THE EFFECT OF RISK MANAGEMENT PRACTICE ON TRANSPORTATION SERVICE SAFETY, THE CASE OF JIMMA ZONE, SOUTH WESTERN ETHIOPIA

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A THESIS SUBMITTED TO THE SCHOOL OF GRADUATE STUDIES OF JIMMA UNIVERSITY IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF LOGISTICS AND TRANSPORT MANAGMENT (MLTMGT)

JIMMA UNIVERSITY MLTMGT PROGRAM

NOVEMBER,2018

JIMMA ETHIOPIA

DECLARATION

I hereby declare that this thesis entitled " The Effect of Risk Management Practice on Transportation Service Safety the Case of Jimma Zone South Western Ethiopia ", has been Carried out by me under the guidance and supervision of Wendwesen Siyum and Mr. Kedir Abrahim.

The thesis is original and has not been submitted for the award of degree of diploma any university or instructions.

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CERTIFICATE

This is to certify that the thesis entities "The Effect of Risk Management Practice on Transportation Service Safety, the Case of Jimma Zone South Western Etyhiopia " , Submitted to Jimma University for the award of the Degree of Master of Logistics and Transport Management (MLTMGT) and is a record of Valuable research work carried out by Mr. Nega Getachew, under our guidance and supervision .

Therefore we hereby declare that no part of this thesis has been submitted to any other university or institutions for the award of any degree of diploma.

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ACKNOWLEDGMENTS

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LIST OF ABBREVIATIONS

ISO -   International Organization for Standardization

WHO -   World health organization

NRSS -   National Road Safety Strategy

UN -   United Nation

JCSS -   Joint Committee of Structural Safety

ERM -   Enterprise risk management

COSO -   Committee of Sponsoring Organizations

USA -   United state of America

PPP -   people and public partnership

RMF -   Result measurement Framework

NAMS -   National Asset Management Steering

NZTA -   New Zealand Transport Agency

ANOVA -   Analysis Of Variance.

SPSS -   Statistical Package for Social Sciences

PDO -   Property damage only

OECD -   Organization for Economic Co-operation and Development

COSO -   Committee of Sponsoring Organizations

VIF -   variance inflation factors

ABSTRACT

This paper sought to assess the effect of risk management practice on transportation service safety of Jimma zone south western Ethiopia.The researcher used descriptive and explanatory research design. A stratified sampling technique was used to select employees from transport agency and police traffic and purposive sampling techniques was used to select key informants for interview. The total population of the study were 314. using Yemanes' sample size determination a sample of 176 respondents were selected. The main instrument for collecting primary data was questionnaire and interview. As secondary data source transportation risk statistics and yearly official reports were used. The data was analyzed using both descriptive and inferential statistical analysis, descriptive statistical like frequency, mean, standard deviation.Inferential analysis like correlation, regression and ANOVA was used to explain the relationship between independent variable and dependent variable. The findings of the study on the effect of transportation risk management practice in terms of establishing the context, risk identification, risk analysis, risk response /risk control/, monitoring and review were poorly practiced, which means the existing risk management practice were not meaningfully contributing to transportation service safety. The study point out transport agency and police traffic should give attention on the risk management practice through implementing the whole risk management process in order to maintain the risk management practice effective and contribute to the improvement of transportation service safety.

Key words: Risk,Transportation risk, Risk management practice, Safety

CHAPTER ONE

INTRODUCTION

1.1. Background of the Study

Mobility of people and goods from place to place using transportation is an inevitable part of everyday life. It has a negative impact on the environment in the form of pollution (air, water, and noise), accidents on humans and damage to properties stolen, to be delayed due to congestion, to get lost or damaged. Although the likelihood of anything bad happening pose an unpleasant consequence in terms of its costs, missed appointments, stress, etc while in motion or at rest. The same issues arise when companies put freight in a container, rail,car, or trailer. The freight can potentially be stolen, damaged, lost, or delayed while in motion or at rest in a port, trucking terminal, rail yard, or other intermediate facility. That is, freight is at risk of many disruptions from the time it leaves the origin location until it reaches its final destination. Because of all these risk impacts now a day attention is given to logistics in general and transportation in particular. In addition supply chain risks have expanded, resulting in a new set of uncertain and unfamiliar incidents that can create chaos and disruptions, posing a number of significant threats to human and business continuity Hesham,(2015).

Road traffic accidents are one of the most critical problems for human life. Despite widespread measures being used to control and minimize this problem, road traffic accidents are facing a growing trend, day by day. According to the World Health Organization (WHO) report on road safety for 2015, road traffic injuries cause more than 1.25 million deaths each year and have an enormous effect on human life and development. As (WHO 2004 & Nantulya, et,al)More specifically, these events are the major cause of death among young people aged between 15 and 29 years. The cost associated with deaths and injuries is approximately 3% of the GDP in low- and middle-income countries. In spite of this huge human and economic loss, actions to fight this global challenge are still insufficient(Kopits,et al 2003).

Addressing the preventable problem of inadequate road safety requires the dedicated action of multiple ministries, most notably law, planning, transport, education, public information, and

health. The range of measures to ensure road safety includes improving the built environment (e.g., safer road design, regulating sidewalks and traffic lights, introducing safe bicycle lanes), law enforcement and education to increase seat belt use and helmet wearing while reducing speeding and drink driving, better vehicle standards, and improved post-crash response. Road safety measures that provide safer, more sustainable public transport options are also particularly promising and can support synergies in transportation system.This alarming situation highlights the need for promoting risk prevention actions across nations WHO (2017)

The National Road Safety Strategy (NRSS) Of Australia review identified a number of specific issues for national attention such as improve the safety of heavy vehicle operations through stronger compliance measures, build community support for appropriate speed management measures, create low-speed environments in areas with high pedestrian and cyclist activity strengthen measures to reduce drink driving behavior, enhance the effectiveness of national police enforcement operations Council, (2014).

As fortune weekly report indicates road transport Accidents are one of the major cause of transportation risk around the world, which creates a large life and property loss. As the former transport minister Ethiopia (Workneh Gebeyehu,) illustrates Road safety is a serious problem all over the world. However, the severity of the problem is more pronounced in developing countries. A high number of vulnerable road users, poor vehicle condition, under-developed infrastructure, insufficient risk awareness, and ineffective enforcement jeopardized by weak institutional arrangements are among the major causes for accidents Solomon (2015).

The trends in road crash data reported to police in Ethiopia characterize the existing state of road safety. Six years (July 2005 - June 2011) of police reported crash data were analyzed, consisting of 14,542 fatal and 29,454 injury crashes on the country's road network. The 14,542 fatal crashes involved 1,070 drivers, 5,702 passengers, and 7,770 pedestrians, totaling 14,542 fatalities, an average of 1.2 road user fatalities per crash. All these problems were the problems that arrived from low level of transportation service safety. The focus of this study is to investigate on the effect of risk management practice of regulatory body on transportation service safety improvement thought its risk management process Getu, et al.2013.

The Road Traffic Safety Management System is an international standard designed to help vehicle fleet operators and others such as national governments adopt a structured and holistic

approach to managing the risk of death and serious injury from road traffic.It specifies requirements to enable an organization, that interacts with the road traffic system, to reduce death and serious injuries related to road traffic crashes which it can influence. A list of road traffic safety factors, which every one must analyze in order to assess risks, before coming up with targets and deciding on action plans. These factors include the areas of safe: roads, road users, safe drivers and emergency planning ISO39001:2012.

According to Regda (2004), risk management program involves preparation of a risk management policy statement, close cooperation with other individuals and departments, and periodic review of the entire risk management program that follows risk identification, risk assessment and analyzing, risk control, implementation and evaluation of risk. Similarly risk management is the process of establishing the context, identifying risk, analyzing, response/controlling, monitoring and review of risk. The prime objective of this study is to analyze the applicability of the whole risk management process in transportation service to improve the safety of the system ISO 31000:2018

As a number of evidences reported in Africa continent, transportation risk especially in Ethiopia is very Sever and it affects country or nation growth and living significantly. So, conducting research on the effect of existing transportation risk management practice on the safety of transportation service is essential. It is use full and timely to know the way existing risk management practice contribute to the improvement of transportation service safety in the study area. But, the absence of research on the area, i.e. jimma zone has remained to be a serious problem for such strategy making and action taking efforts of transport risk reduction. This research is therefore aimed to assess the effect of risk management practice on transportation service safety of Jimma zone.

1.2. Statement of the problem

Transportation risk management practices have been vital in allowing the phenomenal growth in transportation service safety. Currently, the level of transportation risk becomes the major problem in many areas and the society is facing a day to day life challenges. One of the major challenges the people are facing every day is road transport accidents that include Public transport accident, motor bike accident, freight accident which affecting the people physically, socially, economically and morally in terms of death, injury, property damage, sad, fear, etc. All those day to day challenges in Jimma zone indicates that the available transportation service is

not safe. Indeed, Jimma zone is rich in natural, human resources and cash crops, and the economic growth in the area creates demand of having different types of motorized means of transportation(i.e. Bajaj, minibus, ISUZU, FSR , SINO TRUCK etc) so ,it is always questioned that what had gone wrong for not properly using those resources with effective and efficient utilization to ease the burden of transportation risk that the people are facing through improvement in transportation service safety.

The fortune weekly report shows Ethiopia is a country that losses about 500 million Birr and 3000 lives each year from road accidents. The loss from road transport accident in Ethiopia is recently the first in Africa continent, in Ethiopia, there are 64 deaths per 10,000 vehicles; this is a record in Africa. According to Kapila International road federation chair reporters, particularly illustrated that road safety is challenging in Africa due to poor road infrastructure system, poor vehicle condition, and poor driving condition ie.driving after taking drug or alcohol, driving above the limited speed are some of the main causes. The UN Decade of Action Plan was proclaimed in March 2010 towards achieving a goal of reducing global road fatalities by 50 percent by 2020.To achieve this goal African officials and representatives of stakeholders together, expected to be a platform that African countries share experiences and deliberate on ways of designing short and long-term solution towards tackling the problem. The conference was also deliberate on the 5Es including, Educating people; Engineering, in connection with roads; Emergency, regarding giving appropriate medical care to victims of traffic accident; Enforcement, with laws; Encouraging the best performers Solomo (2015).

Moreover ,the analysis of strategic risk management within the municipal and public sector has identified some unanswered questions that may also prove to be areas for future research: How does a public sector organization measure its risk culture and the effectiveness of its processes? Both risk management practitioners and senior management are cautioned to give greater consideration to the overall impact that organizational risk culture has on the successful practices and processes in order to contribute to transportation service safety cooper (2010).

The above findings report mainly focused on yearly loss associated to transportation risk, risk factors and the safety level in developing countries, I have used maximum effort to search previous studies on the issue under study, as per my effort I have seen very little research has been conducted in risk management practice in Ethiopia in general, and particularly non on this topic in Jimma Zone. Thus gaps exists with respect to the effect of transportation risk

management practice on transportation service safety. Therefore the intent of this study is consider to fill this gap. The focus of the study is mainly to investigate the effect of the risk management practice on transportation service safety and how the regulatory bodies are managing risks in everyday situations. Because regulators are responsible to solve the problem facing the society through different regulatory measures.The theory of the risk management process was compared to the actual practice in order to investigate similarities and differences. As it can be seen from the above plenty of reports, standards and study findings, they have reached on various results concerning to the issue of risk management and safety. Since the concept of transport risk management and safety is dynamic and broad in its nature, the previous research findings of other countries and regions may not represent Jimma Zone.Thus, conducting study on the effect of risk management practice on transportation service safety of Jimma zone is significant and timely to improve transportation service safety. In addition to this, the study supports to achieve the goal reducing the fatality of road transport by 50% in 2020 UN Decade of Action Plan (2010). In view of the above research problem ,the specific questions that are to be addressed in this study are:

Q1.What is the effect of establishing the risk context on transportation service safety?

Q2.What is the effect of risk identification practice on transportation service safety?

Q3.What is the effect of risk analyzing practice on transportation service safety?

Q4.What is the effect of risk response techniques practice on transportation service safety?

Q5.What is the effect of monitoring and review practice on transportation service safety?

Q6.What are the major transportation risks occurred during the last five years in Jimma zone?

1.3 Research objectives

1.3.1 General Objectives

General objective: To investigate the effect of risk management practice on transportation service safety in Jimma zone, south western Ethiopia.

1.3.2 Specific objectives:

The specific objectives of the study include:

1. To identify the effect of establishing risk context on transportation service safety in the study area.

2. To examine the effect of risk identifying practice on transportation service safety in the study area.

3. To identify the effect of risk analyzing practice on transportation service safety in the study area.

4. To examine the effect of risk response techniques practice on transportation service safety in the study area.

5. To identify the effect of risk monitoring and review practice on transportation service safety in the study area.

6. To review the major transportation risk occurred during the last five years in Jimma zone.

1.4. Significance of the Study

This study was believed to help for the clear understanding of the effect of risk management practice on transportation service safety in jimma zone. The results of the study are vital to a various groups. Among them mainly it benefit for policy makers or jimma zone transport office. For the transport office, it is significantly important for creating controlled transportation risk environment, providing the appropriate transport risk management strategies, to promote transport service investment in the zone. In addition, it provides relevant information to make decisions with regard to the strength and improvement areas of the existing practices or system in satisfying its beneficiaries through safe transportation and achieving its objectives.

The study also benefit for owners and transportation risk analysts. For owners and transportation risk analyst the findings provide an insight of understanding the actions of governments and give proper interpretations to policy directions. In addition, it helps them to identify proper transportation risk management opportunities to save their property and for the transportation risk analyst it gives information related to the effect of transportation risk management practice on transportation service safety in the area in order to make analysis on the area if needed.

The findings of the study initiate and can be used as a platform by any concerned parties in the transportation risk management who may want to carry out further and in-depth research on the transportation risk management and other related issues of transportation, since there is no research on the subject matter within the zone context. The study therefore add to the existing knowledge in the subject area and provide scientific findings on the subject of transportation risk management in the area. It is meant to benefit especially those who conduct their research studies in the same area.

The study also improve on existing literature and provide a different perspective to academicians based on the effect of different scientific technique of analyzing transportation risk management practice on transportation service safety. For those who want to develop new transportation risk management model, the study serve as the existing practice in the area. For any interested readers of this paper, it gives them a clear understanding of the effect of risk management practice on transportation service safety. It also benefit the researcher by having master's degree in Logistics and transport management after completing this research project.

1.5 Scope of the study

Transportation risk management is the continuous process that implemented in day to day flows of transport service. Due to the nature of transportation complexity, resource, data manageability, this study intend to look only into the regulatory bodies in Jimma Zone. It was conducted by taking samples from transport office employee and traffic polices working at zonal and wereda level. Because of jimma town is the seat of jimma zone the town also included in to this study, So Jimma town transport office employee and traffic polices were part of the population. Similarly, due to the previously mentioned constraints the study is delimited to specified area only.Though the study was focused on a variables that affect the transportation risk management processes. It was focused only on establishing the risk management context, the risk identification, risk analyzing, risk response/control, monitoring and review.Therefore the finding's and applications to those findings are limited to Jimma zone, Ethiopia.

The five years transportation accident from (2005 – 2009) data in Jimma zone transport office and police traffic department was summarized.For this study the target population,(i.e. 260,Transport office employees and 54 police traffic total of 314 in jimma zone and jimma town

were the focus of the study. Most of the time different studies were focused on risk factors and drivers behavior,infrastructural problems, etc. The regulators effort and the effect of risk management practice in solving this problems was not get attention so, focusing on regulators risk management practice especially the risk management process is essential.On the other hand summarizing the five years lost life and property of the area can simply used to show how mach this problem was affecting the society from year to year. Therefore it is believed that focusing on the above mentioned scopes were significantly contribute to minimize the transportation risk and safety problems existing in the study area.

1.6. Limitation of the study

The purpose of this study is to examine the effect of risk management practice on transportation service safety in Jimma zone transport agency and traffic police, which is wide in concepts and need depth study. Risk management and transportation safety are an interrelated concept recently received an attention from all corner.There are many concerned parties in managing transportation risk such as regulators, private organizations on transportation, drivers and pedestrians etc to mange transportation risk and improve the safety level of the service.The study covers only few among several concerned parties in case of transportation.

1.7. Structure of the Thesis

There are five chapters in this thesis. The first chapter is dealing with introduction, background of the study, statements of problem, objective of the study, significance and scope of the study. The second chapter presents the theoretical and empirical literature reviewed related to risk management practice and transportation service safety, and the conceptual framework. Chapter three contains the methodological aspect of the study which includes: research design, sample design, source and type of data**,** sampling design **(**target population**,** sample size and sampling technique**),** data collection instruments and its administration**,** data processing and analysis, Variable description, coding and modeling, and ethical consideration. Chapter four brings the data analysis, results and discussions of the findings and the last chapter, chapter five, deals with the summary, conclusion and recommendations parts of the study under taken.

CHAPTER TWO

2.Review of Literature

2.1 Theoretical review

2.1.1.Definitions

Risk: The term risk is multi-disciplinery word and its definition depends on scope of activity performed. The risk is generally seen as a composition of a hazard, which could occur at a given frequency and cause a given severity of the consequences of the occurrence. According to the Oxford Dictionary, a noun risk is "a situation involving exposure to danger."or 'The possibility that something unpleasant or unwelcome will happen and also ,the possibility of loss. According to ISO 31000 (2009) a risk is "an effect of uncertainty on objectives", again as defined in ISO Guide 73:2009   risk is the frequency of occurrence of accidents and incidents resulting in harm (caused by a hazard) and the degree of severity of that harm.

As European railway the scope of road safety (2013) the concept of risk is described as a tool to quantify the level of road safety relative to the amount of exposure, as opposed to the absolute level of safety as measured by the absolute number of accidents or casualties.

Hazard: something that poses a threat to life, health, and property, the environment or hazard refers to set of factors or conditions that aggravates or facilitates either the chance or size of loss or an accident.

2.1.2. Transportation risk concepts and terms

The concept of risk in transportation is an everyday part of life. Whenever we get behind the wheel of our cars, the potential exists for us to be involved in an accident, to be delayed due to congestion, or to get lost. Although the likelihood of anything bad happening may remote, each of these risks poses an unpleasant consequence for us costs, missed appointments, stress,injury,death and so on.

The same issues arise when companies put freight in a container, rail, car, or trailer. The freight can potentially be stolen, damaged, lost, or delayed while in motion or at rest in a port, trucking

terminal, rail yard, or other intermediate facility. That is, freight is at risk of many disruptions from the time it leaves the origin location until it reaches its final destination.

2.1.3 Risk Management

Risk management is the systematic approach of management policies,procedure and practices to the tasks of identifying , analyzing,evaluating and controlling risk.

According to *Rejda*,(2004) risk management practice is described by the risk management processes(i.e. risk identification, risk assessment, risk analysis and risk treatment.) These basic processes are used in any types of risk management frameworks. Similarly a risk practitioners guide to ISO 31000:2018 defines risk management is the process of establishing the context, identifying risk, analyzing, response/controlling, monitoring and review of risk.

2.1.3.1 Establishing the context:

Establishing the context is the first step in risk management processes. It is the first process that the regulatory or management body establish the context of risk management in a given organization or public sector. The managers can clearly develop what risk means as their context, purpose and scope of risk management activities, the aim and objectives of risk management,the internal and external structure of risk management structures,evaluation criteria and acceptable level of risk,the possible strategies and process with the required resources of human, capital and instruments. According to (Rejda,2004 & ISO 31000:18) this step is very essential to the over all success of risk management process.

2.1.3.2 Risk identification

The identification of potential risks is a key activity in supply chain particularly in transportation risk management. One way to identify risks is to ask people who have intimate knowledge of the organization and its supply chain, including the operations and the environment within which they operate. The existing risks in transportation are identified with tools such as risk checklists, brainstorming, interview, accident investigation, preliminary hazard analysis ,failure mode and effect analysis etc for the further analysis activity. (Waters, 2007)

2.1.3.3.Risk analysis

The aim of risk analysis is to prioritize the identified risks, based on their significance. Having identified the most significant risks, managers should pay sufficient attention in order to control these in the step that follows. According to (Waters ,2007, and ISO 31000:2018) there are different techniques to risk analysis. The commonly used techniques useful to gain better understanding of risks,qualitative and quantitative approaches, their effects and their consequences. Potential consequences changes to operations, Likelihood,the scope and areas affected, severity, Current management of risks and their efficacy.

2.1.3.4. Risk response/ Controlling/

According to a risk practitioners guide ISO 31000:2018   Four major responses are suggested for controlling risks.These responses are linked to sustainability-related risks Avoidance, Reduction, Transfer, and Retention. In this step, prevention plans and countermeasures are developed to lower the probability and/or consequences of the highly ranked risk events. The categorization of risks based on their nature will help devise proper mitigation strategies, leading to realistic expectations of what such strategies can really achieve. That a balance between benefits, risks, and resources must be achieved (Mollah et al 2013).

2.1.3.5 . Monitoring and review of risk

This is an essential step in risk management process where risks are properly monitored and the effectiveness of risk treatment plan is reviewed. Risks are needed to be monitored to ensure changing circumstances do not alter the risk priorities. Very few risks will remain static, therefore the risk management process needs to be regularly repeated, so that new risks are captured in the process and effectively managed (ISO 31000:2018 & Standards Australia, 2004). In order to apply risk management effectively, it is vital that a risk management culture be developed. The risk management culture supports the overall vision, mission and objectives of an organization. Limits and boundaries are established and communicated concerning what are acceptable risk practices and outcomes. Since risk management is directed at uncertainty related to future events and outcomes, it is implied that all planning exercises encompass some form of risk management. There is also a clear implication that risk management is everyone's dealing, since people at all levels can provide some close into the nature, likelihood and impacts of risk.

Risk management is about making decisions that contribute to the achievement of an organization's objectives by applying it both at the individual activity level and in functional areas. It assists with decisions such as the settlement of science-based evidence and other factors; costs with benefits and expectations in investing limited public resources; and the governance and control structures needed to support due diligence, responsible risk-taking, innovation and accountability. A typical decision support for risk and safety management at strategic, normative and operational level is provided JCSS ,(2008).

2.1.4. Safety and ,risk in road transport.

Transportation safety on road transport also named as traffic safety according to Arche, J.(2004) the term traffic safety is "Term that is related to the negative performance of the traffic system to generate traffic accidents that involve injury or fatality. At the individual level, traffic safety is related to the absence of danger and experience of security". The same author gives a definition of the concept "traffic system": "Systems theory view used to describe the processes of the traffic system as dynamic and complex interactions between and among elements at various levels. The three main elements usually identified in transportation safety are: the roadway infrastructure, the road-user, and the vehicle.

Transportation service safety and risk are two interrelated terms that define each other in many ways.In this concept, while calculating risk in the traffic safety field, the lowest level of risk has been considered as the frontier of safety. Road safety analysis is related to the survival of humans on roads and, during road safety risk evaluation, 'risk' is associated with a number of fatalities and known as a road safety outcome. In the field of road safety, the risk is defined as 'the road safety outcome to the amount of exposure.

Risk =Road Safety Outcome / Exposure

It is necessary to evaluate the risk and its relationship with the road safety performance indicators.The concept of Safety Performance Indicators was developed by the European Transport Safety Council(2001). Thus, road safety indicators can be defined as measures that are causally related to accidents or injuries and are used in addition to the figures about accidents or

injuries, in order to indicate safety performance or understand the processes that lead to accidents (Gitelman V. et. al, 2010).

According to (Joewono.et.al,2006) public transportation provides a mobility service to the user, as well as producing a wide impact on the system.The European Commission as cited in the Transportation Research Board 8, consists of several classes, in which safety and security have been included. In that hierarchy of quality determinants, security is defined as the actual degree of safety from crime or accidents and the feeling of security resulting from that and other psychological factors. The security class consists of three aspects, namely Safety from crime, safety from accidents and perception of security. Safety from accidents (Presence/visibility of supports; avoidance/visibility of hazards; active safeguarding by staff) .

In addition to this Safety and security measures evaluate the likelihood that passengers will be involved in an accident, be it vehicular or otherwise (safety) or become the victim of a crime (security).The key components of the Safe System are the areas where safety countermeasures can be developed and implemented to significantly reduce risk. System thinking focuses attention on how these elements interact to produce a total level of risk, and what complementary actions could be taken to lower the resulting overall road trauma outcome. The prime task for transport designers, regulators and policy-makers is to minimize the total risk in the system by determining the relevant risk factors in a given situation, determining which factors can be effectively manipulated and determining which countermeasures will produce the desired outcomes.The driver of public transportation should possess a higher degree of skill and knowledge regarding safety and security. Another aspect is that the improvement in public transportation safety involves different parties, such as operators, owners, users, drivers, or local governments, not only the Police or Department of Transportation. Improvement in safety and security is not a single approach but involves commitment from all parties responsible.

Moreover, public transportation requires an action plan regarding safety and security, specifically in the standardization of design and equipment, operation, and risk management. The understanding and awareness of both users and drivers of road safety and security is the most important variable in improving safety and security, which can be reached by training and education. In the case of road-based public transportation, where there is no fixed place to access and emergence, the role of user and driver is really significant for the safety aspects.

2.1.5. Enterprise Risk Management Theory

An Enterprise risk management theory designed to manage all of the existing risks in holistic approach. This approach is said to be Enterprise risk management (ERM). According to Tseng (2007), Enterprise Risk Management (ERM) is a framework that focuses on adopting a systematic and consistent approach to managing all of the risks confronting an organization. Gordon et al.(2009) on the other hand defines ERM as the overall process of managing an organization's exposure to uncertainty with particular emphasis on identifying and managing the events that could potentially prevent the organization from achieving its objective. ERM is an organizational concept that applies to all levels of the organization. According to Committee of Sponsoring Organizations COSO(2004), Enterprise risk management is a process, effected by an entity's board of directors, management and other personnel, applied in strategy setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risk to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives.

2.1.5.1.Components of Enterprise Risk Management

Enterprise risk management consists of eight interrelated components. These components are:

Internal Environment: The internal environment encompasses the tone of an organization, and sets the basis for how risk is viewed and addressed by an entity's people, including risk management philosophy and risk appetite, integrity and ethical values, and the environment in which they operate.

Objective Setting: Objectives must exist before management can identify potential events affecting their achievement. Enterprise risk management ensures that management has in place a process to set objectives and that the chosen objectives support and align with the entity's mission and are consistent with its risk appetite.

Event Identification: Internal and external events affecting achievement of an entity's objectives must be identified, distinguishing between risks and opportunities. Opportunities are channeled back to management's strategy or objective-setting processes.

Risk Assessment: Risks are analyzed, considering likelihood and impact, as a basis for] determining how they should be managed. Risks are assessed on an inherent and a residual basis.

Risk Response: Management selects risk responses avoiding, accepting, reducing, or sharing risk – developing a set of actions to align risks with the entity's risk tolerances and risk appetite.

Control Activities: Policies and procedures are established and implemented to help ensure the risk responses are effectively carried out.

Information and Communication: Relevant information is identified, captured, and communicated in a form and time frame that enable people to carry out their responsibilities. Effective communication also occurs in a broader sense, flowing down, across, and up the entity.

Monitoring : The entirety of enterprise risk management is monitored and modifications made as necessary.

2.1.6. Real option and Integrated Risk Management theory.

The current in use environment is demanding a more integrated risk management approach (Bolvin et al.2007 and Treasury Board of Canada 2001). It is no longer sufficient to manage risk at the individual activity level or in functional silos. Organizations around the world are benefiting from a more comprehensive approach to dealing with all their risks. Today, organizations are faced with many different types of risk (e.g policy, program, operational, project, financial, human resources, technological, health, safety, political). Risks that present themselves on a number of fronts as well as high level, high -impact risks demand a coordinated, systematic corporate response. Thus, integrated risk management is defined as a continuous, proactive and systematic process to understand, manage and communicate risk from an organization-wide perspective. It is about making strategic decisions that contribute to the achievement of an organization's overall corporate objectives Basel Committee on Banking Supervision(2003).

2.1.6.1 An Integrated Method For Risk Management In Transport.
As (Miller &Waller 2003) the main purpose of integrating management systems is to minimize the number of risks and their consequences and to take advantage of the capacities and

opportunities offered by integrated methods of risk management. Miss of system integration produces risks which are the result of different management structures, different management methods, poor flow of information between sub-systems, organizations and staff and inconsistent databases.

One of the components of organizational management systems (at different levels of their decomposition) is the organization's safety management system. A safety management system is part of organizational management systems and includes the improvisational structure, planning, accountability, procedures, processes and resources for the development, implementation, delivery, monitoring and maintenance of the organization's safety policy and its objectives.

The basic tool for delivering a safety policy and its objectives is risk management. Organizations can manage their risks in different problem areas, the right place for formulating the need for risk management integration.

2.1.6.2. General principle of integrated method for risk management in transport.

According to the principle of the integrated method of risk management the purpose of risk management is to continue to improve areas of human activity from the perspective of the risk in these areas. The classic concept of risk management methods assumes that they bring together two phases risk assessment phase, risk response phase. For those areas of human activity that involve transport processes, the natural move is to adopt general principles of the integrated method for risk management based on the classic approach. According to classic concept of integrated risk management theory: Risk assessment phase includes two components: risk analysis and risk evaluation and the risk response phase takes account of risk treatment, risk monitoring and risk communications. This theory categorized five to eight steps defined by other theories and literature in to two phases by including all the steps.

2.1.7 Transportation Risk Management: A New Paradigm

A new paradigm in transportation risk management was introduced on the annual meeting of the Transportation Research Board and for publication in Transportation Research Record (Abkowitz et al.2003) it is apparent that decision-makers need to employ a new paradigm for transportation risk management. In particular, this paradigm focused on 1) more explicitly

consider safety threat and vulnerability, and 2) integrate safety considerations into the overall framework for addressing natural and man-made risks, be accidental or planned. The transportation safety and traditional risk management share a common objective: To reduce the likelihood and consequences of risk so as to protect human, property,quality of life and the environment.

A new transportation risk management paradigm is needed to accommodate considerations associated with assessing and communicating the risks. Because of the added complexities associated with managing terrorist security risks, institutional coordination and decision-support becomes even more critical. As transportation risk managers expected to handle a variety of responsibilities, the availability and use of enabling tools will be essential. These tools include knowledge and awareness building, process development, intelligence gathering, emergency response planning, information management and good risk management practice. Information technology will play an important role in this regard, provided that technology is utilized to develop practical, easy-to-use tools that enable transportation risk managers to perform their duties with a high degree of confidence. The significance of integrating security risk with other transportation risks should not be underestimated. As opposed to these risks being managed in separate tower, if they are evaluated, controlled and monitored as a single, integrated function, better overall risk management strategies will emerge and the likelihood of producing undesirable risk management results can be avoided. The net result is the best protection we can provide society with the means that are transportation service safety available.

2.1.7.1. Institutional Coordination and Decision-Support

To make risk management practice has to be successful in maintaining transportation service safety within the transportation industry, there are a variety of influential parties who, in effect, operate as risk managers. In the public sector, this can include a multitude of federal, state and local agencies, federal government department of transportation, environmental protection agency, federal emergency management agency, department of defense, department of energy ,department of justice, state agencies emergency management, transportation environmental management, law enforcement, public safety health departments ,local government emergency operations centers, local emergency planning commissions, port, bridge and tunnel authorities, fire departments, local police, city planners because there are multiple

stakeholders involved, it has always been important to understand the circumstances under which each party has powerful, the need for mutual agreements and the upward compatibility (local to state to federal) of emergency preparedness. According to the new paradigm transportation risk management the coordination of all stakeholders has its own positive and negative impact depends on the coordination performance.

The above theories shows that to make transportation service safe to the community a risk management practice has to be practiced in order to maintain the safety and security of transportation service. As mentioned in the theories the application of risk management processes, the coordination of different stakeholders at different level, the continuous review and improvement has to be needed. So studying the applicability of those risk management activities in the study area was compered to these theories.

2.2 Empirical literature review

As reported by (Daniel et al.2012) international Practices for Program Development and Project Delivery, the risk management scan team included Federal, State, and private sector members with well over100 years of combined experience in the operation, design, and construction of U.S. transportation Systems. Through this focused research study, the team has gained a fresh perspective on how the U.S. transportation industry can use risk management practices to better meet its strategic objectives, improve performance level of safety, and manage assets. The scan team recommendations offer a path forward for the transportation community help develop a culture of risk awareness and management in the United States. Develop executive support for risk management, Define risk management leadership and organizational responsibilities, Formalize enterprise risk management approaches using a holistic approach to support decision making and improve successful achievement of strategic goals and objectives, Use risk management to reexamine existing policies, processes, and standards, Embed risk management in existing business processes so that when asset, performance, and risk management are combined, successful decision making ensues, Identify risk owners and manage risks at the appropriate level, Use the risk management process to support risk allocation in agency, program, and project delivery decisions, Use risk management to make the business case for transportation and build trust with transportation stakeholders, Employ sophisticated risk analysis tools, but communicate results in a simple fashion.

More over the risk management scan findings confirm that an efficient and effective enterprise risk management practice is a powerful tool for the international transportation agencies the team visited. The demonstrated benefits for the agencies are both quantitative, such as better controls over costs and delivery schedules, and qualitative, safety in transportation such as less likelihood of negative events to public issues. The scan findings confirm the need for additional implementation activities that fall into the categories of research, training, governance, and communication and for knowledge transfer.

(Carbonara et al.2015) con reveals that risks has to be analyzed and managed on a context-specific approach, and that there is a lack of a comprehensive study on the appropriate risk mitigation strategies for each risk embedded in Public-private partnerships (PPP) projects. According to the finding focusing on the transport sector, provides guidelines for both public and private parties in defining a list of significant risks in PPP motorway projects, and identifying for them both the effective allocation and the suitable mitigation strategies can improve transportation safety. The research findings support both the public and private sectors in understanding the key risks, establishing an effective risk allocation and adopting the most effective mitigation strategies.

(Hill et al.2010) The research, which was carried out in New Zealand in 2008, aimed to establish the best-practice requirements for an integrated risk management framework for local councils that was specifically designed for application in the area of transportation. In addition to establishing a risk framework, the supporting objectives to the research were to identify and apply risk management procedures and risk profiling as factors in optimizing 'hard asset' solutions and/or 'non asset' solutions in decision making, to check the data management issues associated with good risk management practices.The case study of nine councils clearly demonstrated that transport risk management processes and practices were not well implemented by local authorities in New Zealand. The majority of councils understood the theory of risk management, but there was little evidence that risk management strategies were being implemented. The consequences of asset failure can range from financial through to loss of life. It was clear that asset managers needed to demonstrate that they were minimizing the likelihood of risks occurring by keeping the risk register up to date and implementing actions to reduce risk. The biggest difficulties with the implementation and maintenance of RMF were starting off establishing the framework, register and identifying risks, lack of record of current

practices that contributed to risk reduction, or evaluation of their effectiveness, accurately summing up of the results of the risk management process. The key recommendation from this study is that a standard risk register be provided to all councils through an update of the NAMS manuals and/or an NZTA guideline. In order to cope with transportation service safety, and to achieve corporate goals, it is necessary to implement risk management processes. Due to several corporate crises and insolvencies, specific pronouncement as well as regulatory requirements exist in numerous countries relating to the analysis, communication and monitoring of risks.

(Christian et al.2003; Peker *et al.* 2014). The typical risk management practice is based on the common management process (Terry 1972; Peker *et al.* 2014) and encompasses the following steps: risk identification, analysis, handling and control. The risk identification step is often considered as most important since only those risks which have been identified can be managed afterwards (Schröder *et al.* 2013). During risk analysis, the gathered risks are assessed at first by indicating the likelihood of occurrence and the possible damage. Then, the risks are prioritized in preparation for the risk handling step. Methods supporting risk identification and analysis are for example brainstorming or the failure mode and effects analysis. Risk `handling represents the third step of the risk management process. Strategies in order to handle risks target at avoiding, reducing, transferring, sharing or taking the risk (Norrman, Lindroth 2004, Schröder *et al.* 2013). Since Porter (1998,) declares a strategy to characterize "the creation of a unique and valuable position, involving a different set of activities", there are various measures which can be assigned to a strategy. Finally, during risk control it is the intention to review whether the measures have been applied and if they have been effective. Generally, the risk management process should be run through reputedly because single risks or the whole risk situation may change over time Eberle (2005).

(Cafiso,et.al,2013) conclude that the introduction of new technologies is perceived as an important factor in improving transportation service safety, this study was evaluate the knowledge and perception managers with respect to safety issues and the potential effectiveness of various technologies in achieving higher safety standards. Safety issues related to drivers (training, skills, performance evaluation and behavior), vehicles (maintenance and advanced devices) and roads (road and traffic safety issues) in response to a research survey. As the study examines safety issues are appositive significant impact on the reduction of transportation risks.

More over failure to assess suitable safety strategies by the agency managers could lead to a significant waste of resources and continued loss of life and property. Similarly Pellegrino,(2014) conclude that an adequate risk management process in PPPs is fundamental to an assurance of the project's or a specified operations success. Decision-makers should identify, evaluate, and control key risks during the various phases of a PPP project. According to him these risks are not only challenges but also opportunities for the private concessionaire as well as for the government. This needs a correct and "proactive" risk allocation and evaluation which may require the application of financial tools such as real options. Analyzing transport PPPs, the research focuses on one step of the risk management process, i.e. the identification of strategies to shape and mitigate risks as a first step in the development of an option-based risk mitigation framework that associates related strategies to each risk. These mitigation strategies expressed as real options provide a range of possibilities and support decision makers to find the most cost-effective combination of mitigation strategies to include in a PPP investment in order to optimally control risk and maximize investment value.

Cooper(2010) a principal researcher found that the capability for a public sector organization to manage their risk begins with recognizing and identifying it. It is therefore recommended public sector organization seriously consider creating a new municipal plan or strategy that is updated on a regular basis. These plans should include clear objectives and attainable goals. The success of public sector planning depends on the critical success factors of risk identification, management as well as appropriate implementation practice of the processes needed to ensure effective control.

According to Getachew (2014) The study conducted on risk management on road construction projects in Ethiopia shows that there is no coordination in managing risk, the client, insurance companies, consultants and contractors have their individual preferences on the ranking of various risk factors in the road construction industry, contracting parties mainly provide insurance coverage to road projects to meet the demand of the client rather than to avoid possible risks. The finding also examines that there is no risk management practice in the construction project. Insurance companies were insure without analyzing the risk exposures of the project and at the time accident occurs indemnify the insured party.

The study of Dawit (2016) was conducted by having objective of assessing Practice and management of hazardous materials in transportation whether the current systems are able to

handle the adjustments necessary to provide a consistent level of safety and security. The finding shows the current risk management practice there are structural problem, lack of effective communication system, the designed strategies are the major problems identified in the system. Correcting these problems and incidents caused by human error can be reduced through the implementation of effective training and awareness creation programs.

According to Kedir (2015) his study on assessment of road traffic crash data Collection and Management System of Ethiopia, the Current road Crash data collection forms of the nation are much below the best practices of other countries and it could not serve the needs of all stakeholders. Hence, the police data collections forms need to be modified completely so that the minimum data elements can be incorporated in the data collection forms and the nation will have a uniform crash reporting format.

Fanuel (2006) conducted analysis on Addis Ababa traffic simulation shows the most commonly reported in police statistics of risk factors are those risk caused by transportation accidents in which the accidents are because of over speeding, serious overtaking alcohol and drug abuse, driver negligence, poor driving standards, vehicle overload, Poor maintenance of vehicles, bad roads and hilly terrain, negligence of pedestrians , distraction of drivers (e.g. speaking on cell phones). More over underlying inter-related factors contributing to the rising magnitude are rapid growth in motorization and human population, Increased spatial interaction of road traffic, in terms of the volume and direction of movement, deficiencies and problems in road user behavior, conditions and environment of work in the public transport sector, with special reference to buses and minibuses Social and economic conditions prevailing in Ethiopia, Serious deficiencies in the road network development and maintenance, and deficiencies in road safety planning, management, enforcement and interventions. Firm political commitment and resources are needed at the national and international levels to effectively address these social, economic and developmental issues. The finding of Fanuel indicated that majority of the factors were those able to minimized through good risk management practices followed by the regulatory bodies.

(Aljanahi,Rhodes & Metcalfe,1999) the relationship between various measures of traffic speed, under free flow conditions, and accident rate is investigated for two groups of sites, one in the Tyne and Wear county of the UK and the other in Bahrain. The effect of speed limits on traffic speed is estimated for both groups of sites. In Bahrain, there is statistically significant evidence

of an association between mean speed and accident rate. In Tyne and Wear the statistical evidence is weaker, and points to a stronger relationship between accidents and the variability of traffic speeds. In both areas, there is an apparent decrease in accident rate if the percentage of heavy vehicles increases, with the speed distribution held constant. In both areas the effect of speed limits is to reduce the mean speed of traffic by at least one quarter. Higher speeds are associated with longer trips.

2.3.Conceptual Framework

The study attempts to identify the effect of transportation risk management practices on transportation service safety in Jimma zone. From the related literature reviewed for the purpose of this study transportation risk management practice is simply implementing risk management processes. So the student researcher has prepared the following conceptual frameworks. The risk management is not only a one time activity rather than continuous and passing through different stages. Different theories and international standards shows this truth (ISO 31000,2009 and Rejda (2004) the risk management is mainly focus on: Establishing the context ,Risk identifying through (risk analysis questionnaires and checklists, physical inspection, flow charts, historical loss data), Risk analyze through (loss frequency, loss severity , the maximum possible loss**,** the probable maximum loss) Risk treatment/control/ through different strategies (avoidance, reduction, retention and transfer), and implementation of monitoring and review (cooperation with Other departments, periodic review and evaluation). Under the independent variables these specific variables was evaluated.

Fig 2.1.Conceptual framework designed by the researcher.

 <u>**Independent variable**</u>

Risk management practice
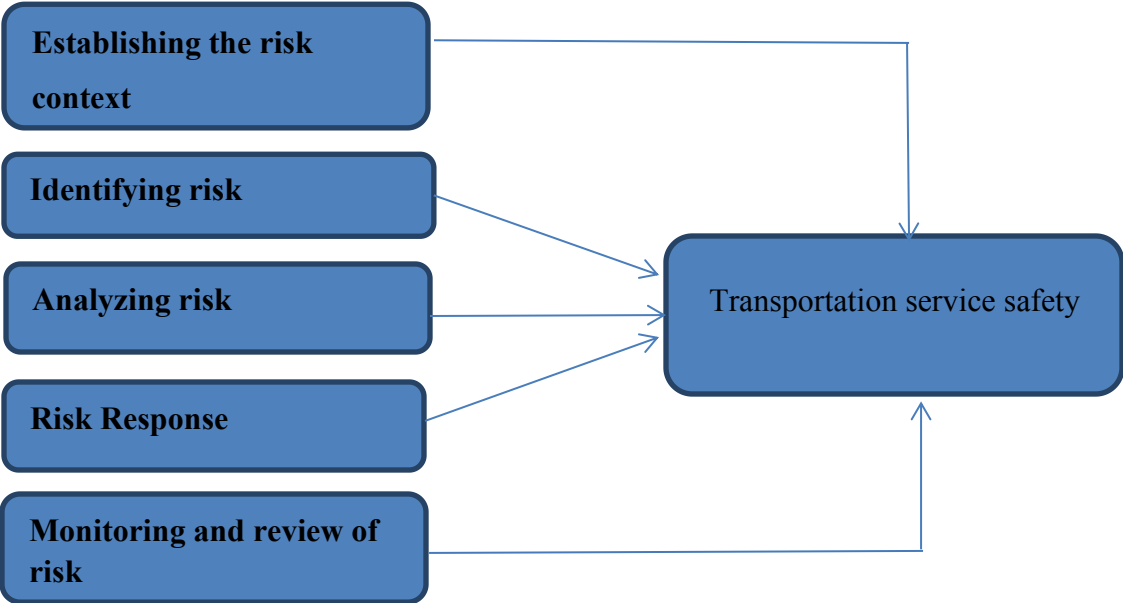
Source Adopted from ISO.31000:2009 Risk management processes.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1. Research Design

Research design is the basic frame work which provides guidelines for whole research.The choice of research design depends on the type, depth and extent of the issue under the study. According to Kothari,(2004) research design refers to arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to research purpose with economy in the perspective. Since the purpose of the study is to investigate the effect of transportation risk management practice on transportation service safety the research design adopted for this study was descriptive and explanatory research design. Descriptive research is a fact finding inquiry or investigation. It describes the current state of risk management practice as it is. In this research design, the researcher can only report what happened in the past and what is happening in the present. The researcher was also made use of both qualitative and quantitative data to gain an in-depth understanding of transport risk management practice in the study area. The explanatory research design explains the cause and effect between risk management practice and the transportation service safety in the study area.

3.2 Source and Type of data

Both Secondary and primary data sources was used for this study. Secondary data are accident related data and documented reports that were collected from the transport office and from traffic police officers. Secondary data provided the researcher with the opportunity to better understand, identify the gap and the past and recent risk management practices in transportation. Therefore the last five years accident related losses were obtained. Primary data was gathered from the transport office and the traffic police through the use of questionnaire and personal interview. Primary data source provided the level at which transportation risk management process practiced and transportation service safety around the study area.

3.3 Sampling design

3.3.1 Target population

The target population of the study was the regulatory bodies of jimma zone that are directly related to transportation system,(i.e. transport office and traffic police) of jimma zone and Jimma town. These tow sectors were selected from 28 regulatory sectors because of their direct relation to the study problem.The two sectors were selected at wereda and Jimma town in the same way. An employee of transport office and traffic polices of jimma zone and jimma town was the target population of the study. According to the data obtained from transport and traffic police officers, there were 260 Transport office employees and 54 Traffic polices total of 314 employee were on working.

3.3.2 Sample Size

The sample size was determined using Yemane (1967) sample determination formula which was widely accepted by researchers. The formula applied with 5% error and 95% confidence level in order to determine the sample size.

$$n = N/ (1+Ne^2)$$

Where; n is the sample size.

N is the total target population

e is the acceptable significance level of 5% .

Accordingly ,

$$n = N/ (1+Ne^2)$$

$$n = 314/(1+314(0.0025)$$

$$n = 176$$

3.3.3 Sampling Technique

After having the above sample survey size, sample respondents were selected using the probability and non-probability sampling technique, The researcher was used probability sampling particularly stratified sampling technique.The target population for the study was classified into different groups based on the sectors and weredas which is directly related with the transportation risk management of the regulatory body.Then the samples were selected from each stratum according to their proportion to the total population. From previously existing 18 weredas in Jimma zone 10 weredas were chosen from five administrative clusters, and employees with in specific sector were selected through simple random sampling techniques because all weredas are performing the same activities that provided from the same center/zone/. So 150 transport agency employee and 26 police traffic were chosen.

By using the proportionate sampling technique the following samples of respondents were drown. i.e.(m= n x y/N) where : m= sample,n = total sample,y= number of employee in the sector/wereda/ , N = the total target population.

Table 3.1 Table showing sample size drown from police traffic and transport agency.

S.NO	Sampling Frame	N	Prop.	sample
1	Jimma zon Transport office employee	41	176*(41/314)	23
2	18 weredas transport office employee	175	176*(175/314)	98
3	Jimma town Transport office employee	52	176*(52/314)	29
4	Jimma town Traffic police	28	176*(28/314)	16
5	Jimma Zone Traffic police	18	176*(18/314)	10
	Total	**314**		176

source: *own preliminary study*

To get appropriate level of employee from weredas the same proportionate techniques was employed and the following sample size was drown from selected ten weredas.

Table 3.2. Transport agency employee sample size by weredas.

S .No	Weredas	N	Prop.	Sample
1	L /seka	7	98*(7/108)	6
2	Manna	10	98*(10/108)	9
3	O /nadda	7	98*(7/108)	6
4	Gomma	11	98*(11/108)	10
5	Gera	10	98*(10/108)	9
6	L /kosa	14	98*(14/108)	13
7	Dedo	13	98*(13/108)	12
8	Sh /sombo	10	98*(10/108)	9
9	Aggaro	12	98*(12/108)	11
10	Sokoru	14	98*(14/108)	13
Total		108		98

source: *own preliminary study*

According to this selection technique 121 and 29 jimma zone transport office and jimma town transport office employee 10 and 16 jimma zone and jimma towon police traffic respectively included in the sample. Different key informants were also selected through purposive sampling technique for interview. As Bhattacherjee (2012) defined, a technique in which a sample is drawn from that part of the population that is close to hand, readily available, or convenient, has been used to select employees. A researcher selects key informants from police office and transport office; traffic police head, transport office vice and traffic issue process owner,

transport office head, totally 6 key informant were selected, because those individuals have an in depth insight with regard to the study subject, and consequently can provide reliable information which could indicate the real situation of the study.

3.4 Data Collection Instruments and Procedures

Zikmund (2003) defines data collection tools as the instruments used to collect information in research or the methods employed to collect research data. Structured questionnaires, semi-structured interviews and document review were employed as the necessary instruments for this study.

3.4.1 Questionnaire

Questionnaires were prepared by the student researcher and used as a main source of data gathering instrument. Questionnaires are less expensive, offer greater anonymity of respondents, and appropriate for collecting factual information (Kumar, 2005). These justifications made questionnaire more appropriate for this study. Two sets of questionnaire (close and open-ended) were prepared to collect information from the respondents. The items were prepared in accordance with the designed objectives and basic questions to be answered in the study concerning the effect of risk management practice on transportation service safety.After all data was collected from 161 respondents.

3.4.2 Interview

In addition to the questionnaires, semi-structured interview has been conducted with key officials of the transport agency and police traffic of Zonal offices. A semi-Structured interviews were used as the researcher wants to investigate deeply into a topic and to get chance to ask another important questions based on the interviewee response to understand exhaustively the answers provided. This method is useful to identify the existing risk management practice and its contribution to transportation service safety in an in depth way. During the interview the researcher used audio recording device, in line with taking notes.

3.5 Data Processing and Analysis

Both primary and secondary data were analyzed using qualitative and quantitative methods. Data analysis was made through both descriptive and inferential statistics. Questionnaires were first collected, edited, coded and entered into computer software called Statistical Product and Service Solutions – SPSS version 20 (Package for Social Sciences).

Then the edited data coded and arranged in to suitable categories, so that they were organized and classified into groups having a similar characteristic that makes the information ready for analysis.

In order to analyze the collected data, the study uses both quantitative and qualitative approaches. The quantitative approach was used to analyze secondary data and data collected through questionnaires, qualitative approach was used to analyze the data collected through interview and open-ended questions.

As quantitative approaches, this study was used descriptive and inferential statistics. According to Boone(2012) to analyze likert scale data we can use parametric statistics such as mean for Central tendency and standard deviation for variance, additionally pearson's r, t-test,ANOVA, and regression. Hence,frequency,mean and standard deviation was used as descriptive techniques. Moreover, inferential statistics was employed to examine the relationship between risk management practice and transportation service safety. To do so, the researcher was used Pearson correlation moment, ANOVA test and multiple linear regression models to determine the relationships between the independent and dependent variables. Sekaran(2000) inferential statistics allows inferring from the data through analysis the relationship between two or more variables and how several independent variables might explain the variance in a dependent variable. The Statistical Package for Social Sciences SPSS. Version20 was used to analyze the data obtained from primary and secondary sources.

3.6. Model Specification and Study Variables

This study has five independent variables, which affect the dependent variable. The relationships between the independent variables and the dependent variable are discussed below. To determine the relationship between the variables, multiple linear regression model is formulated which is :

The multiple linear regression formula is applied that is;

$$Yi = \beta_0 + \beta_i X_i + e_i$$

$$Yi = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + €$$

Where:

This formula indicates Y as the dependent variable – Transportation service safety and X_i includes the independent variables (the risk management practice) of this study (i.e. X_1= Establishing the context, X_2= Identifying risk, X_3= Analyzing risk, X_4= response/controlling risk, X_5= Monitoring and review of risk,) and €= standard error.

β_0 is the intercept term- constant which would be equal to the mean if all slope coefficients are 0. β_1, β_2, β_3, β_4, β_5, are the coefficients associated with each independent variable which measures the change in the mean value of Y, per unit change in their respective independent variables.

3.7. Ethical Consideration

Ethics refer to norms governing human conduct which have a significant impact on human welfare. A research permit/introductory letter were obtained from management department of Jimma University before embarking on the data collection. The respondents was informed of their rights to participate or not to this study, Information provided by respondents or interviewees is not be transferred to a third party or will not be used for any other purpose other than academic. Thus, they were assured of confidentiality and anonymity of their responses.

3.8. Validity and Reliability Checks

3.8.1 Reliability

Reliability analysis used to measure the consistency of a questionnaire. There are different methods of reliability test, for this study Cronbach's alpha is considered to be suitable. Cronbach's alpha is the most common measure of reliability. As described by Andy (2006) the values of Cronbach's alpha more than 0.7 is good. All the alpha coefficients for the scales were presented on the following table 4. So Since all alpha values are found to be above the threshold point of 0.7, we can conclude that reliability of the measurement instruments of this particular study are considered adequate.

Table 3.3 Reliability test results with cronbach's alpha.

No.	Variables	No items	*Cronbach Alpha*
1	Establishing the context	6	.749
2	Risk identifying	7	.845
3	Risk analyzing	7	.836
4	Risk response /controlling	8	.798
5	Monitoring and review	6	.863

Source: own survey data of 2018

3.8.2 Validity

As of Bhattacherjee (2012), Validity, often called construct validity, refers to the extent to which a measured equates represents the underlying construct that it is supposed to measure. Hence, to make measurement approach or instrument strong thorough analysis of both theoretical and empirical literature s were performed and consequently the study variables were developed. Previous studies and the regulatory guidelines of risk management standards (ISO 31000) were considered. In addition to make sure validity of instruments, the instruments were developed

under close guidance of the advisers and language experts and also a pilot study was carried out in Nono Benja wereda which was not included in the sample of the study. It was administered to selected respondents of transport office employee and traffic police totally 15 respondents were included. It was done with objectives of checking whether or not the items included in the instruments could enable the researcher to obtain the relevant information and to identify and eliminate problems in collecting data from the target population. After the dispatched questionnaires were returned, problems of wording, unnecessary open ended questions, sequence and grammatical problems, necessary modifications on demographic parts, 2 open ended questions; and the complete removal and replacement of 3 unclear questions were made.

CHAPTER FOUR

4.RESULT AND DESCUSSIONS

Introduction

This study used both descriptive and inferential statistics to achieve the objective sought at the beginning of the study. Descriptive statistics was used to assess the effect of risk management practice on transportation service safety in Jimma zone,south western Ethiopia. Hence, frequency, mean and standard deviation was used as descriptive method. Moreover, Pearson correlation moment,ANOVA, and multiple linear regression were employed as inferential analysis to determine the relationships between the independent and dependent variables.

A total of 176 questionnaires distributed of which 161 questionnaires filled and returned yielding acceptable response rate of 91.5%.

4.1. Demographic Characteristics of Respondents

The background information of respondents was viewed as necessary because the ability of the respondents to give acceptable information on the study variables greatly depends on their backgrounds.

In the following table, the demographic information of respondents were presented. These include the level of education, work experience of respondents.To get information on these issues the respondents were asked a structured question and their responses are presented and analyzed as follows. The results of this survey processed using the SPSS version 20 software.

Table 4.1 Demographic characteristics of the respondents.

Item	Demographics	Frequency	Percent
Gender	Male	94	58.4
	Female	67	41.6
	Total	161	100
Age	21-30	21	13
	31-40	41	25.5
	41-50	85	52.5
	Above 50	14	8.7
Marital status	Married	98	60.9
	Unmarried	63	39.1
	Total	161	100
Position	Management	21	13
	process owner	27	16.8
	Expert	87	54
	Traffic police	26	16.1
	Total	161	100

Source: own survey data of 2018

Table 4.1 represents the background information of the respondents such as: gender, age, marital status, and position. There are a total of 161 respondents; among which (58.4%) of them are males while the remaining (41.6%) are females. As shown on the above table the number of males and female respondents are almost not far apart. These findings represent the views of the two gender groups about risk management practice of transportation from both sides. This could be necessary for the study to get a balanced picture of the respondents' views. The study sought to establish the background information of the respondents in terms of age. Accordingly, out of 161 respondents, 13% are categorized under the age range between 21-30 years and 25% of them are categorized in the age range of 31-40. The large number of respondents, 52.5%, are found in the range between 41-50 years whereas the small portion, 8.7% of them are having age above 50 years. These findings represented that the majority of the respondents working on transportation are on the working and stable age level which enable them to provide matured information. With respect to the other background information of the respondent which focus on the marital status, out of the 161 respondents, (60.9%) are married while the remaining (39.1%) are unmarried. This information is expected to contribute in order to provide responsible information for the study. Regarding the position of the respondents, the data obtained from the study indicates that from the total 161 respondents, (13%) are from management position, (16.8%) are from process owner of transport agency; the large number of the respondents, (54%) were experts of transport agency and the rest (16.1%) were traffic polices. These findings represented that the respondents were participated from all position level in the population which is very important to gain comprehensive information from all.

From the above findings it is concluded that the participation of respondents from both genders, the age level of the respondents and the respondents involvement from all working level was necessary for the study to get a balanced picture of the respondents views. From the marital status of the respondents also concluded that the respondents were provide responsible information for the study. So the demographic characteristics of the respondents were adequate for this study.

Fig 4.1 Educational status of respondents
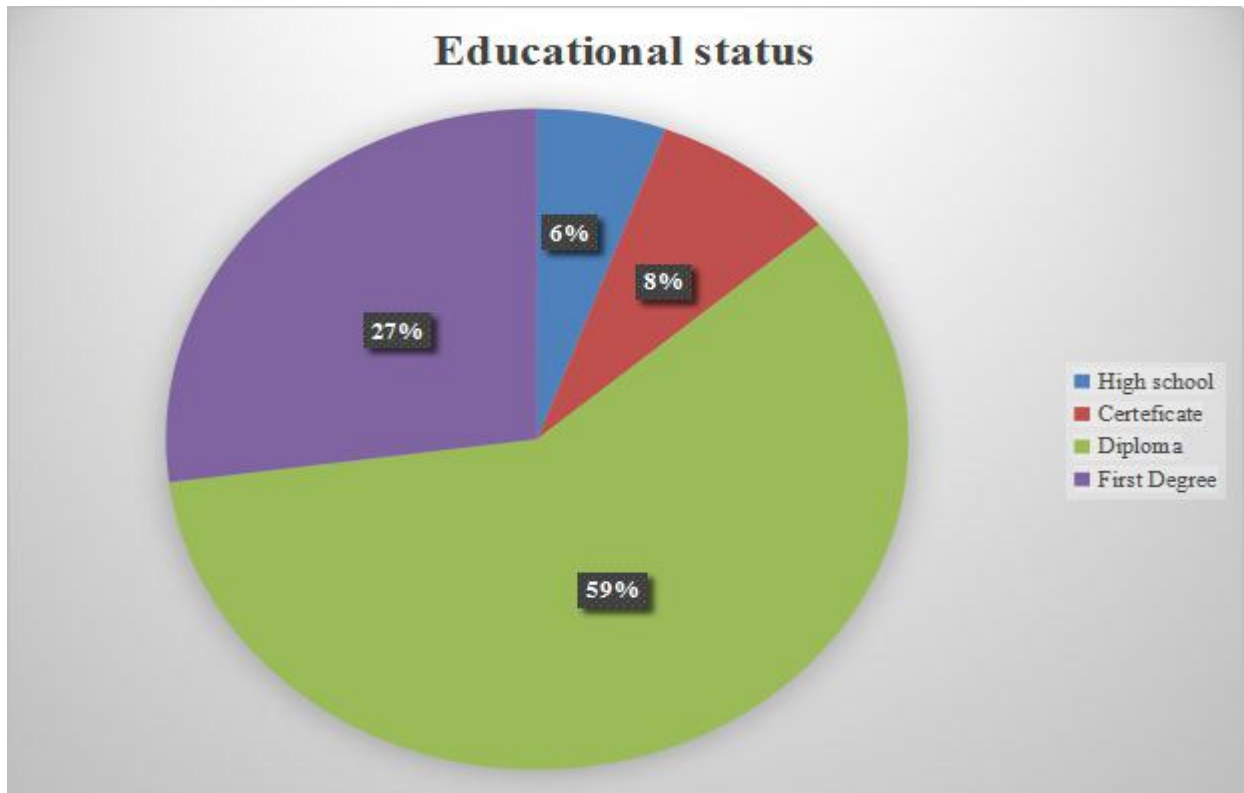
Source: own survey data of 2018.

The study sought to establish the background information of the respondents in terms of level of education. The above pie chart indicates level of education and qualification of the respondents. Accordingly,out of 161respondents, 27% have first degree, 59% have diploma in different educational qualification, 8%of the respondents have certificate and the rest 6% are high school complete.These findings indicated majority of the respondents have sufficient level of educational qualification; degree and diploma. From the findings of educational qualification of the respondents it is concluded that the respondents were able to read ,understand and respond accurately on the questionnaire given to them by the researcher and able to perform the structured work activities in the sector.

Fig 4.2. Work experience of respondents.

work experience in the office

51.6 — Less than 5 years
30.4 — 6-10 years
18 — 10 years and above

Source : own survey data of 2018

As shown in the Above graph out of 161 respondents, 51.6% of total respondents represent a group that covers less than 5 years of experience, 30.4% of total respondents represent a group that covers 6-10 years of experience. The rest 18% of respondents were under the ranges of greater than 10 years of experience. It implies that most of the staffs are new and fresh and the rest 48.4% are above 6 years which acquired enough experience in the study area. The findings result indicated that the working experience of respondents less than five years and above five years are almost near to each other. So from this we can conclude that the respondents work experience is adequate for the study because of their participation from new and fresh workers and from well experienced workers whom acquired enough experience in the study area.

4.2.Establishing risk management context

Establishing the context is the first step in risk management processes.under this variable how the regulatory body establish the context of risk management is evaluated depends on the respondents answer. So the following table shows the summary result of the respondents on the risk management context.

Table 4.2. Respondents response on establishing the context.

Establish the context	N	Mean	Standard deviation
The purpose and scope of risk management activities are well defined in the agency / traffic police department	161	2.93	1.176
The acceptable amount and type risk are clearly defined in the Agency/police traffic department	161	1.96	.769
The internal and external contexts of risk management structure are clearly defined.	161	1.83	.738
The risk evaluation criteria are clearly set out by the agency/police traffic	161	2.12	.990
The aim and objectives of transportation risk management are clearly defined and communicated to all stakeholders.	161	1.84	.766
Equipment requirement, budget, stakeholders' involvement strategies and schedules of risk management are clearly defined.	161	2.14	1.093
Managing risk is considered as an integral part of other management activities that contribute to the performance and success of transport service.	161	1.99	1.031
Grand mean	**161**	**2.12**	**0.93**

Source: own survey data of 2018

In the above table 4.5, respondents were asked to indicate the way risk management purpose and scope activities were defined, according to the respondents answer (2.9) of mean value indicated the way purpose and scope of risk management activities was defined. Which means almost they were neutral.On the same table, respondents answered about the acceptable amount and type of risk defined in the agency/traffic police shows the mean value of (1.96) which means the acceptable amount and type of risk is not clearly defined, this is also supported by the interview ;during the interview founded that there is a debate on different incidents whether they

are risk or not,the category of risk is it fatal, injury or property damage some times it is mixed of all type of loss ; in this case the way such incidents were registered was not clear. The respondents were asked to respond about the clarity of internal and external context of risk management structure, their answers on this issue indicated mean value of (1.83) , which means the internal and external context of risk management is not clearly defined in order to contribute to transportation service safety. Regarding to the clarity risk evaluation criteria, the mean value of the respondent was (2.12) which means the risk evaluation criteria is not clearly defined. On the same table , regarding to the aim and objectives of risk management clarity and communicability to the stakeholders,the mean value of the respondents indicated (1.84) indicating that aim and objectives of risk management is not clearly defined and communicated to all stakeholders. Additionally on the same table the risk management resources such as equipment requirement,budget,stakeholders involvement strategies and schedules clarity was asked and the result shows the mean value of (2.14) which means in the risk management practice the source of those needed equipment's,budget,and schedules were not well defined/available. This was also supported during the interview with the key informants. The interviewed mentioned that equipment's like speed controlling devise,computers, emergency vehicles,budget,etc are not available to perform the activities. Even during the secondary data collection the researcher has founded manual way of documentation with the disordered arrangement of poor document management. The table further shows the way risk management is considered as an integral part of other management activities with a (1.99) of mean value that indicates the risk management is not considered as an integral part of other management activities. The interview finding also supports this idea by clarifying theoretically it is considered as an integral part of other management activities but practically both the transportation agency and police were more focused on the other managerial activities like licensing, controlling , facilitating in buss station etc. Similarly the police office are more focus on other criminal issues like conflict prevention and solving, following security issues,etc. Most of the time only traffic polices are working on it, even traffic themselves are more of working on controlling at some stations, registering the accidents and report to highers. The grand mean of 2.12 with the standard deviation of 0.93 showed the disagreement of the respondent on goodness of establishing risk management context.

(Hill,F.et al.,2010) an integrated risk management framework for local councils that was specifically designed for application in the area of transportation. In addition to establishing a risk framework, the supporting objectives to the research were to identify and apply risk management procedures and risk profiling as factors in optimizing 'hard asset' solutions and/or 'non asset' solutions in decision making, to ascertain the data management issues associated with good risk management practices. As ISO31000:2009 establishing the context is a specific activity within the risk management process. According to state of Queensland department of transport and main road ,August (2016) establishing the context is a critical component of the risk management process.

So from the above findings we can conclude that the risk management frame work specifically establishing the context in the study area is not inline with standards and literature. It doesn't established in a way to coordinate the internal and external structure of the risk management stakeholders,sources of important resources are also not clearly structured. Again it is concluded that the established context practice was not in a position to improving the safety of transportation service.

4.5.Risk Identification

Table 4.3. Respondents response on risk identification.

Risk identification	N	Mean	Standard deviation
Transportation risks are regularly identified by brainstorming.	161	2.04	.473
Transportation risks are regularly identified by checklist.	161	1.85	.436
Preliminary Hazard analysis is used to identify transportation risk.	161	1.76	.497
Event and fault tree analyses are used to identify transportation risk.	161	1.64	.554
Transportation risks are regularly identified by failure mode and effect analysis.	161	1.60	.615
Transportation risks are regularly identified by accident investigation.	161	3.85	1.125
Transportation risks are regularly identified by controlled experiments.	161	1.60	.606
Grand mean	**161**	**2.01**	**0.6**

In the above table 4.6, the way transportation risks were identified was asked. According to the respondents answer on the first question risk are regularly identifies by brainstorming , (2.04) of mean value obtained.This result indicates transportation risks are not regularly identified by brainstorming. On the same table, respondents answered for checklists were used to identify transportation risk in the agency/traffic police shows the mean value of (1.85) which means the respondents were in disagreement of transportation risks are regularly identified by using checklist. For the question preliminary hazard analysis was used to identify transportation risk (1.76) mean value of responded,the mean value result indicating that majority of the respondents were in disagreement. This shows preliminary hazard analysis was not used in identify transportation risk. This was also supported by the interview result which indicates most of the time in the agency and traffic police risks are identified in reactive approach after the accident,there is no significantly mentioned preliminary hazard identification practice. The respondents were asked to respond about the event and fault tree analysis were used as a risk identification technique their answers on this issue indicated mean value of (1.64) , which means the event and fault tree analysis were not used by the agency to identify transportation risk. Regarding to the failure mode and effect analysis was used in identifying transportation risk , the mean value of the respondent was (1.60) which means the disagreed on failure mode and effect analysis were used in the agency and traffic police to identify transportation risk. Additionally on the same table for the question transportation risk are regularly identified by accident investigation (3.85) of mean value which means the respondents were in agreement of accident investigation was used to identify transportation risk. After the accident occurred the expert and traffic police assigned to identify the risks for different purposes such as for reporting, court purpose, insurance purpose etc in order to identify the existing accident formally by the order of higher officials. Finally on the last question transportation risks are identified by controlled experiment. The result of the respondents indicate the mean value of(1.60) which indicates the respondents were disagreed.

From the above finding we can conclude that majority of risk identification techniques are not used to identify transportation risk. The commonly used risk identification technique was accident investigation which is reactive method. In another word transportation risk were not regularly identified using different techniques.

Generally the grand mean of 2.01 with the significant standard deviation of 0.6 on the risk identification of transport agency and police traffic practice, majority of the respondents were in disagreement of risk identification. From questioner and interview findings it was confirmed that transportation risk and risk contributing hazards were not regularly and proactively identified through different mentioned techniques, This finding violates the risk management process in (ISO 31000:2009,& COSO,(2004) on enterprise risk management theory. More over (Terry 1972; Peker *et al.* 2014) and encompasses the risk identification, analysis, handling and control. According to (Schröder *et al.* 2013)the risk identification step is often considered as most important since only those risks which have been identified can be managed afterwards .

4.6.Risk Analyzing

Analyzing / measuring risk is very important to know the frequency, severity, main causes and it helps to demonstrate/conclude the corrective measures to be used to control. So the table shows the level of agreement of respondents on transportation risks analyzing practice in the study area.

Table 4.4. Respondents response on analyzing risk .

Risk analyzing	N	Mean	Standard deviation
The agency/police office is analyzing the risk by the loss severity or impact of the risk.	161	3.92	.924
The agency/police office analyzed the risks by the loss frequency	161	3.81	.979
The agency/police traffic is analyze the risk by estimation in quantitative and qualitative way	161	2.92	.518
The agency/police traffic is analyze risk by the type or area of transportation, e.g. by infrastructure problem, means of transportation, the environment.	161	1.34	.474
The agency/police traffic is analyze risk by their impact on transportation safety.	161	1.31	.464
The agency/police traffic knows about the strengths and weaknesses of the risk management practiced.	161	1.38	.487
The agency /police traffic uses the result of risk analysis to evaluate and prioritize major risks for risk controlling techniques improvement.	161	1.47	.559
Grand mean	**161**	**2.10**	**0.6**

Source: own survey data of 2018

In the above table 4.7, the way transportation risks were analyzed was asked. For the question that focus on the transportation risk was analyzed through loss severity or the impact of risk the result obtained from the respondents indicates the mean value of (3.92) this shows that almost the respondents agreed on transportation risks were analyzed through severity or impact of the existing accidents. This finding also supported by interview and documents during the interview the interviewee respond that transportation risks were analyzed by loss severity the document also available in the severity level of accidents(i.e. death,injury,PDO). In the same table the respondents asked to rate their level of agreement on the question transportation risks are analyzed by the loss frequency, accordingly the result obtained indicates the mean value of (3.81), this result shows majority of the respondents agreed on loss frequency was used for risk analysis purpose. The finding of interview and document shows transportation risks were analyzed and documented through loss frequency. On the same table, respondents answered for transportation risks were analyzed both in quantitative and qualitative way (2.92) mean value was obtained which means the respondents were almost neutral on this statement. For the question that deals with transportation risks are analyzed by type or area of transportation mean value of (1.34) obtained. This shows the risks are not analyzed in type and areas of transportation. On the same table the respondents were asked to respond on risks are analyzed by their impact on transportation safety through identifying sources/hazards (1.31) mean value is obtained. This indicate majority of the respondents strongly disagreed on risks were analyzed by the impact of those risks on the safety of transportation. In the other ways the respondents were also asked to rate their level of agreement regarding to the strength and weakness of risk practiced. The mean value of (1.38) is obtained ,which means the agency or traffic police doesn't know the weakness and strength of risk management practice. Finally whether or not transport agency and police traffic used the result of risk analysis for prioritization of risks in order to improve risk response techniques the mean value(1.47) obtained. During the interview also mentioned that risks were analyzed in their frequency or severity but it is not meant that it is used for improvement of the techniques rather than for evidence and reporting purpose. Because many corrective measures needs resources which is not available on hand , so the risk analyzing results are not used to improve the risk response techniques.

From the above results it is revealed that transportation risks were analyzed more by loss severity and loss frequency in the study area which have a mean value of (3.92) and (3.81)

respectively.So ,from the above finding it is concluded that the risk analysis practiced in the study area was not used for the risk response improvement or for the improvement of transportation service safety rather than for the evidence purpose.

Generally the above finding of risk analyzing practice in the study area indicated with the grand mean of(2.10) with significant standard deviation of (0.6) which shows that the respondents were disagreed on the risk analyzing practice in the study area was on the position to contribute to transportation service safety. This finding is not supported by (Schröder *et al.* 2013) During risk analysis, the gathered risks are assessed at first by indicating the likelihood of occurrence and the possible damage. Then, the risks are prioritized in preparation for the risk handling step but as it has been from the finding it is not prioritized for the further improvement purpose.Also the finding violates ISO standard, and Australian risk management standard.

4.7.Risk response /control/

This section contains the findings with respect to objective on risk controlling techniques/response which sought to assess the risk controlling /response in Jimma zone. The respondents were asked to indicate their level of agreement with the following statements that relate to the risk responses/ controlling/.

Table 4.5. Respondents response on risk response/ control/.

Risk response/ control/	N	Mean	Standard deviation
The agency / traffic police uses risk reduction as a risk response technique.	161	2.35	.847
Regular and continuous awareness creation was used for the stakeholders to control risk.	161	2.15	.816
Safety materials in transportation and performance of motorized means of road transportation performance are regularly checked and corrected.	161	1.65	.503
Speed limits of driving are regularly cheeked and corrected.	161	1.48	.537
Faults in transportation are corrected more by advice, awareness creation rather than punishment/ charge/.	161	1.66	.993
Road safety audits are regularly conducted and corrected by the responsible body.	161	1.59	.684
Risk transfer/ insurance/ is highly used as a risk response technique in the area.	161	1.89	.912
The agency /police traffic used risk retention / accepting risk / at the acceptable level as a risk response technique.	161	1.94	.983
Grand mean	**161**	**1.8**	**0.8**

Source: own survey data of 2018

In the above table 4.8, the strategies or risk response techniques practiced in the study area was asked. For the question the agency/ traffic police used risk reduction as a risk response technique the mean value of (2.35) was obtained, the result indicates the respondents were disagreed on the risk reduction strategy was well practiced in order to contribute to transportation safety. This finding was also supported by interview and documents, during the interview the interviewee respond that risk reduction strategy was already planned to implemented but this techniques needs resources, equipment, human power, coordination etc the actual practice is not in a situation of reducing transportation risk: the daily registered transportation risk are increasing from time to time, many accidents severe than the previous are existing now a days. The documented data also indicated the same result the death,injury,PDO actually existing is increasing. Similarly for the question continuous awareness creation was used to control risk the mean value of (2.15) was obtained which means the respondents were disagreed on continuous awareness creation was applied in the agency.The findings of interview and document confirmed

that there is atrial of teaching the society in informal way. There is a direction designed to create awareness for the society at four places(at school level, in the church and mosque, at the market place, and at 'iddir' /'ikub').The designed awareness creation strategy by itself has its own problem these places by nature are not comfortable to teach because the society are available there for their own aim and objectives and also not sufficient time is available to teach. Therefore it is possible to say awareness creation activities were not regularly performed. Additionally simply talking to the society is not teaching, it needs different teaching aids, energizer,budgets etc all these are not considered. On the same table, for the question safety materials in transportation and performance of motorized road transportation are regularly checked and corrected , the result obtained from the respondents answer shows with the mean value of (1.65), which means transportation safety materials in transportation and the performance of the vehicles are not regularly checked and corrected. The interview result also support this finding safety and performance are not checked and corrected regularly. Performance checkup 'Bollo' in its local name for motorized vehicle was conducted once a year. In the process of performance checkup many mischief's were there, some times unfit/bellow standard/ vehicles were licensed to provide service to the community. For the question speed limit of driving are regularly checked and corrected the mean value of (1.48) was obtained. This shows the majority of respondents disagreed on it, so speed limit of drivers driving is not checked and corrected. The interview finding also confirmed the finding of questioner. Even if driving in speedy is the one and major cause of transportation risk,it is not possible to control those drivers driving above the limited speed. Because there is no single speed controlling instruments exist in Jimma zone. The only available speed controlling mechanism is telling to the driver to minimize the speed and road side speed limit signs,even these are also not have great attention. This finding is not inline with (Schepers, P., et al.2017) the paper explored on how the Netherlands achieved an 80% reduction in the number of cyclists killed to a high level of cycling safety. The researcher founded that Low cycling speed was contributed to the high level of cycling safety in the Netherlands as a one factor. So controlling speed is the issue that have no attention in the study area.

The respondents were asked to respond on fault in transportation are corrected more in advise, awareness creation rather than punishment/charge/, (1.66) mean value was obtained. This indicates the majority of the respondents strongly disagreed on faults are more corrected by advise ,awareness creation but So it confirmed punishment or charges (i.e. monetary punishment)

used.This was also supported by interview. Regarding to the question that deals with the road safety audit is regularly conducted and corrected by the responsible body, a mean value of (1.59) was obtained, which means road safety audit is not conducted and corrected by the responsible body . The interview result also indicates Once the road is ready for service no road safety audit was conducted, pavement problems, additional traffic signs, correcting faded and invisible signs, zebras,pedestrian ways were not checked and corrected by the responsible, even the responsible sector for this issue was not known. As they expressed specially on the rural sand filled roads because of missed simple flood way or drain age correction a rural road project constructed in millions becomes out of use with in one summer and finally creates problem on transportation, the same things in towns in the towns Some times traffic police by themselves correct zebras,faded signs, additional signs etc by participating volunteers from the community. On the other hand when the road infrastructure are improved to the standard level a very severe and frequent accident are registered on that root because of human and vehicular factors associated with a high speed. For the question risk transfer/insurance/ is highly used as a risk response technique the mean value of (1.89) was obtained ,which means the risk transfer/ insurance/ is not highly used. As it can be seen from the interview third party assurance is obligation to all but the other insurance service is depends on the interest of the owner. In their actual status insurance themselves are facing problem because they are simply paying for their customers no risk reducing, awareness creation strategies are followed by insurances, so according to the response from key informants insurances only focused on indemnification which bring them face challenge because of continuously existing risk. So this strategy cant benefit the safety of transportation. Moreover, with respect to the question that deals with risk retention is used as a risk response a mean value of (1.9) was obtained. Which means there is not at a risk retention status because of the existing transportation risk is above the acceptable level of risk .

Thus, the grand mean of (1.8) with a significant standard deviation of (0.8) indicated that the risk response in the study area is not in a position to minimize or control transportation risk. This finding also confirmed that the risk response/control/ applicable in the study area is not significantly contributing to the safety of transportation. According to an integrated risk management principle,   risk response/ treatment/ includes risk avoiding,risk reduction,risk transfer,and risk retention through the coordination of different responsible body and stakeholders. This is also supported by (Norrman, Lindroth 2004, Schröder *et al.* 2013) risk

`handling represents the third step of the risk management process. Strategies in order to handle risks target at avoiding, reducing, transferring, sharing or taking the risk. In addition to this (Cafiso,et.al,2013) conclude that the introduction of new technologies is perceived as an important factor in improving transportation service safety. This is the issue related with speed controlling, drivers training technologies, vehicles performance checkup,roadside controlling devices etc the area is poor in all these. From all the above findings we can conclude that the risk response/controlling/ practice could not minimizing the existence of risk in the area. So transportation risk response/controlling practiced in Jimma zone was not significantly contributing to the improvement of transportation service safety.

4.8.Risk Monitoring and review

Risk monitoring and review is one of the risk management processes used to improve implementation and the outcomes of the risk management process. The following questions that are listed in the table had been presented for the research participants and their responses are analyzed accordingly.

Table 4.6. Respondents response on monitoring and review.

Monitoring and review	N	Mean	Standard deviation
The design and effectiveness of risk management process practiced was regularly monitored and improved.	161	2.73	1.15
The implementation and outcomes of the risk management process was regularly monitored and improved	161	2.29	.810
The agency/police traffic has formal procedures for reporting transportation risks and incidents	161	2.29	.984
Changes to the transportation risks are regularly reported on an ongoing basis to their effect on transport safety.	161	1.76	.497
All transportation risk information are honestly reported to the higher/ decision makers.	161	2.07	1.119
Risk management activities and their effect on transportation service safety communicated across the stakeholders.	161	1.77	.491
Grand mean	**161**	**2.2**	**0.8**

Source: own survey data of 2018

In the above table 4.9, respondents were asked on the monitoring and review practice of transportation risk. For the question dealing with whether or not design on effectiveness of transportation risk management practice was regularly monitored and improved a mean value of (2.73) was obtained ,Which means the design and effectiveness of the risk management practice is not regularly monitored and makes improvement on risk management practice. This also not makes any improvement on transportation safety. On the same table, implementation and outcomes of the risk management process was regularly monitored and improved the mean value of (2.29) was obtained. This result indicates that the respondents disagreed on implementation and outcome of the risk management process practice was regularly monitored and improved. For the question focusing on there is a formal procedures for reporting transportation risk and incidents,the mean value of (2.29) is obtained this indicates formal procedure of reporting practice is not available in the study area. The result of interview also supports the procedure in transportation agency has its own problem, many unreported accidents are there, further more on the question number four changes to the transportation risks are regularly reported on an ongoing basis to their effect on transportation safety obtained (1.76) of the mean value, which means the respondents were disagreed on changes to transportation risk was reported on an ongoing basis to their effect on transportation safety. On the same table for the question transportation risks are honestly reported to the higher the result of respondents with the mean value of (2.07) which means all transportation risk are not reported to higher officials. The interview made on the same issues also supported this finding, during the document review,open ended question and interview as founded some times minimized reports were provided for the sake of evaluation and fear of highers for the less performance of risk controlling. Finally on the last question risk management activities and their effect on transportation safety communicated across the stakeholders has, (1.77) mean value, the result shows the respondents were disagreed on the issue,which means the activities and their effect is not communicated across the stakeholders.

The grand mean of (2.2) with a significant standard deviation of (0.8) indicated that the risk monitoring and review practice in the study area was not in a position to make the risk management process effective and contributing to transportation service safety. According to ISO 31000:2018 guide , monitoring and review is a very important step that helps to evaluate the effectiveness and outcome of the risk management process and enables to bring some improvement or continuity to the available practice. Moreover as Eberle (2005),during risk

control it is the intention to review whether the measures have been applied and they have been effective or not. Generally, the risk management process should be run through reputedly because single risks or the whole risk situation may change over time.

From the above finding we can conclude that the risk monitoring and review of the study area was not meaningfully contributing to the improvement and implementation of the over all transportation risk management activities. In another word the monitoring and review of transportation risk management process could not significantly contributing to the improvement of transportation service safety.

4.2 The transportation risk occurred in last five years (2005-2009)

One of the main causes of transportation risks that the community facing day by day was transportation accident/crashes. The transportation accidents impacting people in death, high and simple injury, property damage only/PDO/ and it has also moral, social and economical impacts on the society. So the following table shows the transportation risk in jimma zone that the community suffer from transportation accidents during the last five years. From the collected data it is concluded that a large number of peoples and property were affected in car accident in the last five years. So the available transportation service in Jimma zone was full of high risk which is not significantly reduced by the existing risk management trends.

Table.4.7. The last five year accident related transportation risk in Jimma zone 2005-2006

Year	Place	Frequency	Death	High injury	Simple injury	Property damage	Loss in cash
2005	Jimma zone	181	75	84	53	73	4,309,209
	Jimma town	42	9	31	11	20	57,300
	Sum	**223**	**84**	**115**	**64**	**93**	**4,366,509**
2006	Jimma zone	203	74	63	36	94	4,106,811
	Jimma town	46	11	4	60	18	609,800
	Sum	**249**	**85**	**67**	**96**	**112**	**4,716,611**
2007	Jimma zone	143	69	46	26	66	4,760,400
	Jimma town	77	16	39	17	24	698,600
	Sum	**220**	**85**	**85**	**43**	**90**	**5,459,000**
2008	Jimma zone	138	60	35	30	54	3,846,825
	Jimma town	65	22	14	13	17	1,309,000
	Sum	**203**	**82**	**49**	**43**	**71**	**5,155,825**
2009	Jimma zone	153	94	60	31	74	4,522,800
	Jimma town	86	21	34	27	20	496,080
	Sum	**239**	**115**	**94**	**58**	**94**	**5,018,880**
Total	Jimma zone	818	372	288	176	361	21,546,045
	Jimma town	316	79	122	128	99	3,170,780
	Sum	**1,134**	**451**	**410**	**304**	**460**	**24,716,825**

Source : Recorded data obtained from traffic police Department.

Table4.8 : yearly summary of transportation risks in the study area.

Year	Place	Frequency	Death	High injury	Simple injury	Property damage only	Loss in cash
2005	Jimma zone	223	84	115	64	93	4,366,509
2006	Jimma zone	249	85	67	96	112	4,716,611
2007	Jimma zone	220	85	85	43	90	5,459,000
2008	Jimma zone	203	82	49	43	71	5,155,825
2009	Jimma zone	239	115	94	58	94	5,018,880
Total	Jimma zone	1,134	451	410	304	460	24,716,825

Source : Recorded data obtained from traffic police Department.

The above table findings are the transportation risk that the community was facing the last five years. According to this finding from 2005 -2009 EC 1,134 different types of transportation accidents were formally registered in Jimma Zone. During the interview I have got the information that shows the number of accidents existing in the Zone exceeds the registered one, because there are many accidents that the community negotiate locally and hide the accidents. Such that from formally registered data in transportation agency and police traffic document ,it is inferred that 451 peoples were died,714 with high and simple injury, 460 PDO with a total loss in cash of 24,716,825. The data shows peoples died in transportation risk were from all parts of the community(i.e Doctors, Engineers, merchants, drivers, farmers, students, regulatory bodies etc ,) from both genders. In line with these losses there are many families affected in moral, socially and economically through many ways. As we can see from the Data and line graph this problem is increasing from time to time. This indicates Jimma Zone has losing trained and experienced working force which support the development program, community has losing his property and his life acquired through long ups and downs with in a fraction of seconds, and finally the sum of all these has a negative impact on the growth of the country. The over all sum

of these negative incidents in transportation service showed the transportation system is not safe to the society.

On the other hand these accident contributed to the sum up of accidents in Ethiopia that makes the country the first from the world in transportation risk. This finding is the same with the finding of (Debela 2013 & world health organization report, 2015)the transportation service in Ethiopia was very high rate of traffic accident (first in the world) and to which road transportation contribute significantly.

The following graph indicates that generally transportation risk increasing from 2005-2009, but during 2007&2008 the risk was retained at almost the same level decreasing from that of 2006. According to the information provided from the documentation department of traffic police in this two years counter measures taken on transportation risk by the regulatory bodies makes transportation risk reduced. In these two years controlling transportation risk becomes the issue of every body and tried to control the risk coordinately both in teaching the community and trough monetary punishment on transportation service providers. From the above finding it is concluded that transportation risk is continuously increasing from time to time so the likelihood and severity of those risks makes the transportation service not safe to the society.

Fig 4.3 : Line graph of the five years transportation risk
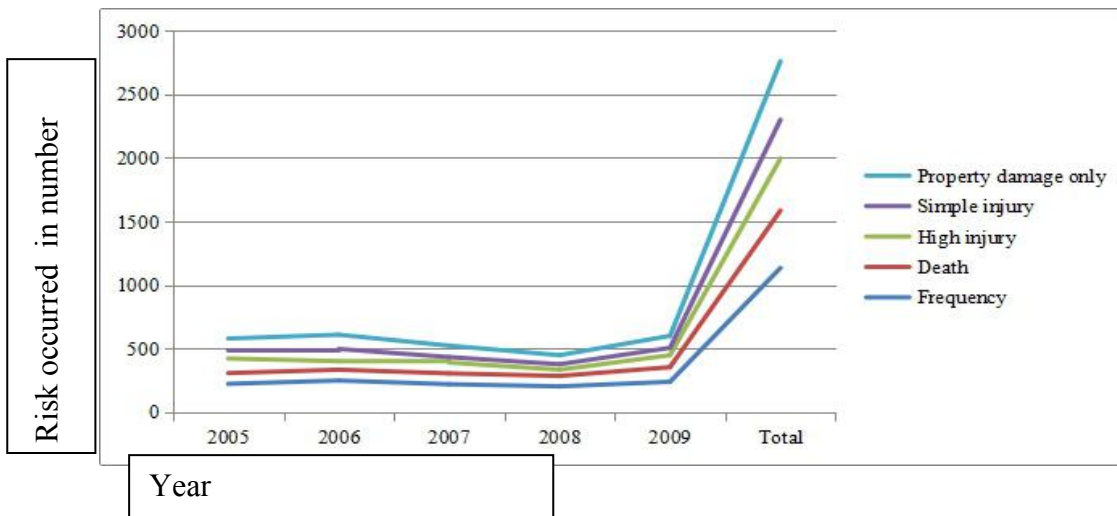
Source: own survey data of 2018

From the above findings, it can be observed that the direction of the graph shows that the problem continues unless corrective measure will be taken. So investigating the effect of transportation risk management practice on transportation service safety of the study area was considered as a very important issue. reviewing different theory and standards on the risk management,different empirical studies in risk management and coming with the solution can benefit Jimma Zone more.

4.3. Transportation service safety

This part contains the findings of the objective which desired to identify transportation service safety in the study area. The respondents were asked the following statements that related to the overall transportation service safety in the area.

Transportation service safety holds many activities that shows the level at which transportation safety is existing. Mainly focusing on the ways in which risk management practice in the study area was contributing to the safety of transportation. So the following table shows how transportation safety was improved by the practice of risk management

Table 4.9 The respondents response on the safety of transportation in the study area.

Transportation safety	N	Mean	Standard deviation
Transportation service safety in Jimma zone is good and peoples feel safe in transportation service .	161	2.63	1.228
Safety problems in transportation are regularly identified and analyzed for the purpose of improvement.	161	2.61	1.101
Human related safety problems such as driving license, training, pedestrian road usage practice, driving speeds are improved.	161	2.57	1.199
Infrastructure related safeties are improved in a regular manner(quality of roads, traffic signs, pedestrian ways etc)	161	2.39	1.189
Vehicle related safety issues of transportation are improved regularly(performance checkup and maintenance)	161	2.53	1.189
The improvement in safety of transportation service is regularly monitored for continuous improvement.	161	2.5	1.304
Grand mean	**161**	**2.5**	**1.2**

Source: own survey data of 2018

In the above table 4.4, respondents were asked to indicate the feeling of the people on transportation service safety accordingly (2.63) of mean value of the respondents indicated regarding to the safety of transportation. Which means the society is not feeling safe in transportation. On the same table, respondents answered about the identification and analysis of safety problems in transportation for improvement purpose,according to their answer (2.61) of mean value indicated transportation safety problems in the area was not continuously identified and analyzed for the improvement purpose. The respondents were asked to respond about the human related transportation safety problems, their answers indicated mean value of (2.57) , which means the human related transportation safety problems in the study area are not significantly improved. Regarding to the infrastructure related safety problems in the study area the mean value of the respondent was (2.39) which means the respondents were disagreed so this indicates infrastructure related safety problems are not improved regularly. Further more for the vehicle related safety issues are improved regularly, a mean value of (2.53) of the respondents indicated that vehicle related safety issues are not improved in a regular manner. Finally for the question of monitoring on the safety improvement, a mean value of (2.5) was obtained which indicated that the improvement in transportation safety improvement doesn't monitored regularly.

Therefore the over all result of the respondents showed that the risk management practiced by the regulatory bodies were not meaningfully improving the safety of transportation service. The interview conducted with key informants also indicated that the risk management practiced in the agency/ traffic police was not effective in minimizing transportation risk because of different problems related to human,vehicle, infrastructure, resource, trained man power, coordination etc. When there is no decrease in transportation risks in the area this indicates that transportation service safety also not improved progressively.

According to OECD(2006) studies a systematic risk management process is a legal obligation. As the result of the study indicated a well implemented risk management process can improve workplace safety and business performance generally. It is simply the documentation of what is done in a workplace and what can go wrong . The five basic steps(establishing the context, identifying source of risk, analyzing , controlling,monitoring and review) in the workplace health and safety risk management process must be followed to manage exposure to risks. The grand mean of the study finding(2.4) with standard deviation of (1.2) shows that the

transportation service in the study area was not safe or it was not free from dangers that has negative consequence on the society.

This finding is supported by (kedir 2015,Dawit 2016) finding and the World health organizations, 2015 report that transportation service safety in developing country especially in Ethiopia has a safety problem. This illustrated by the number of yearly fatal and injuries in the country.

From the above findings it is concluded that the risk management practice in the study area were not in a position to reduce the existence of transportation risk which means it is not in a position to improve transportation service safety.

4.9.Pearson's product moment coefficient of all independent variables with dependent variable.

Table 4.10: pearson's product moment correlation coefficient.

Correlations		Transportation service safety	Identifying risk	Analyzing risk	Risk response	Monitoring and Review	Establishing the context
Transportation service safety	Pearson Correlation	1					
	Sig. (2-tailed)						
	N	161					
Identifying risk	Pearson Correlation	.741**	1				
	Sig. (2-tailed)	.000					
	N	161	161				
Analyzing risk	Pearson Correlation	.710**	.663**	1			
	Sig. (2-tailed)	.000	.000				
	N	161	161	161			
Risk response	Pearson Correlation	.715**	.692**	.585**	1		
	Sig. (2-tailed)	.000	.000	.000			
	N	161	161	161	161		
Monitoring and Review	Pearson Correlation	.682**	.642**	.597**	.566**	1	
	Sig. (2-tailed)	.000	.000	.000	.000		
	N	161	161	161	161	161	
Establishing the context	Pearson Correlation	.744**	.661**	.733**	.612**	.638**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	161	161	161	161	161	161

**. Correlation is significant at the 0.05 level (2-tailed).

Source survey data of 2018

The above table 4.10 is Correlation Analysis between risk management practice and transportation service safety. Pearson correlation test was conducted to see the degree of relationship between the variables i.e. Establishing the context and safety of transportation. The results of the correlation between these variables are shown in the above table ,there is significant correlation between establishing the context and transportation safety which have a relationship value of (r=.744 with p-value 0.00).This indicated that establishing the risk management has a strong positive relationship with transportation service safety.

Correlation Analysis between identifying the risk and transportation service safety, for these variables Pearson correlation test was conducted and the results are shown. As shown in the table, the relation between the two variable has (r =.741 with p-value of 0.00) which means they have strong positive relationship.

Correlation Analysis between analyzing the risk and transportation service safety, for these variables the Pearson correlation test conducted result showed the (r=.710 with p-value of 0.00) this indicated that risk analyzing practice has a strong positive relationship with transportation service safety.

Correlation Analysis between risk response /controlling/and transportation service safety, Pearson correlation test was also conducted for these variables, the results shown in the same table above. As seen from the above table the risk response/controlling/ and transportation service safety has a significant strong positive relationship of (r=.715with p-value of 0.00).

Finally the Correlation Analysis between monitoring and review of risk and transportation service safety, for these variables Pearson correlation test has (r =.682 with p value of 0.00), this value indicated that monitoring and review of risk and transportation service safety has a significant strong positive relationship.

From the overall Pearson's correlation result we conclude that all predictors have a positive and strong correlation with transportation service safety in the study area. In other words the independent variables which are studied in this research strong effect for the improvement in safety of transportation service.

4.10.Regression analysis

The study also sought to examine the effect of risk management practice on transportation service safety in the study area. Hence, multiple linear regression analysis was conducted to check the effect of risk management practice on transportation service safety. Before the regression analysis,the assumption tests were conducted and presented as follows.

4.10.1.Multiple linear Regression assumption tests

1. Sample size

A sample must represent well the characteristics of the population. With small sample size, one may obtain a result that does not generalize to the target population. If results do not generalize to other samples, then they are of little scientific value. Most researchers tend to use Tabachnick and Fidell (2007) formula for calculating sample size requirements for multiple regressions. These authors took into account the number of independent variables that researchers wish to use: $N > 50 + 8m$ (where N = sample size and m = number of independent variables). In the case of this study, the number of independent variables is 5 and sample size is 161. Substituting these values into the formula, we have; $161 > 90$. Hence, the assumption on sample size requirements for multiple regressions was met by the researcher before analyses.

2. Multi-collinearity

As (Keith, 2006; Shieh, 2010) Collinearity also called multicollinearity refers to the assumption that the independent variables are uncorrelated. When a predictor variable has a strong linear association with other predictor variables, the associated VIF is large and is evidence of multicollinearity.The rule for a large VIF value is ten. Small values for tolerance and large VIF values show the presence of multicollinearity. Based on the above assumptions the researcher performed multicollinearity test to check the dependency of predictor variables with one another and the fitness of the model and has the least tolerance of .369 and the greatest VIF of 2.709 thus, there is no existence of multicollinearity problem among the independent variables as tolerance values are greater than 0.1 and VIF values less than 10.

Table 4.11 collinearity statistics summary table .

Independent variables	Collinearity Statistics	
	Tolerance	VIF
Identifying	.375	2.667
Analyzing	.396	2.525
Response	.467	2.140
Monitoring and review	.491	2.036
Establishing the context	.369	2.709

Source: own survey data of 2018

3. Normality test

Normality refers to the normal distributions of the residuals about the predicted dependent variable scores. Normality can be checked through histograms of the standardized residuals (Stevens, 2009). Histograms are bar graphs of the residuals with a superimposed normal curve that show distribution. As depicted in the figure below; which is an example of a histogram with a normal distribution from the SPSS software, there is no normality problem on the data used for this study.
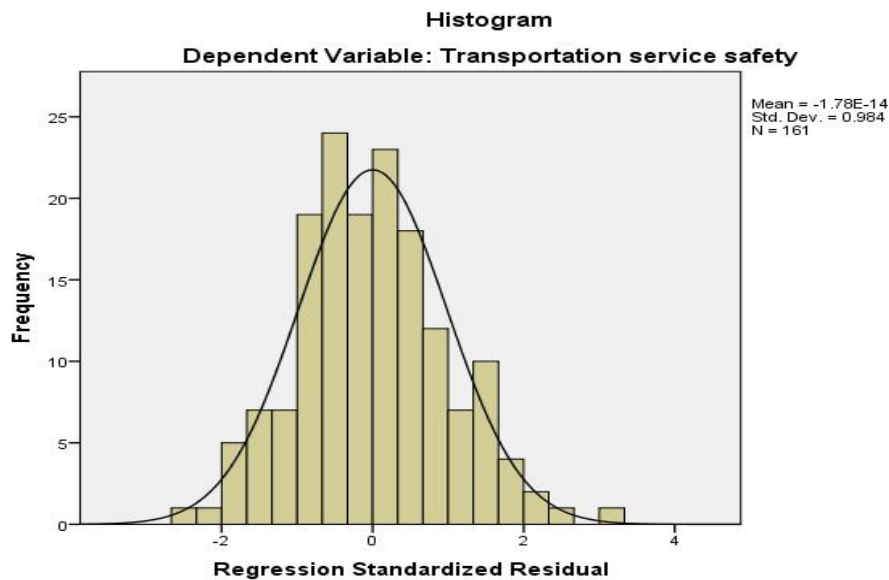
Source: own survey data of 2018

4. Linierity test

Linearity has to with the residuals should having a straight-line relationship with predicted dependent variable scores. It describes the dependent variable as a linear function of the predictor variables. According to Stevens (2009), linearity can be best cheeked by normal p-plot residual. As shown in the figure below, the relationship between the dependent and independent variables is linear. Hence, no linearity problem on the data used for this study

Normal P-P Plot of Regression Standardized Residual
Dependent Variable: Transportation service safety
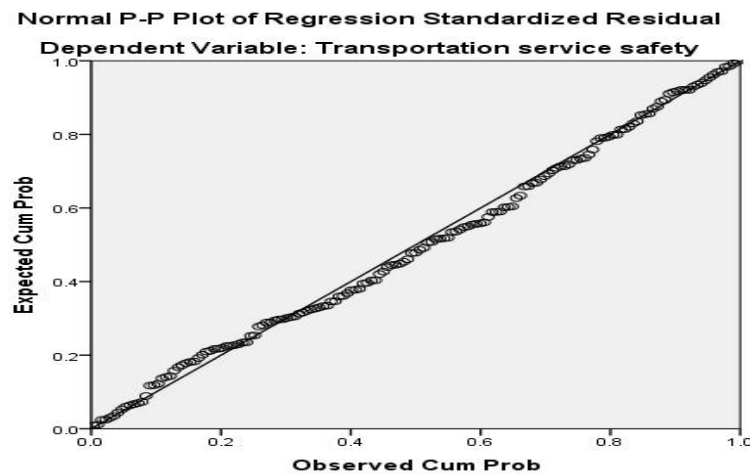
Source: own survey data of 2018

5. Homoscedasticity

As (Osborne & Waters, 2002) the assumption of homoscedasticity refers to equal variance of errors across all levels of the independent variables.This means that researchers assume that errors are spread out consistently between the variables. Ideally, residuals are randomly scattered around zero providing even distribution. To check this assumption scatter plot was generated for the model. As shown in the figure below, the error variance is constant since most scattered plot attributes are around zero and near to the horizontal line. Therefore, there is no violation of homoscedasticity assumption in this study.

Scatterplot
Dependent Variable: Transportation service safety
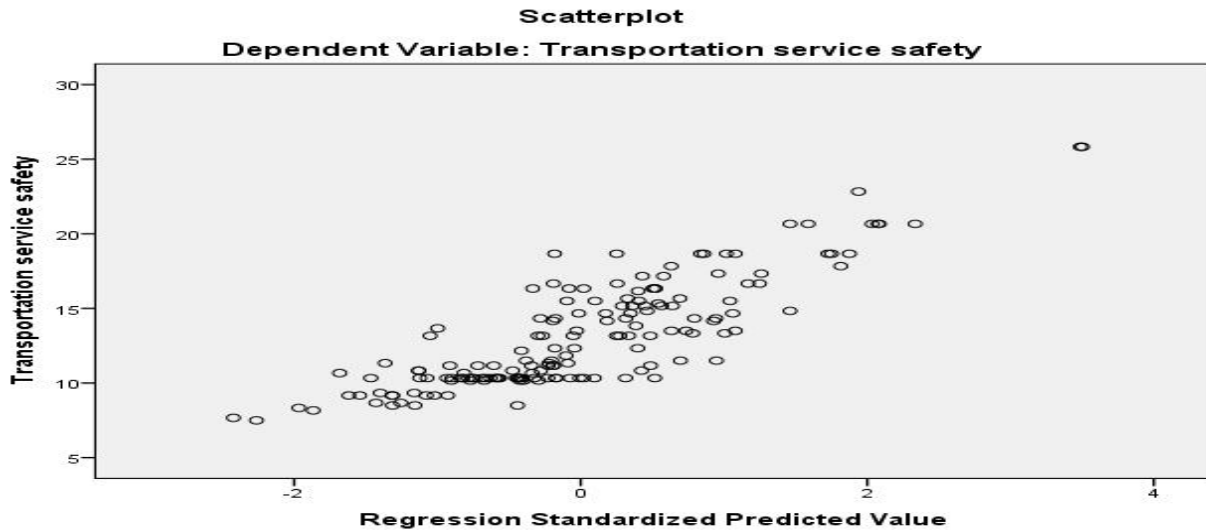
Source: own survey data of 2018

4.10.2.Analysis of Multiple Linear Regressions

In addition, the researcher conducted a regression analysis to establish the consolidated effects of the independent variables Establishing the context, identifying risk, analyzing risk,risk response , monitoring and review on the dependent variable transportation service safety.The findings are presented below:

Table 4.12. Summary of regression analysis between dependent and independent variables.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Sig. F change
1	.853[a]	.727	.718	1.927	.000

Source: own survey data of 2018

The above table 4.11 show model summary of regression analysis between independent variables of establishing the context , Identifying risk, Analyzing risk, risk response/ controlling, monitoring and review, dependent variable namely transportation service safety. These findings show that risk management practice in the study area has an effect up to 71.8% as indicated by the adjusted R Square. Thus, 71.8 %, of the variances in transportation service safety can be explained by combined effect of the predictor/independent variables. The remaining variances on

the dependent variable could be explained by other explanatory variables not included in this study.

4.10.3.ANOVA analysis

Table 4.13. ANOVA of regression analysis

Model	Sum of square	df	Mean square	F	Sig.
Regression	1534.323	5	306.865	82.638	.000b
Residual	575.573	155	3.713		
Total	2109.896	160			
	Source: Survey data 2018				

The above table 4.12 depicts ANOVA (Analysis of Variance) of regression analysis between five independent variables including establishing the context, Identifying risk, analyzing risk, risk response/controlling/, monitoring and review and a dependent variable namely transportation service safety. From the analysis of variance the result of positive significance of all values shows that model summary was significant. This is so, the F and a probability value of (F=82.638, P value = 0.000). The probability value of (0.000) shows that there is the overall regression model was significant and it gives a logical support to the study model.

4.10.4 . Coefficient of regression.

Table 4.14. coefficient of regression analysis

Model	Unstandardized coefficient		Standardized coefficient	t	Sig.
	B	Stand. error	Beta		
(Constant)	-7.250	1.148		-6.316	.000
Establishing the context	.300	.087	.238	3.444	.001
Identifying risk	.433	.146	.204	2.977	.003
Analyzing risk	.293	.122	.160	2.404	.017
Response /controlling risk	.265	.068	.239	3.897	.000
Monitoring and review	.311	.111	.168	2.808	.006
Dependent variable: transportation service safety					

Source: own survey data of 2018

Multiple regression models

The model is: $Y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5$

$Y = \beta_0 + \beta_1$ Establishing the context $+ \beta_2$ identifying risk $+ \beta_3$ Analyzing risk $+ \beta_4$ risk response $+ \beta_6$ monitoring and review

Therefore, $Y = -7.250 + (.300)$(Establishing the context) $+ (.433)$(Identifying risk) $+ (.293)$(Analyzing the risk) $+ (.265)$(risk response) $+ (.311)$(monitoring and review)

The table revealed that, the correlation between the observed value of transportation service safety and the linear combination of the independent variables. The findings from the study showed that all the variables were significant as their significance values were less than 0.05. From the model, taking all independent variables constant at zero, transportation service safety had an autonomous of -7.250. The data findings also showed that a unit increase in establishing risk management context leads to increase on transportation safety by .300. A unit increase in identifying transportation risk leads to an increase in transportation service safety by .433; while, a unit increased in Analyzing transportation risk leads to increase transportation service safety by .293. Also, a unit increased in response/controlling risk leads to an increase in transportation safety by .265, a unit increase in monitoring and review leads to an increase of transportation service safety by .311. Generally, the study findings show that how mach risk management practice jointly has an effect on transportation service safety. This implies that improvement in each steps of transportation risk management process practice has a positive significant effect on transportation service safety.

CHAPTER FIVE

FINDINGS ,CONCLUSION AND RECOMMENDATIONS.

Introduction

The chapter presents the summary of findings, conclusion drawn from the data findings. In addition, it presents the recommendations of the study. All this had been engaged toward achieving the objectives of the study.

5.1.Summary of the findings

The summary of the finding is based on the five study objectives that included: Establishing risk management context, Identifying risk, Analyzing risk , response / controlling/ risk,monitoring and review of risk practices in transport agency and traffic police.

Establishing risk management context

The findings revealed that Establishing the context are not in place. The context of risk management showed that it is not clearly defined and in a position that makes the risk management activities organized and uniformly exercised by the stakeholders. This proves that the risk management process of developing countries have a great problem in establishing the risk management context. Then It can be concluded that establishing the context were not practiced as per the standard of risk management process framework. Those finding implies the purpose and scope, internal and external context, evaluation criteria, aim and objectives, resources, schedules and involvement of stakeholders in risk management were not clearly defined and practiced by the regulatory bodies in the study area. The problems observed in Establishing the risk management context practice enabled the regulators faced challenges and fail in managing risk in a meaning full way to improve transportation service safety.

Risk identification

Practice of risk identification showed that risk was not identified regularly through different techniques listed in the literature. The finding indicated that accident investigation was used to identify transportation risk. This method of risk identification is normally used after the occurrence of accident which means it is reactive risk identification. The other techniques brainstorming,checklist,preliminary hazard analysis,event and fault tree analysis,failure mode and effect analysis and controlled experiment have not been conducted as part in risk identification methodology. The consequence of these missed techniques can minimize the proactive hazards, risk identification and management in the study area. As a result the uncertainty of risk increased and feeling of the society to transportation service safety decreased.

Risk response/ Controlling/

The study revealed that there are indicators that transport agency and traffic police commonly used risk response in unorganized way. The direction and needs of controlling risk through different techniques were identified. Risk reduction,risk avoidance, risk transfer, risk retention are practiced simply on the basis of previous trends rather than incorporating the entire risk management process. The trial of awareness creation,performance check up and usage of monetary punishment is normally desired to reduce the occurrence of risks on the society. But the existing controlling activities can not reduce it. Insurance is also practiced as a risk response techniques in its less performance of reducing risk. It can then be concluded that transport agency and traffic police were not effectively used risk responses to manage transportation risk. Applying risk response techniques in unorganized way leads transportation risk increase from time to time. So the existing risk response practiced in transport agency and traffic police was not significantly contributing to the improvement of transportation service safety.

Risk monitoring and review

The study revealed that the risk monitoring and review in transportation agency and traffic police was not continuous. The effectiveness and the outcome, regular improvement on the techniques and procedures,the reporting methods and procedures, changes and their effect on transportation service safety etc of the risk management practiced were not regularly monitored and improved

in a continuous manner. Mainly focused on registering the existing risks reporting them and following the usual controlling methods was there. No locally designed controlling mechanisms established depends on the risk behavior of the study area. The outcome of this problems makes the area not safe in transportation service as a result of increase in transportation risk from time to time.

5.2.Conclusions

Based on the study findings, it is concluded that the transportation risk management practice in jimma zone is not well practiced as different literature suggested. It is less performance risk management practice, which is not in a position to save the society from accident related transport risk. The establishment of risk context is not sufficient enough to mobilize all the stakeholders to participate in a formal way to control risk. This leads to a poor risk identification and communication of risk appetite and tolerance in the area. However, the risk identification practice is not regularly and does not include all techniques, It lead the agency/police traffic/not to perform risk identification in effective manner.

With regard to risk analyzing practice risk analyzed based on their loss and probability of occurrence and also evaluated in terms of qualitative and quantitative value. However, the risk analyzing practice do not include by their impact on transportation safety, through source of hazards,and not used the result of analysis for prioritizing major risks for improving techniques, which leads the area not benefit from using of it. The research founded that risk response practice have been conducted in poor and ineffective way. Risk avoidance, reduction, sharing and acceptance are not practiced as per ISO 31000,2012 framework requirements. Risk response should not ensures protecting that society and reduce exposure of peoples from loss and make transportation service safe.

The final conclusion indicate risk monitoring and review were not carried out regularly,effectiveness and outcome of the practice , reporting and communication to the stake holders, were not practiced as a fruitful. This leads the area with no any improvement in the procedures and techniques used to control risk. So that the monitoring and review of

transportation risk practiced were not meaningfully contributing to the transportation service safety.

The overall indication of the study point out most of the component of risk management process are not well practiced in the area, because of the grand mean value of each step of risk management practice was nearly (2) with standard deviation of (0.6 to 1) which shows the disagreement of the respondents on the existing practice. From all these it is concluded that the risk management practice in the study area was poor in its actual performance in order to have a positive effect on transportation service safety.

5.3.Recommendations

On the basis of the findings and conclusions arrived at the following recommendations forwarded so that the effect of transportation risk management practice on transportation service safety could be improved. Therefore, the researcher recommended the following:

For the success and a positive effect of risk management practice on transportation service safety, transport agency and traffic police are advised to establish a risk management context in a clear way by including the purpose and scope of risk management, risk evaluation criteria, internal and external participants clear structure, aim and objectives of risk management, clear procedures / processes / , human, capital, technological resources, and clear schedule for concerned stakeholders that are very important to manage transportation risks so as to improve transportation service safety.

Regarding to the risk identification,there is need for improvement in the risk identification practice,different techniques such as brainstorming, checklist,preliminary hazard analysis,event and fault tree ,failure mode and effect,and controlled experiments has to be recommended to identify risks in a regular and scheduled manner and management should ensure that involvement of all level employees and stakeholders in the practice of risk identification and conduction of workshop to identify risk.

Regarding the risk analyzing, the agency and traffic police has to be analyze the identified risk regularly using different methods as to show the alternative risk response techniques. Analyzing

the risk in type or area of transportation(ie.freight,passengers, motor bike,public ,private , PLC cooperatives etc) has to be recommended. Inline with these in terms of Human , vehicle, infrastructure related hazardous, and their effect on transportation safety analyzing practice has to be recommended in order to make risk analyzing practice fruit full.

For the risk response/controlling activities practiced in the area: the agency and Traffic police effectively practice risk response with respect to the actual factors of risks in the study area. Generally accepted risk management responses avoiding risk, reduction,transfer and retention with a required budget has to be recommended in an organized and involvement of all stakeholders. The awareness creation for the society has to be formally started from the elementary school to the drivers training center in a very strong manner, continuous license renewal and removal depends on the drivers performance portfolio on practical driving history with in a fixed years has to be implemented,technical check up of vehicles performance, road safety audit, speed controlling equipment's has to be recommended. The transport agency,police traffic and insurances should organized and grant training to their customer in doing so they will reduce loss caused by negligence.

The researcher recommended that in order to increase the positive effect of transportation risk management practice on transportation service safety monitoring and review of risk has to be regularly evaluate the effectiveness of risk management practice in quarters and its outcome on safety in transportation. Automated formal procedure of reporting of all risk and communication between stakeholders are recommended. More over this monitoring and review result has to be communicated to highers as their effect for the improvement of the entire process of risk management process and improvement on the safety of transportation service in the study area.

For the federal and state government

Transportation service safety is not improved only through the construction of standardized road infrastructure and using of standardized vehicles,because practical findings in this study area indicated that as the standard of road infrastructure is improved transportation accident are also increased, So incorporating standardized risk management framework including the entire risk management process is very essential to the area and the country.

Recommendations for future research.

Since transport service providers are both private and public organizations so , it is recommended that studying the risk management culture and practice of transport service provider organizations. In addition the relationship between transportation accidents and drivers training centers, the risk management structure in governments sector and private sectors needs additional research.

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APPENDIX I

JIMMA UNIVERSITY COLLEGE OF BUSINESS AND ECONOMICS DEPARTMENT OF MANAGEMENT LOGISTICS AND TRANSPORT MANAGEMENT PROGRAM QUESTIONNAIRE

INTRODUCTION
Dear respondent,

I am a master's graduate student in logistics and transport management program from Jimma university. Currently, I am conducting a research on 'Transportation risk management practice in Ethiopia, particularly in Jimma Zone'. You are one of the key respondents to participate on this study. Please support me in giving correct and complete information to present a representative finding on the current status of the transportation risk management practice in Jimma zone. Your participation is totally voluntary and the questionnaire is completely nameless.

Finally, I confirm you that the information that you share me will be kept confidential and only used for the academic purpose. No individual's responses will be identified as such and the identity of persons responding will not be published or released to anyone. All information will be used for academic purposes only. Thank you in advance for your kind cooperation and dedicating your time.

<p style="text-align:center">With regard!</p>

Instructions

No need of writing your name

Please indicate your response with a check mark (√) in the appropriate block and if you have an additional idea for the respective questions please explain it on the space provided.

The questioner is developed for both transport Agency workers and police traffics.

Section one:Profile of Participants

1. Gender: Male [ ]   Female [ ]

2. Age: less than 20 [ ]   21-30 [ ]   31-40 [ ]   41-50 [ ]   above 50 [ ]

3. Educational Qualification: Uneducated [ ]   below high school [ ]   High school [ ]

Certificate [ ]   Diploma [ ]   first degree [ ]   second degree and above [ ]

4. Marital status: Unmarried [ ]   Married [ ]   Divorced [ ]

5 . Office Name (optional):--

6. In your Agency/police office/, which position in the organizational level you are?

Management [ ]   process owner [ ] , Expert [ ]   traffic police [ ]   Others [ ]

7. How long have you been working in transport agency/traffic police?   Less than 5 years [   ] ,

6-10 years [ ]   More than 10 years [   ].

Section Two: Transportation service safety

Please indicate the degree to which you agree with the following statements concerning the transportation service safety.

No	Transportation service safety	Strongly	Disagree	Neutral	Agree	Strongly
8	Transportation service safety in jimma zone is good and peoples feel safe in transportation service.					
9	Safety problems in transportation are regularly identified and analyzed for the purpose of improvement.					
10	Human related safety problems such as driving license, training, pedestrian road usage practice, driving speeds are improved.					
11	Infrastructure related safeties are improved in a regular manner(quality of roads, traffic signs, pedestrian ways etc)					
12	Vehicle related safety issues of transportation are improved regularly(performance checkup and maintenance)					
13	The improvement in safety of transportation service is regularly monitored for continuous improvement.					

Section Three: Establishing Risk Management context.

 Please indicate the degree to which you agree with the following statements concerning establishing risk management context.

No	Risk management context	Strongly	Disagree	Neutral	Agree	Strongly
14	The purpose and scope of risk management activities are well defined in the agency / traffic police department					
15	The acceptable amount and type risk are clearly defined in the Agency/police traffic department.					
16	The internal and external contexts of risk management structure are clearly defined.					
17	The risk evaluation criteria are clearly set out by the agency/police traffic					
18	The aim and objectives of transportation risk management are clearly defined and communicated to all stakeholders.					
19	Equipment requirement, budget, stakeholders' involvement strategies and schedules of risk management are clearly defined.					
20	Managing risk is considered as an integral part of other management activities that contribute to the performance and success of transport service.					

21.Do you think that there is a strategic/rule and regulation gap that hinders transportation risk management? If yes please mention it

_____

_____

Section Four: Transportation risk identification process.

Please indicate the degree to which you agree with the following statements concerning the risk identification.

No	Risk identification process	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
22.	Transportation risks are regularly identified by brainstorming.					
23.	Transportation risks are regularly identified by checklist.					
24.	Preliminary Hazard analysis is used to identify transportation risk.					
25.	Event and fault tree analyses are used to identify transportation risk.					
26.	Transportation risks are regularly identified by failure mode and effect analysis.					
27.	Transportation risks are regularly identified by accident investigation.					
28.	Transportation risks are regularly identified by controlled experiments.					

29.Is transportation risks are identified for corrective measures or simply for reporting purpose? Please honestly mention the purpose._____
_____

Section five: Transportation risk analyzing.

Please indicate the degree to which you agree with the following statements concerning risk analyzing.

No	Risk analyzing	Strongly disagree	Disagree	Neutral	Agree	Strongly
30.	The agency/police office is analyzing the risk by the loss severity or impact of the risk.					
31.	The agency/police office analyzed the risks by the loss frequency					
32.	The agency/police traffic is analyzing the risk by estimation in qualitative and quantitative way.					
33.	The agency/police traffic is analyze risk by the type or area of transportation, e.g. by infrastructure problem, means of transportation, the environment.					
34.	The agency/police traffic is analyze risk by their impact on transportation safety.					
35.	The agency/police traffic knows about the strengths and weaknesses of the risk management practiced.					
36.	The agency /police traffic uses the result of risk analysis to evaluate and prioritize major risks for risk controlling techniques improvement.					

Section Six: The techniques of risk response /control/ in transportation.

 Please indicate the degree to which you agree with the following statements concerning the risk response /controlling/ mechanisms.

No	Risk Response /control/	Strongly	Disagree	Neutral	Agree	Strongly
37.	The agency / traffic police uses risk reduction as a risk response technique.					
38.	Regular and continuous awareness creation was used for the stakeholders to control risk.					
39.	Safety materials in transportation and performance of motorized means of road transportation performance are regularly checked and corrected.					
40.	Speed limits of driving are regularly cheeked and corrected.					
41.	Faults in transportation are corrected more by advice, awareness creation rather than punishment/ charge/.					
42.	Road safety audits are regularly conducted and corrected by the responsible body.					
43.	Risk transfer/ insurance/ is highly used as a risk response technique in the area.					
44.	The agency /police traffic used risk retention / accepting risk / at the acceptable level as a risk response technique.					

Section seven: Monitoring and review of transportation risk.

Please indicate the degree to which you agree with the following statements concerning risk monitoring and review.

No	Risk Monitoring and review	Strongly disagree	Disagree	Neutral	Agree	Strongly
45.	The design and effectiveness of risk management process practiced was regularly monitored and improved.					
46.	The implementation and outcomes of the risk management process was regularly monitored and improved					
47.	The agency/police traffic has formal procedures for reporting transportation risks and incidents					
48.	Changes to the transportation risks are regularly reported on an ongoing basis to their effect on transport safety.					
49.	All transportation risk information are honestly reported to the higher/ decision makers.					
50.	Risk management activities and their effect on transportation service safety communicated across the stakeholders.					

51. If all transportation risks are not reported , what do you think the reason of not reporting

_____
_____
_____

THANK YOU FOR YOUR TIME AND THE INFORMATION YOU HAVE PROVIDED.

APPENDIX II

MAXXANA AYUNIVARSIYT JIMMAA KOLLEJJI BIZINASI FI IKONOMIKSI

MUMMEE MAANAJIMANTI SAGANTAA MLTMGT GAAFANNOO

Kabajamo/ tu

Ani Barataa Yunivarsitii Jimmaa Koleejji Bizinasii Fi Ikonomiksiitti Baranoota Digirii 2[ffaa] Sagantaa MLTMGT/ masters of logistics and transport management/ tin hordofaa yoon argamu. Yeroo Ammaa Xuumuura Barnoota Kanaaf Qu'anno Fi Qorannoo Mataduree "Barmaata bulchiinsa miidhaa balaa geejjibaa Itoophiyaa kessatti hojiirra oolaa jiru sadartran godina jimmaatti /transportation risk magt practice in Ethiopia the case of Jimma zone/" jedhuun godina Jimmaa kessatti gaggessan jira. Isiin qaama qorannoo kanaaf hirmaataa waantaatanif gaaffiwwan dhihaataniif deebi guutufi dhugaa amanamummaadhaan deebisudhaan akka nagargaartan kabajaan isiin gaafadha. Dabalataan debiin isiin deebistan qaama qoranno kanaaf qoofa kan oluufi iccitumman isaa kan egamu, akkasumas hojii biraatif qaama birattif darbee kan hin kennamne ta'u isaa isiin hubachisa

<div align="center">Galatooma!</div>

Qajeelfama

- Maqaa kessan barressun hin barbaachisu
- Gaafiwwan armaan gaditti tarreffamaniif deebii kessan bakka qophaa'ee jiru irratti mallattoo (√) fayyadamuun agarsiisaa bakka yaada dabalataa qabdanutti immoo iddoo duwwaa isiniif kenname irratti ibsaa.
- Gaafannochi kan qopha'e hojjattoota Ejansii Geejjibaafi poolisii Trafikaatiifi waan ta'eef lamaan kessaniifuu ni tajaajila.

kutaa 1ffaa: Raga bu'uura hirmaattotaa.

1. Saala: Dhiira [ ]   Dhalaaa [ ]

2. Umuri: waggaa 20 gadi [ ]   21-30 [ ]   31-40 [ ]   41-50 [ ]   wagga 50 fi isaa ol [ ]

3. Sadarkaa Barnotaa: Kan Hin baranne [ ]   Sadarkaa 2^{faa} Gadi [ ]   Sadarkaa 2^{ffaa} [ ]

Sartafiketti [ ]   Dipiloma [ ]   Digirii Jalqabaa [ ]   Digirii 2ffaa Fi Isaa Ol [ ]

4. Haala Gaa'elaa: Kan Hin Fune/Herumne [ ]   Kan Fudhe/ Herumte [ ]   kan wal hike/te [ ]

5 Maqaa waajjiraa:_____

6.waajjira /Ejansicha keessatti sadarkaa maaliirra hojjatta ?   gaggeessummaa[ ]   Abbaa
Adeemsaa [ ] , raawwataa [ ], polisii Traafikaa [ ]   kan biroo [ ]

7. waggaa hammam waajjira /ejansii geejjibaa kessa hojjatte? Waggaa 5 gadi [   ] , waggaa 6-10
[ ]   waggaa 10 ol [   ].

Kutaa Lama: Mijaahina/nageenya tajaajila geejjibaa.

Jechamoota Mijaahina/nagenya tajaajila geejjibaatiin walqabatee tarreffaman irratti sadarkaa ati irratti waliif galtu agarsiisi.

Lak.	Mijaahina/nageenya tajaajila geejjibaa	Daran itti wali hin galu	ittin wali hin galu	Hin murtessu	Ittin wali galaa	Daran ittin walii gala
8	Mijihahinni/nageenyi tajaajila geejjibaa godina jimmaa gaariifi hawaasni tajaajilli geejjibaa mijahaadha jedhee yaada.					
9	Rakkooleen mijahinaa geejjiba kessatti argamanu fooyyeffamuudhaaf yeroo yeroodhaan adda baafamaa fi xiinxalamaa jiru.					
10	Rakkooleen mijaahina/nageenya namaan walqabatanu kana akka hayyama konkolachisummaa, leenjii, itti fayyadama daandii warra miilloo, ariitiin oofinsaa fooyya'aniiru.					
11	Rakkoolen mijahinaa bu'uraleedhaan walqabatatanu kan akka qulqullina daandii, mallattoolee tiraafikaa,daandii warra lafoo,fi kkf yeroo yeroodhaan ni fooyyeffamu.					
12	Rakkooleen mijahinaa geejjibaa konkolaataadhaan walqabatanu (mirkanessa gahumsaa fi suphaa) yeroo yeroodhaan foyya'a.					
13	Foyya'insi mijaahina/nageenya tajaajila geejibbaa fooyya'insa ittifuufinsaaf jecha idileedhaan ni hordofamuu.					

Kutaa 3ffaa: Hiika/ maalummaa/ bulchiinsa miidhaa geejibaa ittin qophessuu.

Jechamoota hiika/maalummaa/bulchiinsa miidhaa gejjibaa qophessuun walqabatee tarreffaman irratti sadarkaa ati irratti waliif galtu agarsiisi.

Lak.	Hiika /maalumma bulchiinsa miidhaa gejjibaa qophessuu.	Daran itti wali hin galu	ittin wali hin galu	Hin murtessu	Ittin wali gala a	Daran ittin walii gala
14	Barbaachisummaafi daangaan hojiiwwan bulchiinsa miidhaa geejjibaa ejansii ykn poolisii traafikaa birati haala gaarii ta'en ibsameera.					
15	Ejansii gejjibaa/ mummee polisii tiraafikaa biratti gostifi hammi miidhaaa geejjibaa amanamee fudhatamuu danda'u ifatti ka'amee jira.					
16	Caasaan keessafii kan alaa miidhaa geejjibaa too'achuu danda'u karaa ifa ta'een ibsamee k'amee jira.					
17	Ulaagaan miidhaan geejjibaa ittiin madaalamu karaa ifa ta'een qophaa'ee jira.					
18	Barbaachisumaafi kaayyoon miidhaa geejjibaa too'achuu karaa ifa ta'een kan ka'ameefi dhimmamtoota hundaaf kan ibsamedha.					
19	Meeshaalee barbaachisoon, gajatni, kallattiin hirmaannaa dhimmamtootaa fi sagantaan bulchiinsa miidhaa geejjibaa ifatti ka'amee jira.					
20.	Bulchiinsii /to'annoon/ miidhaa/ gejjibaa hojiiwwan bulchiinsaa wajjirichaa biroo waliin akka qaama tokkootti fudhatamuun gahumsafi milka'ina tajaajila geejjibaatiif ni gumaacha.					

21.Hanqina istrateejiitu ykn Qajeelfama bulchiinsaafi to'anno balaa geejjibaa dadhabsiisaa jira /danqe/ jettee ati yaaddu yoo jiraate naaf tarressime._____

_____

_____

_____

Kutaa Afur : Miidhaan geejjibaa adda baasuu.

Jechamoota hojii miidhaa geejjibaa adda baasuu wajjira kessan kessatti raawwatamaa jiruun walqabatee tarreffaman irratti sadarkaa ati irratti waliif galtu agarsiisi.

Lak.	Maloota midhaan gejjibaa itti adda ba'an	Daran itti wali hin galu	ittin wali hin galu	Hin murtessu	Ittin wali galaa	Daran ittin walii gala
22.	Miidhaawwan gejjibaa idila'uun marii garee banaa qinda'aa/ brainstorming/n adda baafamu.					
23.	Miidhaawwan geejjibaa idila'uun mala cheeklistiitiin adda baafamu.					
24.	Miidhaawwan geejjibaa ka'umsoota miidhaa wantoota ta'an irraa ka'uun adda baafamu.					
25.	Ta'iwwaniifi qaccee ya'insa dogoggoraa fayyadamuun miidhaan gejjibaa adda ba'a.					
26.	Miidhaan gejjibaa mala kufaatiifi dhiibbaa isaa xiinxaluun adda ba'a.					
27.	Miidhaan geejjibaa yeroo hunda qorannoo balaa gejjibaa irratti taasifamuun adda ba'a.					
28.	Miidhaan geejjibaa exparmantii garee murta'e irratti taasifamuun adda ba'a.					

29. Midhaawwan geejjibaa kan adda baafamanuuf gabaasuudhumaaf jechamoo,midhaawwan gejjibaa adda baafaman sana irratti tarkaanfii sirreffamaa fudhachuun sirressuufi?_____

_____

_____

Kutaa shan: Xiinxala miidhaa gejjibaa.

Jechamoota xiinxala miidhaa balaa gejjibaatiin walqabatee tarreffaman irratti sadarkaa ati irratti waliif galtu agarsiisi.

Lak.	Xiinxala miidha Geejjibaa	Daran itti hin wali galu	ittin wali hin galu	Hin	Ittin wali g alaa	Daran ittin walii gala
30.	Ejansichi/polisiin Tiraafikaa/ midhaa gejjibaa bay'ina deddebii miidhaa qaqqabutiin xiinxala.					
31.	Miidhaan gejjibaa sadarkaa ykn dhiibbaa miidhaan sun uumeen madaalama.					
32.	Ejansichi/polisiin tiraafikaa/Xiinxalli miidhaa jiru mala tilmaama karaa lakkofsafi al-lakkofsaa/ibsamaan/ taasifama					
33.	Ejansichi/ polisiin tiraafika/ miidhaa geejjibaa naannowwan gejjibaatiin walqabsiisee xiinxala.FKN bu'uraale gejjibaatiin,gosoota gejjibaatiin.					
34.	Ejansiin gejjibaa / polisiin tiraafikaa miidhaa geejjibaa kaninni xiinxalu haala dhiibbaa inni mijaahina/nageenya tiraafikaa irratti qaqqabsiisu giddugaleessa godhachuudhaani.					
35.	Ejansichi/polisiin tiraafikaa/ ciminaafii dadhabina bulchiinsa/i to'annoo/ miidhaa gejjibaa irratti qabu ni beeka.					
36.	Ejansichi/polisiin tiraafikaa/bu'aa xiinxala miidhaa gejjibaa hojilee sadarkessafi fo'annoo midhaa gurguddootiif foyya'insa maloota to'annoof ni fayyadama.					

Kutaa Jaha: Maloota miidhaan gejjibaa itti to'atamanu.

Jechamoota maloota to'annoo miidhaa gejjibaatiin walqabatee tarreffaman irratti sadarkaa ati irratti waliif galtu agarsiisi.

Lak.	Maloota to'anno midhaa geejjibaa .	Daran itti wali hin galu	ittin wali hin galu	Hin murtessu	Ittin wali gala	Daran ittin walii gala
37.	Ejansiin /polisiin tiraafikaa/ miidhaa hir'isuu /risk reduction/ to'annoo miidhaa geejjibattif ni fayyadama					
38.	Balaa to'achuuf adeemsi hubannoo uumuu itti fuufaafi dhaabbataa ta'e dhimmamtootaaf uumama.					
39.	Meeshalen ofeggannofi gahumsi geejjibaa motorawoo yeroo yeroon madaalamuudhaan sirreffamaa deemu.					
40.	Saffisni konkolaataan ittiin oofamu yeroo yeroodhaan ilaalamaa sirreffamni ni godhama.					
41.	Dogoggorotni konkolaachisummaa yeroo mul'atanu adabuu irraa karaa hubannoo uumuufi barsiisuutiin sirreffama.					
42.	Qaama ilaallatuun Odiitiin mijaahina daandii yeroo yeroon taasifamuudhaan sirreffamni ni fudhatama.					
43.	Miidhaa dabarsuun / insurance/ mala to'annoo bal'inaan hojii irra oolaa jirudha.					
44.	Midhaa sadarkaa fudhatamuu danda'u irra tursiisuun /retention/ mala to'anno ejansi gejjibafi polisii traafikaa birratti fayyadamaa jiramudha.					

Kutaa torba: Barmaata sirna hordoffiifi sirna gabaasa miidhaa geejjibaa.

Jechamoota sirna hordoffiifi madaallii miidhaa gejjibaatiin walqabatee tarreffaman irratti sadarkaa ati irratti waliif galtu agarsiisi.

Lak.	Sirna hordoffifi madaallii	Daran itti wali hin galu	ittin wali hin galu	Hin murtessu	Ittin wali galaa	Daran ittin walii
45.	Bu'a qabessummaa fii kallattin adeemsi midhaan geejjibaa ittiin to'atamaa jiru yeroo yeroodhaan hordofamuun sirreffamaa deema.					
46.	Hojiirra oolmaa fi bu'aan adeemsa miidhaa geejjibaa ittin bulchamu adeemsa dhaabbataa ta'een hordofamuun sirreffama deema.					
47.	Ejansiin geejjibaa /poolisiin tiraafikaa adeemsa gabaasaa midhaa geejjibaa fi ta'iwwanii sirnawaa ta'e qaba.					
48.	Jijjiramni miidhaa geejjibaa irratti mul'atu itti fuufinsaan miidhaa inni mijaahina geejjibaa irratti qabu bu'ureeffachun gabbafama.					
49.	Odeeffannoon midhaa geejjiba hundi isaanii amanamummaadhaan qaama olaanuuf ni gabaafama.					
50.	Hojiiwwan midhaa geejjibaa bulchuuf hojjatamanu fi dhiibbaan jarri mijaahina geejjibaa irratti qabanu dhimmamtoota ni beeksifama.					

51. yoo midhaawwan gejjibaa hundi isaanii hin gabaafamanu ta'e, maalif laata kan hundi isaa hin gabafamneef ?

_____
_____
_____

YEROO KESSAN HAARSAA GOOTANII ODEFFANNOO NAAF KENNITANIIF GALATOOMAA!!

Interview questions for key informants.

1/ what is your name and work position?

2/ Is there transportation risk management activities practiced by the agency / traffic police department ? how it can be implemented?

3/ Is there a continuous risk management processes practice that are used by the agency/ police traffic? What are they ? (like Identification, analyzing, controlling, monitoring)

4/ What are the methods used to analyze and evaluate risks ? for what purpose risks are analyzed and measured?

5/ What types of risk response techniques are used to control risk (retention , transfer , avoid?)

6/ How about the risk monitoring and review practice? Is it contribute to transportation service safety?

7/ What are the major causes of transportation risks in the area?

8/ Is there any regulatory issue or directions that hinders managing risks and causes of risks? What are they?

9/ What are the major threats of managing those risks ? what are they?

Thank you!!!

Qabxiilee Gaafannoo (Interview) Namoota Murteessoo Faana Taasifamu.

1/ Maqaa kessanifi gaheen hojii irratti argamatani maalidha?

2/ Hojiin bulchiinsa / ittisa miidhaa geejjibaa / waajjiricha kessatti ni gaggeeffamaa?

3/ Tartiibni/ processes / itti fuufaa ta'e miidhaa balaa geejjibaa ittiin to'atamu ni jiraa?
Maalfaadha? (Identification, analyzing, controlling, monitoring)

4/ Malootni miidhaan ittiin xiinxalamu,madaalamu maal fayidha? Bu'aa xiinxalaa maal ittiin
gootu?

5/ Miidhaa balaa gejjibaa kana to'achuuf maloota akkamii fayyadamtu? (dhabamsiisuu, hir'isuu,
inshuransii, fudhachuu?)

6/ Sirna hordoffiifi gamaaggama akkamiitu jira?

7/ Ka,umsoonni miidhaa balaa gejjibaa ijoon maal fayi? maaltu irratti hojjatamaa jira?

8/ Kallattifi qajelfamni mootummaan baase balaafi kaumsoota balaa to'achuuf isin danqanu ni
jiruu? Maal fayidha?

9/ Miidhaa balaa geejjibaa kana to'achuuf wantootni Danqaa ta'an ni jiruu? Maal faadha?

Galatomaa!!!