropriate activities due to lack of proper training when executing tasks. In Bungoma south sub county overload is the order of the day among riders NTSA report 2017. According to base commander Bungoma who asserts that one rider carries two or three pillion passengers per trip. At the same time one would observe the same riders carry heavy loads comprising of vegetables, potatoes and cereals from Chwele market towards Bungoma town (base commander Bungoma, June 2017)

Age is also a social determinant of health. According to NTSA (2015), all motorcycle operators must have valid driving license and 18 years and above. Even though different countries have different regulation system regulating the transport system, the age bracket involved in motorcycle riding in most countries vary. For instance, in Kenya, the most active age group is between 16-19 years who have just completed primary or secondary education (Maina, 2011). Most of the young riders learn riding from friends and relatives who teach them the riding skills ignoring road safety measures and end up causing accidents. In Uganda, the age between 16-30 years were the most common in motorcycle riding(Kisaalita& Kibalama.,2007).According to Odumosu, PT Officer &Yaro (2008), a study done at Nigeria shows that the most of youths operating motorcycle are at the age of 16-36 years. (Hill & Chow, 2002) explains that risk taking behavior is higher in young men than old men and women. Young men engage in risky activities like over speeding, overtaking, using wrong sides of the road while riding and riding under influence of alcohol.

2.4. Ownership status and Commercial Motorcycle Accidents

Lack of ownership of resources leads to increased accidents amongst motorist according to Griskevicius et al., (2011),. Most people from poor social economic background don't fear taking risk because they do not have much to lose and moreover have the desire to get out of their poverty. Unemployment is another serious crisis not only in some parts of the country but in Kenya as a whole (Gladys, 2013). Most of the youths have completed colleges but are rendered jobless because white collar jobs are now scarce. Others are rendered jobless because

they could not gather for further education due to poverty; hence do not have the necessary skills to be employed. Gladys (2013) further says that these unemployed youth focus on motorcycle operations to gather for their basic needs. The matter of concern is that in the course of operating these motorcycles, accidents are caused.

In U.K booking for motorbike rides must be done in advance. This happens in London where there are a number of tour companies that offer this mode of transport (Rome de Liz, 2006). The same situation also prevails in America where people prefer use of taxi motorbikes to make tours round cities that are near each other. The riders are thus assured of monthly pay and this has proved a good source of employment with steady income. Researchers aver that this could explain the order that is witnessed on roads in UK and USA (Rune et al, 2009). In Indonesia, there are organized companies which invest in cities in taxi motorcycles. They always look forward to investing in cities with sound public policies (Rome de Liz, 2006). The operators here are called Jitney operators and it's reported that they vie for the best terms of service. In India where they are called Boda Boda, taxi motorcycle touring is considered risky so tourists book reservations for them by paying 100% of tour package amount. In Thailand, motorcycle travelers pay more than they pay for air conditioned taxi vehicle ride for the same distance (Samaha et al, 2007).

In African states, this business is informal. In Rwanda, one has to pay entry fee in order to operate a taxi motorcycle because by 2007, 16% of Rwanda's total road accidents were due to motorcycle accidents while in Uganda and Tanzania only 7% of total accidents were due to motorcycle accidents (KNBS, 2010). In Kenya, terms of service are thought to be a major cause of: lack of concentration on riding, overloading, over speeding, overlapping on lanes, (Clerke et

al, 2004). Many riders in Kenya decry poor pay packages, poor terms of service, a fact that can easily lead to reckless riding as they try hard to get more money, (Odera, 2009). This is common in Nyanza where employers expect the riders to bring them Ksh.300/= on daily basis. In such a situation, the riders will want to make the required amount and try harder to get another Ksh.300/= for their daily upkeep, an attitude that will definitely make them over-exhaust themselves, (Oyugis OCS, 2012).

2.5. Riding skills and Commercial Motorcycle Accidents

Clerke et al, (2004) talked about experience and habits of riders in which 14% respondents to a questionnaire indicated how long they had held a motorcycle license and the type of license they held. The report revealed that those involved in motorcycle accidents had held those licenses for one year thus confirming that inexperience is a factor that causes accidents in the U.K and U S A. Furthermore, when the respondents were asked if they had any gaps in their motorcycling experience, 95% of them said they had started riding as soon as they acquired their license but 43.8% said there had been a period when they had not ridden; 40% with a gap of one year or less while 38% had a gap of three years or more (Clerke et al, 2004). It is thus possible that inexperienced and unskilled riding had something to do with road accidents.

In Nigeria, Ayodele, (2009) says that most accidents involving motorcyclists are caused by unlicensed and untrained riders. He found out that in some parts of Nigeria, Okada riders make their debut after a few hours of training session and it is common to see underage Okada

riders on Nigeria roads. In Zambia, a report revealed that most of motorcycle riders have just bought their driver's licenses yet they know very little about Highway Code. This point to inexperience among riders and this can orchestrate road fatalities.

Githinji, (2011) explains that some Kenyans exploit people willing to learn riding in informal training places where an average of Kshs.200 is used to offer one training for one hour after which a recruit is ready to hit the road, safety of the rider notwithstanding. As a result of the little training, most riders flout the traffic rules thereby exposing themselves to danger, (Odera, 2009). Lack of refresher courses is thus a major concern because many fatalities can occur because of it.

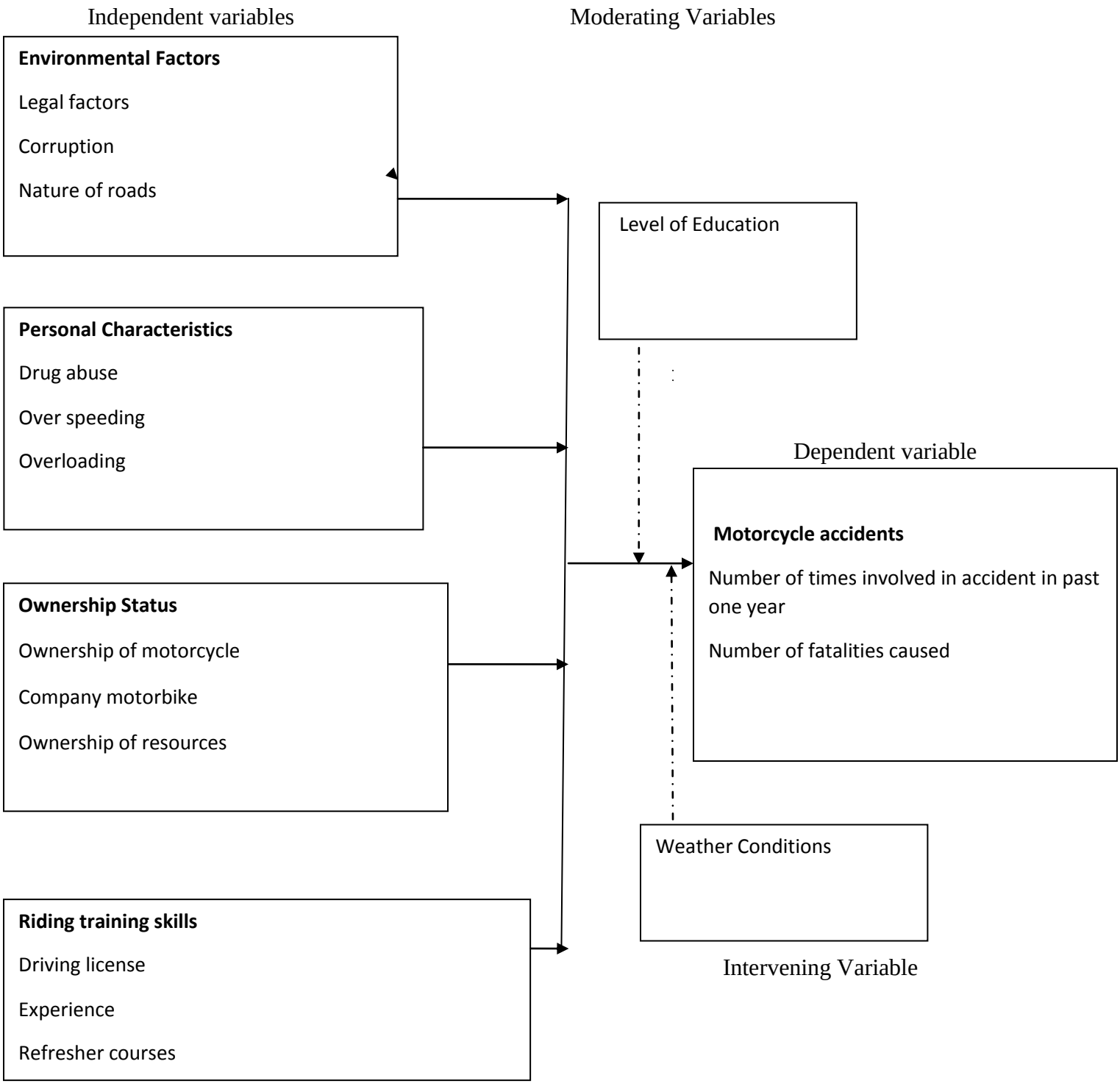
2.6 Theoretical Framework

The researcher used the human factors theory .The human factors theory premise is that human errors cause accidents. The structure of human factors theory is a cause/effect format one. This theory of accident causation attributes accidents to a chain of events caused by human error. It consists of three broad factors that lead to human errors categorized as overload, inappropriate worker responses, and inappropriate activities. In overload the work is deemed to be beyond the capability of the worker on physical/psychological factors. There is the influence by environmental factors, internal factors and situational factors. In the case of inappropriate worker responses, there are hazards, safety measures/worker's faults and compatibility of workstations that are deemed to cause accidents. On the case of inappropriate activities there is lack of training and misjudgment of risks as the causal effects of accidents. These human errors are influenced by capability of the workers (driver/law enforcers), the environmental conditions

(roads infrastructure /road pedestrian facilities), hazards (lack of safety measures/facilities), lack of training/ misjudgment of risks (driver over speeding and road safety unawareness). These views in the human factors theory are relevant and are applied in this study that investigated factors influencing commercial motorcycle accidents in Bungoma south sub county.

2.7. Conceptual framework

The study was guided by a conceptual framework in a diagrammatic representation containing all variables and indicators


Independent variables
Moderating Variables
Environmental Factors
Legal factors
Corruption
Nature of roads
Level of Education
Personal Characteristics
Drug abuse
Over speeding
Overloading
Dependent variable
Motorcycle accidents
Number of times involved in accident in past one year
Number of fatalities caused
Ownership Status
Ownership of motorcycle
Company motorbike
Ownership of resources
Weather Conditions
Riding training skills
Driving license
Experience
Refresher courses
Intervening Variable

2.8. Summary of Literature Review

This chapter looked at factors influencing commercial motorcycle accidents. It has reviewed various ways in which environmental factors such as legal Factors, Corruption, and nature of roads, secondly personal characteristics such as drug abuse, over speeding and overloading thirdly ownership status such as ownership of motorcycle, company motorbike and ownership of resources, and lastly riding skills such as experience, license and refresher courses.

2.9 Knowledge gap

Factors influencing the rate of motorcycle accidents are well documented in literature but little literature can be found about Factors influencing motorcycle accidents in Bungoma south sub county and more specifically human errors which from government officials, police officers and motorists themselves. This study investigated how environmental factors, personal characteristics, ownership status and riding skills influence the rate of commercial motorcycles. This kind of study has never been carried out in Bungoma Sub County despite the increase accidents in the region (NTSA report January 2017).

CHAPTER THREE

RESEARCH METHODOLOGY

3.1. Introduction

This chapter presented research design, target population, sample size, and sample procedure, data collection instruments, piloting, instruments validity, reliability, data collection procedure, data collection techniques, and methods of data analysis.

3.2. Research Design

This study used a descriptive survey research design. Descriptive survey research design allowed researchers to gather information, summarize, present and interpret data for the purpose of clarification Orodho, (2003). The descriptive survey research was intended to produce statistical information about factors that influenced the rate of commercial motorcycle accidents in Bungoma south sub county.

3.3 Target population

Target population is the total number of elements that researcher specifies in his or her research as Mugenda and Mugenda (2003) puts it. The target population for this research was 1739 comprising of 1724 registered Bodaboda riders in Bungoma Township, Kanduyi, Bukembe, Nzoia, Mechimeru, and Mwibale and 15 traffic police officers.

Table 3.1. Summary of the target population

Respondents:	Bungoma	kanduyi	Bukembe	Nzoia	Mechimeru	Mwibale	population
Boda boda	622	280	210	270	180	162	1724
Police officers							15
Total							1739

3.4. Sample Size and Sample Selection

This section presented sample size and sampling procedure.

3.4.1. Sample Size

According to Mugenda and Mugenda (2003) a sample size is a subject of particular population selected for the purpose of study to make conclusion about the population. Krejcie and Morgan table, (1970) in appendix II was used to determine sample size which was 313.

3.4.2 Sampling procedures

Using proportional allocation, the sample size for each location was determined in proportion to the Bodaboda riders in the target population. Simple random sampling was used in selection of the required Bodaboda riders in each location according to the sample size determined in the table 3.1. Pieces of papers were assigned values, odd and even numbers, those with even numbers were selected. This procedure was repeated in order to get number of samples from each location as shown in the table 3.1. Five research assistants were used to get lists of Bodaboda riders in Kanduyi, Bukembe, Nzoia, Mechimeru, and Mwibale while researcher conducted this exercise in Bungoma Township. Purposive sampling was used to select 3 traffic police officers who were on duty in Bungoma traffic base.

Table 3.2 sample size for each location

Location	Operating enterprises in each location	Proportional allocation ni=(NixS)/N	Sample size in each location
Bungoma Township	622	(622x313)/1724	113
Kanduyi	280	(280x313)/1724	51
Bukembe	210	(210x313)/1724	38
Nzoia	270	(270x313)/1724	49
Mwibale	162	(162x313)/1724	29
Mechimeru	180	(180x313)/1724	33
TOTAL	**1724**	(1724x370)/1724	**313**

ni=Sample each location

Ni=strata size for each location

S=Sample of the target population

3.5 Research Instruments

This study used questionnaires in collecting data. A questionnaire is a research instrument that gathers data over a large sample Kombo & Tromp (2006). The questionnaires that were used in this research consisted of structured questions. Structured questions were easier to analyze, easier to administer because each item was followed by possible answers. They were also economical to use in terms of time and money. Matrix questions in Likert scale were used to determine levels of agreement or disagreement of items of analysis.

Interview schedules were used on Traffic police officers to provide sufficient information. This is a face to face encounter with the respondents, Mugenda andMugenda (2003). Interviews are advantages as it make possible to obtain data required to meet specific objective of study and provide in depth data which is not possible to get through questionnaires.

3.6 Piloting of instruments

A pilot study was conducted to standardize the instruments before the instruments were used for actual data collection. Pilot testing is the idea of pre testing the instruments by the researcher. The research instruments should be pre tested using between 1%-10% of the sample size, Mugenda and Mugenda (2003).The researcher used 10% which was 32. This was carried out in Webuye Sub County which was a different region from study areas.

3.6.1 Validity of Research Instruments.

The validity of a test is a measure of how well a test measures what it is supposed to measure Kombo (2006). Validity of an instrument was determined by the presence or absence of systematic error in data or non-random error which had a consistent boosting effect on the measuring instrument Mugenda and Mugenda, (2003). The validity of research instruments was established by research experts before data collection in the field and was done by my supervisor.

3.6.2 Reliability of research instruments

Reliability refers to the measure of degree to which a research instrument yields consistent results or data after repeated trials. It is influenced by random error so that when random error increases, reliability decreases. Random error is the deviation from a true measurement due to factors that have not effectively been addressed by the researcher, Mugenda and Mugenda (2003). In order to establish the reliability of the instrument the researcher conducted a pilot study. The test-retest method of assessing reliability was used which involved administering the same instrument twice to the same group of subjects after a carefully considered time lapse between first and second test. The second test was administered after two weeks. The researcher used Pearson product moment formula to calculate the coefficient of correlation. Coefficient of correlation of 0.8 was obtained which was high enough (Mugenda and Mugenda 2003).

3.7. Data Collection Procedures

Data collection began as soon as the proposal was approved by the supervisor and the defense panel. The researcher sought the permission from the relevant authorities including the national council of science and technology (NACOSTI) in order to be allowed to collect data. Once permit was obtained, field begun. Actual fieldwork begun after piloting activity was successfully carried out. The researcher made a trip to Webuye area to distribute questionnaires to respective respondents for piloting and later revisited the respondents for collection of the same at an agreed date. After successfully piloting, the researcher and research assistant distributed copies of the questionnaire to all selected participants (sample population) for study.

3.8. Data Analysis Methods

After collection of data, the response items from the questionnaires were coded and scored to yield qualitative responses to assist the researcher in generating answers to the research questions. The responses from the questionnaires were then analyzed, aggregated and frequencies worked out and thereafter, the information obtained was summarized. Data analysis was in quantitative. Quantitative data was analyzed using simple descriptive statistics like frequencies and percentages; SPSS was used in the analysis of data.

3.9. Ethical Consideration

The researcher endeavored to follow all the ethics of carrying out a research. The researcher ensured that an official consent was sought to be allowed to carry out a research. The researcher ensured that the purpose of the study was explained to the respondents. Further to this, the respondents were assured of confidentiality of all information they volunteer. In fact, this was done by the respondents not writing their names in the questionnaires as a first step to maintaining privacy of the participants. The respondents' rights was also explained to them and no one was forced to give information, indeed, the researcher sought to ensure the respondents voluntarily participated in the research and that anyone who wanted to withdraw had his or her decision respected. Integrity and honesty was also maintained. Before commencement of the research, the researcher trained the research assistants and briefed them on ethical issues and advised them to ensure they debriefed all participants well and avoid deceiving the subjects by deliberately misleading them on the research.

3.10 Operational definition of variables

There were two variables that were to be considered in the study, the independent and dependent variables. The independent variables in the study were: Environmental factors, personal characteristics, ownership status and riding skills. The dependent variable was the rate of commercial motorcycle accidents in terms number of times involved in accident number of

fatalities caused by individual motorists, number of injuries caused by individual motorists and the number of accidents caused by motorist

Table 3.3. Operational definition of variables

Objectives	Variables	Indicators	Measurement scale	Descriptive
The influence of environmental factors on accidents by commercial motorcycles	1.Independence V Environmental factors 2.Dependence V Rate of accidents by commercial motorcycles	-legal Factors -Corruption -Nature of roads	Nominal	Analysis -Frequencies -percentages
The influence of personal characteristics on accidents by commercial motorcycles	1 Independence V personal characteristics 2.Dependent V Rate of accidents by commercial motorcycles	-drug abuse -over speeding -overloading	Nominal	Descriptive Analysis -Frequencies -percentages
The influence of ownership status on accidents by commercial motorcycles	1 Independence V Ownership status 2.Dependence V Rate of accidents by commercial motorcycles	-ownership of motorbikes -company motorbike -ownership of resources	Nominal	Descriptive Analysis -Frequencies -percentages
The influence of riding skills on accidents by commercial motorcycles	1 Independence V Riding training skills 2.Dependent V Rate of accidents by commercial motorcycles	-Driving license -Experience -refresher courses	Nominal	Descriptive Analysis -Frequencies -percentages

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION OF THE FINDINGS

4.1 Introduction

The results of the data analysis are presented in this chapter. Data has been organized and presented as per the objectives of the study and demographic information captured at the beginning of the analysis. The study was guided by the following objectives: to investigate the extent to which environmental factors and ownership status influence commercial motorcycle accidents and how personal characteristics and riding skills influence commercial motorcycle accidents respectively.

4.2 Questionnaire Return Rate

Table 4.1 contains the rate at which the questionnaires were returned after dispatch to the sampled respondents.

Table 4.1: Questionnaire Return Rate

Questionnaire		**percentage**
Delivered	313	100
Returned	298	95
Missing	15	5

Out of 313(100%) questionnaires that were delivered to respondents 298 (95%) were returned dully filled while 15(5%) were not returned. These were considered adequate for this

analysis which according to Babbie (2002) states that any response of 50% and above is adequate for analysis

4.3 Demographic Information of Respondents

In this part, general information of respondents was analyzed by use of frequencies and percentages for age and area of business operation of respondents.

4.3.1 Present age of respondents

The study sought to know the age of respondents. This was important to determine the productive age of bodaboda riders. Table 4.2 summarizes the results.

Table 4.2 Present Ages of Respondents

Present Age	Frequency	percentage
15-20	70	23.5%
21-30	60	20.1 %
31-40	100	33.6%
41-50	36	12.1 %
Above 50	32	10.7%
Total	**298**	**100%**

Table 4.2 shows that, out of 298 (100%) respondents, those who were aged between (15 – 20) years were 70 (23.5%), between (21 – 30) years were 60 (20.1%), between (31 – 40) years were 100 (33.6%) between the ages of 41 – 50 were 36 (12.1%) and above 50 were 32 (10.7%). The study revealed that most of the riders who were involved in operating business were aged between (31 – 40) years old that comprised of 100 (33.6%), this shows that riders in these study region are in their active years of between 15-40 years.

4.3.2 Area of business operation

The study sought to know the area of operation of respondents. Table 4.3 summarized the area of operation of the respondents.

Table 4.3: Areas of business operation

Area of business	Frequency	percentage
Bungoma town	108	36.2%
Kanduyi	48	16.%
Bukembe	36	12.%
Nzoia	47	16%
Mwibale	28	9.4%
Mechimeru	31	10.4%
Total	**298**	**100%**

Table 4.3 shows that, out of 298 respondents, 108(36.2%) were in Bungoma town, 48 (16%) in kanduyi, 36(12%) in Bukembe, 47(16%) in Nzoia, 28(9.4) in Mwibale and 31(10.4%) in Mechimeru. This shows that Bungoma town has the highest number of boda boda riders than any other place in the study area.

4.4: Environmental Factors and Commercial Motorcycle Accidents

This section looked at the extent to which environmental factors influenced commercial motorcycle accidents.

4.4.1: Legal factors

The researcher sought to establish the opinion of the respondents on whether legal factors influenced motorcycle accidents. Respondents were asked about how much they agreed or disagreed with the statement that there were adequate traffic laws and rules in the sub-county to curb motorcycle accidents. Results are tabulated in table 4.4.

Table 4.4: Laws and Rules of Sub-County

	Frequency	**%**
Strongly disagree	145	49
Disagree	130	44
Neither agree nor disagree	12	4
Agree	6	2
Strongly agree	5	1
Total	**298**	**100**

Out of 298(100%) of the respondents, 145(49%) strongly disagreed that there was adequate traffic laws and rules in the sub-county to curb motorcycle accidents, 130(44%) disagreed, 12(4%) neither agreed nor disagreed, 6(2%) agreed and 5(1%) strongly agreed that there was adequate traffic laws and rules in the sub-county to curb motorcycle accidents

The above results show that majority of the respondents 145(49%) strongly disagreed that there was adequate traffic laws and rules in the sub-county to curb motorcycle accidents. This might be as a result of ignorance about the existing motorist traffic laws and rules of the county government by the respondents. This result agrees with the research carried out by Chitere (2006) who indicated that the main governance problem in the transport sector is that the policy and legal framework as well as the regulations have been unilaterally formulated and enforced by the government without consultations with key stakeholders hence legal framework hardly reduces road carnage.

4.4.2Corruption

The researcher sought to establish the opinion of the respondents on whether corruption influences motorcycle accidents. Respondents were asked about how much they agreed or disagreed with the statement that there is corruption among traffic police officers in the sub-county. Results are tabulated in table 4.5 below

Table 4.5: Opinion on corruption amongst traffic police officers

	Frequency	%
Strongly disagree	12	4
Disagree	5	2
Neither agree nor disagree	9	3
Agree	75	25
Strongly agree	196	66
Totals	**298**	**100**

Out of 298(100%) of the respondents, 12(4%) strongly disagreed that there is corruption among the traffic police in the sub-county, 5(2%) disagreed, 9(3%) neither agreed nor disagreed 75(25%) agreed and 196(66%) strongly agreed that there is corruption among the traffic police in the sub-county.

The results above show that majority 196(66%) strongly agreed that there is corruption among the traffic police in the sub-county. Corruption among the traffic officers can lead to high rates of accidents since defective motorcycles can be allowed to operate in public roads. This result agrees with (West, 1993) who said that graft and corruption by traffic police officers as one of the major causes of taxi motorcycle accidents in developing countries like Zambia, Nigeria, Uganda, Tanzania and Kenya.

4.4.3 Road condition

The researcher sought to establish the opinion of the respondents on whether road conditions influences motorcycle accidents. Respondents were asked about how much they agreed or disagreed with the statement that there is poor road condition in the sub-county. Results are tabulated in table 4.6**.**

Table 4.6 Road condition

	Frequency	**%**
Strongly disagree	21	7
Disagree	15	5
Neither agree nor disagree	9	3
Agree	124	42
Strongly agree	129	43
Totals	**298**	**100**

Out of 298(100%) of the respondents, 21(7%) strongly disagreed there is poor road condition in the sub-county, 15(5%) disagreed, 9(3%) neither agreed nor disagreed, 124(42%) agreed while 129(43%) strongly agreed that there is poor road condition in the sub-county.

The above results in table 4.6 shows that majority of the respondents 129(43%) strongly agreed that there is poor road condition in the sub-county. Poor roads conditions can increase accidents, lack of all-weather roads, tarmac roads with potholes and narrow roads can cause more accidents to the motorists. This result confirms the work of Ayodele, (2009) which said that severity of road traffic accident injuries in Africa is higher because of very bad road conditions that contribute to increased motorcycle injuries. Because of bad roads and negligence in repairing them, number of taxi motorcycle accidents continues to increase and this is blamed on the gaping potholes.

The views of police officers on legal factors were that two out of three indicated that laws and rules of the county influenced accidents and that riders should wear reflector jackets and helmet. On corruption two out three police officers agreed that corruption by traffic police officers influenced accidents by allowing un-roadworthy motorcycles to operate. On the nature of roads all the three police officers agreed that road condition influenced the rate of motorcycle accidents and that both national and county government must repair all the potholes.

4.5 Personal characteristic and motorcycle accidents

This section looked at the how personal characteristics factors influenced commercial motorcycles accidents.

4.5.1 Taking drugs

The researcher sought to establish the opinion of the respondents on whether Taking drugs influences motorcycle accidents. The researcher sought to establish the opinion of the respondents on whether the respondents use drugs or not. Results are tabulated in table 4.7.

Table 4.7 Drug abuse

	Frequency	%
Yes	234	78.5
No	64	21.5

Out of 298(100%) 234(78.5%) uses drugs while 64(21.5%) do not use drugs. This shows that majority of the respondents use drugs.

4.5.1.1. Types of drugs used

The researcher wanted to know from the respondents that take drugs, which kind of drugs they used. Results are tabulated in table 4.8 .

Table 4.8 Type of drugs

	Frequency	%
Alcohol	202	86
Bhang	7	3
Kuber	25	11
Total	**234**	**100**

Out of 234(participants) 202(86%) admitted to using alcohol, 7(3%) used bhang while 25(11%) used kuber.

4.5.1.2 How often drugs are used

The researcher wanted to know from the respondents that take drugs, how often they use the drugs. This was important in order to know the level of abuse. Results are tabulated in table 4.9.

Table 4.9How often do you use the drugs

	Frequency	%
At least once in a day	4	2
At least twice a day	12	5
At least Thrice a day	60	6
At least four times a day	34	15
At least five times a day	7	3
At least six times a day	100	43
Very many times	17	7
Total	**234**	**100**

Out of 234(100%) 4(2%) used drugs once a day, 12(5%) at least twice a day, 60(6%) at least thrice a day, 34(15%) at least four times a day, 7(3%) at least five times a day, 100(43%) at least six times a day and 17(7%) used drugs very many times.

The results in table 4.9 above show that 100(43%) of the respondents used drugs at six times a day while 4(2%) used drugs at least once a day. This result agrees with a report presented by MOT, (2006) which stated that motorcycle accidents are mainly caused by drunken driving.

4.5.2. Overloading.

The researcher sought to establish the opinion of the respondents on whether Overloading influences motorcycle accidents. The researcher wanted to know from all the respondents their opinion on whether or not they carried more than one passenger. Results are tabulated in table 4.10.

Table 4.10. Overloading.

	Frequency	%
Yes	278	93
No	20	7

Out of 298(100%) 278(93%) admitted of overloading occasionally while only 20(7%) said they do not overload. This shows that majority of the respondents overload. This result agrees with a report presented by MOT (2006) which states that motorcycle accidents are caused by overloading.

4.5.3. Over speeding

The researcher wanted to know from the entire respondent whether or not they engaged themselves in over speeding. The rating of the respondents is shown in table 4.11.

Table 4.11 over speeding influence and motorcycle accidents

	Frequency	**%**
Strongly disagree	9	3
Disagree	3	1
Neither agree nor disagree	25	8
Agree	27	9
Strongly agree	234	79
Total	**298**	**100**

Out of 298(100%) 9(3) strongly disagreed 3(1%) disagreed 25(8%) neither agree nor disagree 27(8%) agree and 234(79%) strongly agreed that they were over speeding .The results agree with a report presented by the MOT (2006) which stated that motorcycle accidents are caused by over speeding.

The views of police officers on alcohol and substance use are that two out of three agreed that taking drugs influenced motorcycle accidents. The government need to have breath test at strategic traffic police checks to test alcohol level of riders and charged them in court. On overloading all of them agreed while their opinion on over speeding is that two out of three admitted that indeed over speeding influenced accidents, in addition they recommended regular speed checks are done by traffic police officers to curb overloading.

4.6 Motorbike ownership and commercial motorcycle accidents

This section look at the how ownership factors influences commercial motorcycle accidents

4.6.1. Owning a personal motorbike

The researcher wanted to know from all the respondents whether or not they owned a personal motorcycle. Results are tabulated in table 4.12.

Table 4.12. Owning a motorbike

	Frequency	%
Yes	66	22
No	232	78
Total	298	100

Out of 298(100%) 66(22%) admitted of owning a motorbike while 232(78%) said they did not own a personal motorbike. This shows that majority of the respondents did not own a motorcycle. This implies that many boda boda in Bungoma south are likely to cause more accidents.

4.6.2: Company motorbike increases rate of motorcycle accident

The researcher wanted to know from all the respondents on their level of agreement whether they were registered as company owned motorcycles. Results are tabulated in table 4.13.

Table 4.13: Company motorcycle increases motorcycle accident

	Frequency	%
Strongly disagree	29	10
Disagree	18	6
Neither agree nor disagree	96	32
Agree	116	39
Strongly agree	39	13
Total	**298**	**100**

Out of 298(100%), 29(10%) strongly disagreed, 18(6%) disagreed, 96(32%) neither agreed nor disagreed, 116(39%) agreed while 18(6%) disagreed with it. This result agrees with Clerke et al, (2004) who stated that company motorbikes could reduce motorcycle accidents in Kenya.

4.6.3: Ownership of resources by motorists causes accidents.

The researcher wanted to know from all the respondents their opinion. Respondents were asked their level of agreement whether they owned enough resources. Results are tabulated in table 4.14.

Table 4.14: Ownership of resources by motorists cause accidents

	Frequency	**%**
Strongly disagree	161	54
Disagree	96	32
Neither agree nor disagree	14	5
Agree	12	4
Strongly agree	15	5
Totals	**298**	**100**

Out of 298(100%), 161(54%) strongly disagreed, 96(32%) disagreed, 12(4%) neither agreed nor disagreed, 14(5%) agreed and 15(5%) strongly agreed that they owned resources. This result agrees with the work of Griskevicius (2011) which stated that lack of ownership of resources

leads to increased accidents amongst motorist because most people from poor social economic background don't fear taking risk because they do not have much to lose and moreover have the desire to get out of their poverty.

The views of police officers on ownership status and motorcycle accidents are that all of them agreed that company motorbike reduces cases of accidents amongst boda boda operators which were attributed to good terms of service and following strict rules and regulations.

4.7 Riding skills and the rate of motorcycle accidents

This section looked at the how riding skills influences commercial motorcycle accidents

4.7.1: Lack of driving license

The researcher wanted to know from the respondents about level of agreement on whether they owned valid driving license. Results are tabulated in table 4.15.

Table 4.15: Lack of driving license

	Frequency	%
Strongly disagree	15	5
Disagree	3	1
Neither agree nor disagree	12	4
Agree	75	25
Strongly agree	193	65
Totals	**298**	**100**

Out of 298(100%), 15(5%) strongly disagreed, 3(1%) disagreed, 12(4%) neither agreed nor disagreed, 75(25%) agreed and 193(65%) strongly agreed that they lack valid driving license. The results in table 4.15 above show that majority of the respondents which was193(65%) strongly agreed that they lack valid driving license while minority of the respondents 3(1%) disagrees with it. This result agrees with the work of Griskevicius (2011).

4.7.2: Lack of experience

The researcher wanted to know from all the respondents of their opinion of whether or not lack of driving experience by motorists had an influence on motorcycle accidents. Respondents were asked about how much they agreed or disagreed with the statement that there was general lack of driving experience in the county. Results are tabulated in table 4.16

Table 4.16 Lack of experience

	Frequency	**%**
Strongly disagree	194	65
Disagree	9	3
Neither agree nor disagree	15	5
Agree	65	22
Strongly agree	15	5
Total	**298**	**100**

Out of 298(100%), 194(65%) strongly disagreed that there was general lack of driving experience in the sub-county, 9(3%) disagreed, 15(5%) neither agreed not disagreed, 65(22%)

agreed and 15(5%) strongly agreed that there was general lack of driving experience in the sub-county. This can be attributed to other factors like drugs use and un-roadworthy motorcycles

The results in table 4.16 above show that majority of the respondents which was194 (65%) strongly disagreed that there was general lack of driving experience in the sub-county. This result disagrees with the work of Odera, (2009) which stated that with little training, most riders flout the traffic rules thereby exposing themselves to danger, and inexperienced riding is thus not a major concern in causing many fatalities.

4.7.3: refresher course

The researcher wanted to know from all the respondents of their opinion of whether or not lack of refresher courses had an influence on motorcycle accidents. Respondents were asked about how much they agreed or disagreed with the statement that they lacked refresher courses. Results are tabulated in table 4.17.

Table 4.17: Refresher courses

	Frequency	%
Strongly disagree	21	7
Disagree	21	7
Neither agree nor disagree	57	19
Agree	135	45
Strongly agree	64	22
Totals	**298**	**100**

Out of 298(100%), 21(7%) strongly disagreed, 21(7%) disagreed, 57(19%) neither agreed nor disagreed, 135(45%) agreed and 64(22%) strongly agreed that they lacked of refresher courses.

The results in table 4.17 above show that majority of the respondents which was135(45%) agreed that they lacked refresher while minority of the respondents 21(7%) strongly disagreed and disagreed respectively. This results agrees with the work of Githinji, (2011) who explained

that some Kenyans exploit people willing to learn riding in informal training places where an average of Kshs.200 is used to offer one training for one hour which makes it difficult for motorist to re-train to do any other refresher courses.

The opinion of police officers on the driving license was all the three officers agreed that lack of it influenced accidents among riders. However one had to have a license with endorsed class 'F' and 'G'. The view on lack of experience by riders was two out of three police officers indicated that it influenced motorcycle accidents. The view on lack of refresher courses was that two out of three agreed that it influenced motorcycle accidents. They recommended training sessions organized by county government of Bungoma south sub county. This was hindered by low level of education among the riders.

4.8 Rate of motorcycle accidents

This section looked at commercial motorcycles accidents.

4.8.1: Number of accidents

The researcher wanted to know from all the respondents of the number of times they had involved in accidents for the past one year. Results are tabulated in table 4.18.

Table 4.18: Number of accidents in the past one year

	Frequency	%
None	20	7
1	30	10
2	21	7
3	110	37
4	52	17
5	58	20
Above 6	7	2
Total	**298**	**100**

Out of 298(100%), 20(7%) had not involved in any accident, 30(10%)had involved in one accident, 21(7%) had been involved in two accidents twice, 110(37%) had involved in accident thrice,52(17%) had involved in accident four times, 58(20%) had involved in accident five times and 7(2%) had involved in accident more than 6 times all in the past one year. This results shows that majority 110(37%) of the respondents have for the past one year been

involved three times in road accident while small number of the respondents which was 7(2%) had been involved in road accidents more than six times for the past one year.

4.8.2: Number of fatalities caused as a result of accident

The researcher wanted to know from all the respondents that had been involved in accident, about the number of fatalities caused. Results are tabulated in table 4.19

Table 4.19: No of fatalities

	Frequency	**%**
None	245	88
1	27	10
2	6	2
Total	**278**	**100**

Out of 278(100%) that had involved in accident, 245(88%) had not caused death due to the accident, 27(10%) had caused one death and 6(2%) had caused two deaths.

CHAPTER FIVE

SUMMARY OF THE FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This study sought to investigate how environmental factors, ownership status, personal characteristics and riding skills factors influence commercial motorbike accidents in Bungoma south sub county. This chapter covers summary of the findings, conclusions drawn from the study as well as recommendations based on the study findings and suggestions for further studies.

5.2. Summary of the study

The researcher sought to establish the opinion of the respondents on whether legal factors influenced motorcycle accidents. Respondents were asked about how much they agreed or disagreed with the statement that there were adequate traffic laws and rules in the sub-county to curb motorcycle accidents. The results showed that majority of the respondents 145(49%) strongly disagreed that there was adequate traffic laws and rules in the sub-county to curb motorcycle accidents.

The researcher sought to establish the opinion of the respondents on whether corruption influences motorcycle accidents. Respondents were asked about how much they agreed or disagreed with the statement that there is corruption among traffic police officers in the sub-county. The results show that majority 196(66%) strongly agreed that there is corruption among the traffic police in the sub-county.

The researcher sought to establish the opinion of the respondents on whether road conditions influences motorcycle accidents. Respondents were asked about how much they agreed or disagreed with the statement that there is poor road condition in the county. The results show that majority of the respondents 129(43%) strongly agreed that there is poor road condition in the sub-county.

The researcher sought to establish the opinion of the respondents on whether Taking drugs influences motorcycle accidents. The researcher sought to establish the opinion of the respondents on whether the respondents use drugs or not. The results show that majority of the respondents use drugs.

The researcher wanted to know from the respondents that take drugs, how often they use the drugs. This was important in order to know the level of abuse. The results show that 100(43%) of the respondents used drugs at six times a day while 4(2%) used drugs at least once a day.

The researcher sought to establish the opinion of the respondents on whether Overloading influences motorcycle accidents. The researcher wanted to know from all the respondents their opinion on whether or not they carried more than one passenger. Out of 298(100%) 278(93%) admitted of overloading occasionally while only 20(7%) said they do not overload.

The researcher wanted to know from the entire respondent whether or not they engaged themselves in over speeding. Out of 298(100%) 9(3) strongly disagreed 3(1%) disagreed 25(8%) neither agree nor disagree 27(8%) agree and 234(79%) strongly agreed that they were over speeding. The findings show that majority were over speeding

The researcher wanted to know from all the respondents whether or not they owned a personal motorcycle. This shows that majority of the respondents did not own a motorcycle. This implies that many boda boda in Bungoma south are likely to cause more accidents.

The researcher wanted to know from all the respondents on their level of agreement whether they were registered as company owned motorcycles. Out of 298(100%), 29(10%) strongly disagreed, 18(6%) disagreed, 96(32%) neither agreed nor disagreed, 116(39%) agreed while 18(6%) disagreed with it.

The researcher wanted to know from all the respondents their opinion. Respondents were asked their level of agreement whether they owned enough resources. Majority did not own resources. .

The researcher wanted to know from the respondents about level of agreement on whether they owned valid driving license. The results show that majority of the respondents which was193 (65%) strongly agreed that they lack valid driving license while minority of the respondents 3(1%) disagrees with it.

The researcher wanted to know from all the respondents of their opinion of whether or not lack of driving experience by motorists had an influence on motorcycle accidents. Respondents were asked about how much they agreed or disagreed with the statement that there was general lack of driving experience in the county. The results show that majority of the respondents which was194 (65%) strongly disagreed that there was general lack of driving experience in the sub-county.

The researcher wanted to know from all the respondents of their opinion of whether or not lack of refresher courses had an influence on the rate of motorcycle accidents. Respondents were

asked about how much they agreed or disagreed with the statement that they lacked refresher courses. The results show that majority of the respondents which was135(45%) agreed that they lacked refresher while minority of the respondents 21(7%) strongly disagreed and disagreed respectively.

The researcher wanted to know from all the respondents of the number of times they had involved in accidents for the past one year. This results shows that majority 110(37%) of the respondents have for the past one year been involved three times in road accident while small number of the respondents which was 7(2%) had been involved in road accidents more than six times for the past one year.

The researcher wanted to know from all the respondents that had been involved in accident, about the number of fatalities caused. Out of 278(100%) that had involved in accident, 245(88%) had not caused death due to the accident, 27(10%) had caused one death and 6(2%) had caused two deaths.

5.3. Conclusions

Based on the research findings and summary, the following conclusions were made on factors influencing motorcycle accidents in Bungoma south sub county:

On environmental factors and commercial motorcycle accidents, the major causes of motorcycle accidents are laws and rules, corruption among the traffic police and poor road condition,

On personal characteristics, the major causes of motorcycle accidents are Use drugs, overloading and over speeding

On Motorbike ownership and commercial motorcycle accidents the major causes of motorcycle accidents are lack of Ownership of personal motorbike, and resources.

On Riding skills and motorcycle accidents, the major causes of motorcycle accidents are Lack of driving license, and refresher course

5.4. Recommendations

As per the findings in this study there is need for a well thought out plan on motorcycle transport. On the factors influencing accidents among motorcycle operators, and for future interventions options, the researcher recommended the following:

1. County government should have enough laws and rules, and improve on poor road conditions.
2. Motorcyclist should avoid Use of drugs, overloading and over speeding
3. Motorcyclist should own motorcycles and join companies.
4. Motorcyclist should have valid driving license, and attend refresher course

5.5 Areas for further study

The study recommended that this research be carried out in other sub counties in Bungoma County. It also require further on factors influencing track drivers in the Northern bypass from Mombasa to Malaba.

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APPENDIX 1: LETTER OF INTRODUCTION TO THE RESPONDENTS/ LETTER OF TRANSMITTAL

SHADRACK MARITIM

P.O BOX 81

BUNGOMA.

Dear respondent,

REF: FILLING OF THE QUESTIONNAIRE

I am a postgraduate student at the University of Nairobi, school of continuing and distance education, currently undertaking a master degree in project planning and management. You have been identified as a respondent to this questionnaire. Please find the attached questionnaire which is designed to gather information on the FACTORS INFLUENCIG COMMERCIAL MOTORCYCLES ACCIDENT IN BUNGOMA SOUTH SUB COUNTY. All answers are confidential and will only be used for academic purposes.

This research will be carried out in partial fulfillment of the requirements for the award of the degree of Masters of Arts in Project Planning and Management in. I will be glad if you fill and return the completed questionnaire at a suitable time.

Thank you.

Yours faithfully,

L50/86744/2016

QUESTIONNAIRE:

SECTION 1: Contextual and Personal Data/Demographic Characteristic of the Respondents

1. Age in years;

i. 15-20……. [ ]

ii. 21-30…… [ ]

iii. 31-40….. [ ]

iv. 41-50…… [ ]

v.Above 50... [ ]

2. Area of residence;

i. Bungoma township…….. [ ]

ii. Kanduyi…….. [ ]

iii.Bukembe……. [ ]

iv. Nzoia…….. [ ]

v. Mechimeru……. [ ]

vi. Mwibale……[ ]

3.What is your level of education?

i. None ……. [ ]
ii. Primary…….. [ ]
iii. Secondary…….. [ ]
iv. Tertiary colleges…… [ ]

v. University……[]

SECTION 2: Environmental Factors and commercial motorcycle accidents

Using a scale of 1-5 Please choose the best option appropriate.

1 = Strongly Disagree, 2 = Disagree, 3 = neither Agree nor Disagree, 4 = Agree,

5 = Strongly Agree

To what extent has the following Environmental factors influence commercial motorcycle accidents in Bungoma south sub county?

Factors under consideration	1	2	3	4	5
Traffic laws and rules of the county on commercial motorists reduces accidents among motorists					
Corruption of traffic officers and county administrators causes more accidents among motorists					
Condition of the roads in Bungoma south causes more accidents among motorists					

In your own view, how does Environmental factors influence commercial motorcycle accidents in Bungoma south sub county?

SECTION 3: Personal Characteristics and commercial motorcycle accidents

Using a scale of 1-5 Please choose the best option appropriate.

1 = Strongly Disagree, 2 = Disagree, 3 = neither Agree nor Disagree, 4 = Agree,

5 = Strongly Agree

1. Do you take drugs?

a) Yes……. [ ]

b) No…… []

2. If yes, indicate the drug you take

a) Alcohol…… []

b) Bhang……. [ ]

c) Kuber……. [ ]

d) Other (specify)_____

To what extent has the following Personal Characteristics influence commercial motorcycle accidents in Bungoma south sub county?

Factors under consideration	1	2	3	4	5
Abuse of drug substances by motorists causes more accidents among motorists					
Overloading causes more accidents among motorists					
Over speeding by motorist causes more accidents					

In your own view, how does Personal Characteristics influence commercial motorcycle accidents in Bungoma south sub county?

SECTION 4: Ownership status and commercial motorcycle accidents

Using a scale of 1-5 Please choose the best option appropriate.

1 = Strongly Disagree, 2 = Disagree, 3 = neither Agree nor Disagree, 4 = Agree,

5 = Strongly Agree

1. Do you own the motorcycles?

a) Yes……. [ ]

b) No…… []

To what extent has the following Ownership status influence commercial motorcycle accidents in Bungoma south sub county?

Factors under consideration	1	2	3	4	5
Motorists with personal motorcycle causes more accidents					
Motorists with Non-personal motorcycle causes more accidents					
Motorist who belong to a company causes more accidents					
Poverty among motorist causes more accident					

In your own view, how does Ownership status influence commercial motorcycle accidents in Bungoma south sub county?

SECTION 5: Riding Skills and commercial motorcycle accidents

Using a scale of 1-5 Please choose the best option appropriate.
1 = Strongly Disagree, 2 = Disagree, 3 = neither Agree nor Disagree, 4 = Agree,
5 = Strongly Agree

To what extent has the following Riding Skills influence commercial motorcycle accidents in Bungoma south sub county?

Factors under consideration	1	2	3	4	5
Lack of a valid driving license causes more accidents					
Low experience causes more accidents					
High experience causes more accident					
Lack of refresher courses causes more accidents					

In your own view, how does Riding Skills influence commercial motorcycle accidents in Bungoma south sub county?

Interview guides

In your own view, how does Environmental factors influence commercial motorcycle accidents in Bungoma south sub county?

In your own view, how does Personal Characteristics influence commercial motorcycle accidents in Bungoma south sub county?

In your own view, how does Ownership status influence commercial motorcycle accidents in Bungoma south sub county?

In your own view, how does Riding Skills influence commercial motorcycle accidents in Bungoma south sub county?

APPENDIX II: KREJCIE AND MORGAN TABLE

DETERMINING SAMPLE SIZE FOR RESEARCH ACTIVITIES

N	S	N	S	N	S
10	10	220	140	1200	291
15	14	230	140	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354

95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	382	75000
210	136	1100	285	1000000	384