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# Abbreviations

| | |
|---|---|
| AACG | Addis Ababa City Government |
| AU | African Union |
| ECA | Economic Commission of Africa |
| MTS | Mass Transport Service |
| PTS | Public Transport Service |
| UN | United Nations |

# Table of contents

## Contents

# List of Tables

# List of Figures

# Abstract

*The transportation service of Addis Ababa has various challenges, in which the existed number of vehicles does not match with the total population size, low infrastructure, importing of old or over used vehicles, the existence of large number of small sized taxis than buses, high population of pedestrians and pack animals and street vendors congested the roads. As a result this research paper is targeting to point out the major factors that affect the transportation service and evaluate the roles of private and government sectors on tackling the existed problems. The researcher has applied random sampling technique and 150 sample sizes were employed. The data was collected through direct observation, interview and dispatched questionnaires and stated in the form of tables, diagrams and graphs. The data is stated in the form of descriptive analysis and the processed data is described in the form of percentage so as to be simple for understanding. The existence of poor transportation service affected the economic, social and political aspects of the city dwellers in which employees are not arriving on time to their working places for the reason of wasting more time on waiting transportation, passengers are forced to pay more than stipulated fare, losing materials on transport, car accidents are common and many lives and properties are destroyed every year .As to the findings of this research paper it was proved that there are different factors that affected the public transportation service such as the existence of poor traffic management, below standard roads, capacity problems of the drivers, importing of over used vehicles, lack of attention from the drivers and pedestrians on driving and using the pedestrian roads. Pedestrians are crossing roads outsides of the zebra crossing roads. The road network coverage is too small that accounts only 23.43% and the role of the private sectors don't match with the current situation while the government is involved on providing transport service instead of empowering the private sectors to provide transportation service and solve the existed problems. The traffic management office should take serious action on the drivers who collect money more than the stipulated fare and the transport users should stand for their right to avoid such unfairness on transport service*



**Key words.** Transportation service, Quality, vehicles, pedestrian

# CHAPTER ONE

# INTRODUCTION

Addis Ababa is the capital city of Ethiopia. The city's current transportation system is marked by a poor management, lack of adequate public transport services, continuous increases in transport fees, lack of smooth traffic flow and infrastructure for pedestrians, and a high rate of traffic accidents. The urbanization of the city has brought different mobility challenges. Mobility growth and transport projects shape cities, and hence the future urban form of Addis Ababa hugely depends on the policies of its decision makers (AACG, 2013). Like all Ethiopian public policies, the transport sector policies are supposed to reconcile "pro-poor" and market oriented approaches (Mintesinot Gebeyehu, Shin Takano, 2007)

The major modes of public transportation in the city are Anbessa bus and mini-bus taxis. In addition, Sheger bus enterprises, higher midi-buses saloon taxis, and the light rail transit which started operating recently are serving the city. Yet, these providers are hardly able to cope with the public demand for transportation. Thus, residents of Addis Ababa have to face great inconveniencies, as well as additional costs to the daily trips to their destinations (Tilahun, M, 2014).

Addis Ababa, which is the capital city of Ethiopia, was founded in 1886 by Minilik II. The city is only 135 years old (www.lonelyplanet.com). There were three main factors that contributed for the permanence of as the capital city of Ethiopia, since many cities have been capital cities along the history of Ethiopia;

Addis Ababa is also an official capital city of Africa, largely due to the fact that it hosts various international organizations such as the African Union (AU), United Nations (UN), and Economic Commission of Africa (ECA) and so on. The city has experienced several planning changes that influenced its physical and social growth.

Addis Ababa is the capital city of Ethiopia with a population of 4 million and is considered to be of diplomatic and political significance for the African continent (United Nations Economic commission for Africa, 2013).

According to the transportation policy of Addis Ababa, August 2011, Addis Ababa, with an area of 540 km2 is divided into 10 sub cities and 120 Woredas. The city is the country's political and economic center, the seat of head offices of African Union and United Nations Economics Commission for Africa. It also accommodates many international Aid and development organizations and 112 Embassies. The city's population is estimated to be 5 million with the current population growth rate of 3.8 %. The city population is estimated to reach 6.5 million in the near future.

Addis Ababa is exhibiting high social, economic, structural and change is found to be fast growth city. More than 70% of registered vehicles in the country are found in Addis Ababa, the facilities are still weak and needs more improvement so as to give effective service and solve the socio-economic problems of the people.

### 1.1 Background of the study

Addis Ababa is growing tremendously. The urbanization of the city has brought different mobility challenges. Mobility growth and transport projects shape cities, and hence the future urban form of Addis Ababa hugely depends on the policies of its decision makers (AACG, 2013). Like all Ethiopian public policies, the transport sector policies are supposed to reconcile "pro-poor" and market oriented approaches (G. Mintesinot, S. Takano, 2007).

An efficient public transport system is critical for urban development. Yet cities in developing countries are characterized by high-density urban areas and poor public transport, as well as lack of proper roads, parking facilities, road user discipline, and control of land use, environmental pollution, congestion, and a host of urban transport related problems (N. Fuhimiko 2008). In this regard, it is indicated that, even though Addis Ababa has become among the ten largest rapidly growing largest cities in sub-Saharan Africa, the city's public transport service is characterized by increased traffic congestion, declining attractiveness of road based 2 public transport, increased high costs of travel and journey times, high levels of road accidents, and increased high levels of road vehicle high exhaust emissions (Fantahun T., 2017).

According to the last assessment of the modal split in Addis in 2006, 44% of journeys involve non-motorized transport, 47% by public transport, and 9% by private care (Rahel, A., 2017). Therefore, recognizing the fact that the MT system is the predominant mode of transport in the

city, along with the continuing challenges the urban transport sector faces, the need for assessing the problems which hinder the firm's performance efficiency calls an urgent attention.

Thus, this research study attempts to find out the factors that determining the quality of transportation service in Addis Ababa City and provide problem solving approaches which contribute to increased service quality.

### 1.2 Statement of the Problem

In cities of developing countries like Ethiopia, road passenger transport is recognized to be the predominant mode of transportation which facilitates the movement of people and parcels. The important role played by this mode of transport is due to its flexibility, accessibility, and affordability (B. Eshetie, B. Birhanie, K. Daniel, 2013). Rapid urbanization, increased income levels, and even fostering the relative growth in motorization have created an urgent need for expanded, more effective, efficient, and safer urban transport systems(AACRTB, 2016). Providing and improving urban public transport service is becoming highly indispensable to meet the demand of the rapidly growing mass mobility due to high population growth and galloping urbanization in and around the city.

Addis Ababa is growing tremendously. It has been undergoing spectacular changes in all sectors, and hence the decision makers are facing enormous challenges. The major modes of public transportation in the city are Anbessa bus and mini-bus taxis. In addition, higher midi-buses saloon taxis, and the light rail transit which started operating recently are serving the city. Yet, these providers are hardly able to cope with the public demand for transportation. Thus, residents of Addis Ababa have to face great inconveniencies, as well as additional costs to the daily trips to their destinations (Tilahun, Meshesha, 2014). Already at crisis levels, worsening urban congestion, deteriorating mass transport service quality, ever rising road accidents, continue to be the major problems the city mass transport sector faces (AACG, 2015).

The increasing population size and physical expansion of the city contribute to the demand of public transport in the city. Social and economic purpose trips also contribute to the increase in the demand (T. Vli Wessling, 2008). However, the existing PTS public transport service system could not meet the demand expectation (B. Eshetie, B. Birhanie, K. Daniel, 2013). Moreover, the

insufficient finance for investment by the government and the limited participation of the private sector in the service has also contributed for the deficiency of transport supply and reduced service quality. Indeed, despite the low level of motorization, the inadequate infrastructure, the low capacity of modes of transport, poor traffic regulations, and lack of coordinated networks create severe jams in major roads of the city. It is increasingly difficult to get to your workplace in the large, sub-Saharan cities (Clelie Nallet, 2018).

The Addis Ababa City road and transport authority (2016) explained that the existing public transport system of the city is critically in adequate to provide quality service to the existing travel demand. The city's authority also noted that districts situated on the further out areas are less and less connected and integrated with the rest of the city which accentuates the marginalization of the poorest people by creating spaces devoid of adequate public structure. The lack of transport options connecting these districts to the rest of the city creates immobility and therefore isolation, with the result of reproducing or re-enforcing social-spatial inequalities. However, lack of infrastructure is not only at fault. The inadequate supply is also reflected in the problem of the cost of transport. The issue of accessibility to the existing transport supply, of the cost of transport, and of the population's financial capacity is crucial (UN, 2016).

According to the city road transport bureau report, the city's current mass transport sector is characterized by imbalance of demand and supply, presence of old , poorly maintained and pollutant vehicles, poor technological utilization in the sector, traffic congestions mainly resulting from poor infrastructure, and capacity and rent seeking and good governance problems. And hence, there is an urgent need to improve the public transport sector so as to meet the level of service quality required as well as attract more passengers in the future.

### 1.3 Research Questions

A. What are the major challenges of transportation service in Addis Ababa?

B. What role do the government and private sectors play to solve transportation problem in Addis Ababa?

C. What challenges determine the quality of transportation services?

## 1.4 Objectives of the Study

### 1.4.1 General Objective

- The objective of this study is to assess the major factors affecting transportation service quality in Addis Ababa City.

### 1.4.2 Specific Objectives

- To identify the challenges to deliver quality transportation services at Addis Ababa City
- To identifying the major factors affecting transportation service.
- To examine the role of government and private sectors on transportation.
- To evaluating the standard of constructed roads.
- To show the impacts of roads under construction on transpiration services.
- To identify why pedestrians, animals and street vendors congested the roads.

## 1.5 Significance of the Study

The research will help to draw the attention of the people and the government to see the major challenges that affects transport service quality in Addis Ababa. It has been stated on the previous studies that there is no strong rules and policy regarding the transport service except some proclamations and it's on and off implementation and this research will emphasis on seriousness of the problem so as to be given attention by the concerned bodies. It will also help the people to read so as to increase their awareness. Because some of the transportation service problems are emanated from lack of awareness among the users and service providers.

## 1.6 Limitation and Delimitation of the Study

### 1.6.1 Limitation

- Time constrains that may not allow the researcher to interview many people.
- Budget limitations to go and interview many people.
- Internet access in which there is strong connection to read more references.
- Some individuals are not willing to respond on the provided questionnaires because of covid-19 pandemic.

- Unwillingness of the subjects of the survey to disclose some important data such as financial income, family size and so on.
- Unavailability of up to date resources for and research and literature review.

**Delimitation**

The study has good opportunities to find out the major factors affecting transportation quality service in Addis Ababa city since it is crucial problem that affects the whole population of the city and it will come out with some raw facts to be exposed for a better solution.

### 1.6.2 scope of the study

This study is bounded conceptually and geographically in which it is designed to depict the major challenges of public transportation service in the case of Addis Ababa. Some major sites such as Mexico, Kaliti, Kera and Megenagna were chosen to dispatch questionnaire papers and concerned offices and officials were interviewed so as to get accurate data on the given topic.

### 1.7 Organization of the Paper

This thesis paper has five main chapters. Chapter one deals with the introduction part which depicts the existing major challenges of quality transportation service in Addis Ababa city. It included ; background of the study, statement of the problem, research questions, objectives of the study, significance of the study ,scope of the study, limitation and delimitation of the study and organization paper. The second chapter deals with literature review in which three major parts are mentioned; theoretical frame work, conceptual framework and empirical literature with respective subtitles. The researcher reviewed related literature to support his study and magnify the existed transportation service in Addis Ababa city. The topics are collected from various sources and references are mentioned properly.

Chapter three deals with research methodology in which the researcher mentioned the approach and design of the research, sources of data and data gathering instruments, sampling size and techniques ,methods of data analysis, validity and reliability and ethical aspects of the thesis paper. Chapter four deals with findings of the study. Chapter five deal with summary, conclusion and recommendation aspects of the study.

# CHAPTER TWO

# REVIEW OF RELATED LITERATURES

This chapter focuses on define key concepts and conceptualising them. Besides, relevant literatures were reviewed; conceptual models were designed to serve as framework for analysing the thesis work.

## 2.1 Definition and conceptualizations of key terms

**Transportation**-is the act or process of moving people or things from one place to another. It is also defined as a way of travelling from one place to another place. Modes of transport include air, land (rail and road), water, cable, pipeline and space. The field can be divided into infrastructure, vehicles and operations. Transport infrastructure consists of the fixed installations, including roads, railways, airways, waterways, canals and pipes and terminals such as air ports, railway stations, bus stations, ware houses, trucking terminals, refuelling depots (including fuelling docks and fuel stations) and seaports. Vehicles travelling on these networks may be including automobiles, bicycles, buses, trains, trucks, people, helicopters, watercraft, spacecraft and aircraft. Operations deal with the way the vehicles are operated, and the procedures set for this purpose, including financing, legalities, and policies. In the transport industry, operations and ownership of infrastructure can be either public or private, depending on the country and mode (en.m.wikipedia.org).

Transportation in this research refers to road transportation (rail and road) and focuses on public transport service and its major challenges.

**Vehicles-**is defined as a machine that is used to carry people or goods from one place to another. In this context the word vehicle refers to the types of cars that are used for public transportation. Vehicles used for public transport includes; taxis, minibuses, midi buses, buses and trains while vehicles used for transportation of goods and others includes; Combiners, Dozers, lories (dry and liquid cargos),Graders, Forklifts and so on.

**Passengers-** refer to the people who are travelling from one place to another in a car, bus, ship, airplane or train. Passenger in this context refers to the people who are travelling on taxis, buses and railways.

**Pedestrians**- refer to the people who are walking in a city, along a road. Pedestrians in this context are referred to the people who are travelling on foot.

**Vendor**-is a person or company offering something for sale, especially a trader on the street. A vendor is a person or business that supplies goods or services to a company. Another term for vendor is supplier. In many situations a company presents the vendor with a purchase order stating the goods or services needed the price, delivery date, and other terms (en.m.wikipedia.org).

Vendor in this research refers to the people who are selling goods on the street and congested the roads. These are illegal merchants who occupy the pedestrian roads.

### 2.2 Theoretical frame work

Transport plays a vital role in the development of the modern era as an integral part of the socioeconomic and political structure of the country. Thus urban transport, transport infrastructure, and traffic management should involve optimal integration of the means and ways of mobility to create maximum ease and comfort maintaining the socioeconomic and physical integration of the city. It is well understood that the modernization and urbanization processes accelerate, the importance of this sector in providing accessibility and mobility reaches higher levels. Transport is an integral part of human life. Proper transport link enable efficient frequency of services, flow of passengers and commodity on (rail, roads, air, water) mode of travel. Transport theory (or the law) stresses strongly that whatever the mode will be, it should primarily consider the human aspect (i.e. safety, livability, economy, satisfaction…etc.).*(*Peter and Christian, 1998) This gives every individual the right to choose the services that he/she desires. Transport and the different modes have evolved through time to where now in the quest to accommodate the complex pattern of the world trade and globalization, its magnitude and efficiency in the distribution process is continuously being brought into effect by technological and operational improvement. The urbanization process increases substantially the demand for urban services such as transport, on whose efficiency and availability, the successful and continued existence of urban society depends. It has played a great role in the transformation of the society and facilities modernization at large. By so doing it has changed the lifestyle of society from traditional to modern. The level of motorization and cost of its accommodation

directly correlates with trends in per capita income and the demand for urban transport is affected the city size and population.

The urban transport system should be modified and structured to contribute and operate within the principles and limitations of urban development planning by simultaneously considering and weighing several socioeconomic, spatial and other perspectives in the problem solving process. Hence, an efficient urban transport system can only be realized and sustainable through planning which responds adequately to movements requirements and offers guidelines for better and efficient use of investment serving as invaluable input for spatial development policy.

### 2.2.1 Urban Transport

All types of means of transportation used in urban areas. “It is commonly accepted that cities are the engines of growth in most developing as well as developed countries. More importantly, urban transport can be viewed as the oil that prevents this engine from seizing up.” (ORAAMP, 2010) Transportation is also diverse. It is multi-sector and, as such, it needs to be fully integrated with other municipal sectors. New transport infrastructure must be part of a balanced urban development program including traffic demand management, public transport provision and supporting land use policies. Economically, transport is an essential element of city development that, in turn, is a major source of national economic growth. Simply stated, poor transport inhibits growth. Furthermore, socially, transport is the means of accessibility to jobs, health education and social services essential to the welfare of the city residents. Deteriorating transport conditions affect all city residents; they impact particularly the poor through a decline in public transport service levels, increased length of the journey to work and other essential services and the negative impacts on environment, safety and security that the poor are least able to mitigate (World Bank, 2001).

### 2.2.2 Urban Transport Problem

Even though, urban transport plays a big role in maximizing the rate of mobility of an urban population, it also has its own problems which are being observed in most cities nowadays. The urban transportation problem is actually a complex bundle of inter related problems. These problems can be grouped into three major categories: congestion, mobility and other additional impacts.

***Congestion***

Congestion causes increased costs for travelers and freight movement, loss of time, accidents, and psychological strain. (Alan Black, 1995) This is not simply congestion of transit vehicles during peak hours, congestion of pedestrian on sidewalks as well as congestion of bicycle. Congestion is neither a new phenomenon nor a role effect of automobile. "As soon as the increase of population is created a demand for wheeled traffic in Rome, the congestion became intolerable. One of Julius Caesar's first acts on seizing power was to ban wheeled traffic from the center of Rome during the day…. Just as motor car congestion now affects small towns as well as big ones, so the increase of animal-drawn vehicles impeded circulation everywhere. Hence Claudius extended Caesar's prohibition to the municipalities of Italy; and Marcus Aurelius, still later, applied it without regard to their municipal status to every town in the Empire" (Lewis Mumford, 1991) Congestion is what most people find objectionable about traveling in cities. It is the most common complaint. If there were no congestion, most people would be happy with their cars, and transportation would not be a widely discussed problem. Congestion has several generic causes (Alan Black, 1995).

I. The first is urbanization-the concentration of people and economic activities in urban areas.
II. The second cause is specialization within cities. People want to travel between different land uses, which are dispersed around the city. Workplaces are concentrated in some areas, living places in other areas, and recreation activities in still others. But these activities are interdependent, and people must travel between them.
III. The third cause is the problem of matching supply and demand temporally. Demand, however, varies greatly over the day; this is the peaking problem. It stems largely from the Journey to work and the practice of having most people start and end their workdays at about the same time.
IV. A fourth cause of congestion is that supply often creates demand. Increases in transportation capacity can be self-defeating. A new highway that seems spacious when it opens may fill up with traffic in a few years.

***Mobility***

According to a paper of (Akinyemi, 1998*);* a new concept of mobility was introduced. It was shown that the level of mobility of a group of people is dependent on four main characteristics which are;

1. Traveling time budget of people.
2. Availability of transportation modes or services to the people.
3. The average speed at which the people can convey from one location to another by available modes.
4. The person carrying capacity of network of facilities. It has also shown in (Akinyemi,1998) that sustainable mobility requires, among other things, acceptable levels of environment impact, and costs of development and operation of transportation system etc. three main inferences can be made from these ideas. The first inference is that sustainable mobility is significantly transportation supply dependent. The better and more sustainable the supply characteristics of a transportation system, higher will be the level of mobility of peoples. The second inference is that current levels of people mobility in many developing cities can be said to be low and unsustainable largely because of inadequate transportation supply characteristics. The inadequacy of transportation supply in many countries manifests mainly through inadequate public transportation services, low productivity and level of ride ability of facilities and high level of transportation related environmental impacts. For example, in many cities, it is difficult to move around by any mode of transportation wit out physically and/or mentally exhausted in the process.

Thousands of people wait for hours at public transportation stops while public transportation vehicles are unable to get to them because they are stuck in queues on the roads. In addition, walkways are often non-existent or in very poor condition. In places where there are walkways, pedestrians are often forced to walk on the streets due to market and trading activities occurring on the walk ways. Traffic delays are ubiquitous and rides by any vehicle are uncomfortable, unsafe and expensive because of inadequate law enforcement and presence of large crevices on many roads. Furthermore, there is little or no classification of roads in general and inadequate distributor and access roads in particular in many cities. Also, based on the results of studies

such as (TRRL, 1998) the efficiencies of major roads in many cities seem to range between five to 25 percent. The Third inference is that sustainable mobility can be engineered. That is, mobility can be sustainably enhanced through appropriate design and management of the facilities and the services they provide. In general mobility is one of the structural elements which influence the transformation of urban systems. Transport is discussed either as a spatial interaction or as a stage in the marketing process that bridges the gap between points of production and points of consumption. Transport plays probably the most important role in shaping the general structure and urban land use spaces and hence urban transport plays a crucial role in maximizing the degree of mobility.

### *Ancillary Impacts*

The ancillary impacts of a transportation system or the externalities make up the third aspect of transportation problem. These are: land use (urban sprawl), energy consumption, environmental impact, land consumption, aesthetics, accidents, and disruption of urban fabric.

**Land use**: Fulfilling the resource requirements of a growing population, due to either migration or natural growth, ultimately requires some form of land-use change or urban expansion (urban sprawl) in order to provide for food, living space, recreation, infrastructure development and service provision. This in turn is easily manifested through the demand for an increased transport supply. However there has always been a major debate amongst land use and transport planners over which comes first, the development of land or the provision of transport. Does development follow the availability of road infrastructure and/or rail, bus or taxi transport or does intensified land use and developments occurs which results in the demand for improved transport. (J.D.Sampson, 1980).

### *Energy consumption*

Transport is a major and an increasing user of energy in modern society and road transport is responsible for a bulk of the energy consumed with in the transport sector. (D.A. Blackleg, 1994) identifies the combined effect of a number of factors that have contributed to increases road transport energy consumption as follows:-

i. Increases in the number of journeys resulting from the considerable growth in urban activities, and dispersion of the population.
ii. Increases in private vehicle ownership.

The presence of large population of pedestrians, live stock animals and street vendors are congested the roads and risky their lives. A pedestrian refers to the people who are walking in a city, along a road. A vendor is a person who sells things especially on the street and the movement of these things affects the traffic aspects of the transportation service of the city.

The City Administration developed the Addis Ababa Transport Plan which has a Public Mass Transport (PMT) System Development Component that includes the rejuvenation of Anbassa City Bus Enterprise, introduction of medium capacity PMT Technology comprising Bus Rapid Transit/ Light Rail Transit System along major corridors, and promotion of Minibus Taxi Services. Moreover, Light Rail Transit (LRT) has been proposed to be a part of the solutions to the transport issues in Addis Ababa. It is designed to bring alternative to the existing public transportation system as well as sustainable transportation option. The construction of the LRT began in 2009 and it will take the next two years to complete the project. The completion of this system will mean a dramatic shift towards a centralized model of public transport for the city and expected to provide the residents of Addis Ababa a safe, efficient and quality public transport (the guardian.com, 2014).

According to Ethiopian Federal Ministry of Education, Educational Statistics Annual Abstract, Addis Ababa, 2013, Addis Ababa has also been expanding, physically for the past several decades. The foundation and expansion of Addis Ababa was associated with the rapid conversion of land from rural to urban uses more than anywhere else in the country. Although the city's development was not adequately controlled, Addis Ababa had a number of plans by prominent architects and town planners between 1936 and 1986. This unsuccessful planning history of the city is reflected in its development, which has largely been characterized by spontaneous growth. The relevant one today, nevertheless, is the 1986 Addis Ababa Master Plan (AAMP) that visualized the development of a three- level polycentric urban centre: a city main centre accompanied by six sub-centers in the intermediate zones and three minor sub-centers for the expansion areas. Because of the change to the market-led economic system since 1991, however, the 1986 AAMP was revised in 2001. However, the purpose of this plan is not only to revise

previous planning, but it also intends to align urban development planning with the ongoing socio-economic and political reform and transformation taking place in Ethiopia in general and Addis Ababa specific. Still due to lack of tight control, especially in 2005 Addis Ababa was expanding at an increasingly rapid rate. Furthermore, the city has been undergoing horizontal expansion as the major form of development throughout its history.

The town was expanded towards an already vacant land and peasant agricultural land holdings. The area of Addis Ababa expanded to from 530.14 square kilometers in 2002 to 540 square kilometers in 2013. The city's radius has widened to the four directions, especially to the east and south. Expansion of the city has direct relationship with travel facility and trip making characteristics (World Bank, 2002). This argument has relevance to Addis' situation. In Addis Ababa, there are households resided at the out strict including condominium residents that need transport services. These are mainly low-income people those who cannot afford to buy car, i.e. need to access public transport. This is another burden to the existing public transport besides can be considered as an opportunity to those interested to invest in transport sector.

Addis Ababa also expanded to connect the surrounding towns of Oromia Special Zone including Burayu, Legatefo Legadadi, Gelan, Sebata, Sululta, Dukem, Holota, Sendafa, and Menagesha including Bishoftu. As a result the city administration is providing public transportation service to these towns. For instance, Anbessa bus is operating up to 50 kilometers to the four directions of Addis. This directly affects the availability of vehicles to the inner city-service because the limited number of vehicles is struggling to service the surrounding towns as well.

As a result of rapid horizontal expansion and the spontaneous growth, Addis Ababa is now confronted with increasing demand for travel because the rapid growth of population of the city has put great pressure on the demand for urban spaces. In response to this demand, efforts are being made by the city government to incorporate the peripheral areas of the city, which is resulting in hastening the sprawl of the built-up area of the city. However, due to lack of appropriate road infrastructure at the peripheries, the residents are not access to the public transport. Hence, people use walk or animal-powered transportation means. Due to inadequate and absence of pedestrians paths, people have to walk with these animals on single lane. This also might lead to discomfort of people on movement.

According to Transport policy of Addis Ababa, August 2012, during the last few years massive road construction and improvement works have been going on in the city. This has contributed to the efficiency of transport mobility and has changed the image of the city as well as facilitating other socioeconomic developments. The road length envisaged by the Addis Ababa 2003

Master plan was 800 km. As of April 2010, constructed road and pedestrian walkway were 620km. and 423km respectively. In 2011, the road coverage of the built area was 11.3% and it is envisioned to have the road network coverage about 20% by the year 2020.

Due to lack of a rail way and other effective mass transport system, the city mobility needs are mostly covered by road based few number of buses and taxis. Moreover, there is no sufficient and comfortable pedestrian walkway. As far as the city development process is concerned, the infrastructure construction and the transport services are not in accordance with the transport plan.

This is best explained in the following main challenges listed under:

- Roads capacity and traffic flow does not work in a modern and coordinated manner,
- The increasing trend of traffic congestion,
- Lack of sufficient traffic signals, road signs and markings; coupled with non-functioning and ineffective feature of the existing ones,
- Lack of dedicated bus and bicycle lanes
- Lack of parking facilities and spaces.

### 2.3 Empirical literature

Addis Ababa is the capital city of Ethiopia with a population of 5 million, and is considered to be of diplomatic and political significance for the African continent (United Nations Economic Commission for Africa, 2013). Recently, the city has been working to develop a multimodal transportation system, including construction of light rail and upgrading the existing road networks. Recent urbanizations in Addis Ababa have brought new urban challenges such as road traffic crashes, particularly pedestrian crashes. Recently, road crashes have increased at an alarming rate throughout the country, as well as in Addis Ababa (Tulu, Washington, & King, 2013a). Pedestrian injury crashes account for 85% of total injury crashes in the city (Addis Ababa Police Commission, 2012; Downing et al., 2000). Currently, in Addis Ababa, at least one

person dies and 8 persons are injured every day, on average (Federal Police Commission of Ethiopia, 2013). These figures might be artificially low, particularly for injury, due to possible crash underreporting. The underreporting of traffic crashes in Ethiopia due to personal settlement of claims has been reported in previous studies (e.g., Persson, 2008; TRL Limited in association with Ross Silcock Ltd, 2001).

Despite the frequency of pedestrian crashes and the importance of walking as a mode of transport, the road authority in Ethiopia often gives priority to the construction and maintenance of roadways for vehicle traffic, but less attention to pedestrian facilities. As per the data in 2010, there is a total of 387 kilometers of pedestrian footpaths in Addis Ababa (Getachew, 2010), whereas the total length of 7m wide roadways is 3,324 kilometers (Bogale, 2012). This implies that approximately 88.4% of the roadways in Addis Ababa have not been provided with pedestrian footpaths. International studies conducted in Asia, Africa, Eastern Europe and Latin America also revealed that about 84% of the road network in developing countries has no provision of footpath alongside roadways (Vaccines for roads, 2012). Lack of proper pedestrian facilities could be one of the reasons for pedestrians sharing roadways with motorized traffic, thus increasing the risk of crashes. In terms of modal split, citizens who walk as their primary means of transport account for about 60% of the trips within the city (Tulu, Washington, King, et al., 2013b). In addition, a high presence of motorized traffic in Addis Ababa has implications for pedestrian safety. Tesema et al. (2005) reported that more than 77% of the total vehicle population of Ethiopia is operated in the city. In addition, most vehicles are old and are operating beyond their expected running life; for instance, 65% of vehicles in Ethiopia are older than 15 years (Akloweg et al., 2011). The lack of enforcement of traffic laws may also contribute to the poor safety record of pedestrians (e.g., Ministry of Transport, 2011; WHO, 2013).

Risk factors associated with pedestrian-vehicle crashes and associated injuries have been investigated over a long period of time in western countries (e.g., Eluru et al., 2008; Kim et al., 2010; Lee & Abdel-Aty, 2005; Wong, Haque, Chin, & Jie-Yun, 2013). For example, an analysis on pedestrian-vehicle crashes along two-lane rural highways in rural Connecticut, USA identified that clear roadway width, type of vehicles, drink driving, pedestrian age, and alcohol were the main risk factors in increasing the injury severity of pedestrians (Zajac & Ivan, 2003). Another study (Roudsari et al., 2004) in the USA investigating the relationship between vehicle

type and pedestrian injury revealed that pedestrians struck by light trucks were more likely to suffer serious injuries compared to those struck by passenger vehicles. A study in New Jersey, USA reported that his presence of raised medians and the provision of sidewalks have contributed positively to pedestrian safety (King et al., 2003). A study in Washington State reported that pedestrian fatality risks were elevated at unsignalised intersections compared to other road facilities (Moudon, Lin & Hurvitz, 2007). Many studies in western countries reported positive associations between pedestrian injury and posted speed limits (e.g. Stone & Broughton, 2003; Pitt et al., 1990; Miles-Doan, 1996) or impact speed (Rosén, Stigson & Sander, 2009). In summary, the relationships between pedestrian injuries and roadway environment factors and traffic characteristics in developed countries are well established, and their policies and strategies were formulated based on the findings of many years of research.

### 2.3.1 Public Transport in the Socio-Economic Context

The need for an understanding of the factors affecting demand, and hence the research necessary to gain such understanding, depend upon the social and economic context in which public transport providers operate. This section discusses the characteristics, policies, roles and resultant objectives of public transport, and the associated criteria for making decisions about resource allocation.

### *2.3.2* The Characteristics and Role of Public Transport

Travel by public transport is necessarily subject to constraints in time, space, money and effort, since people are restricted to traveling at certain times and to certain places only. The conflict between the needs of travelers and the costs of satisfying these demands leads to a divergence of views with regard to the role which public transport should play.

i. At one end of this spectrum, public transport is expected to 'pay its way' with the services being provided in the most cost-effective way possible and paid for entirely by passenger revenues,

ii. While at the other end public transport is regarded as a social service to be funded largely from public money so that users pay much less than the true costs, and those with a special need

(the old, the infirm, children, those in remote areas, those with no car available) are treated even more benevolently.

iii. A role of a rather different nature is the use of public transport to further objectives which are only indirectly connected with public transport travel; these are mainly concerned with problems of the environment such as air pollution, visual intrusion, noise and congestion and urban form which rely on travelers switching from private transport to public transport for their achievement.

### *2.3.3* Total use of Resources

If all these resources, land use, energy, manpower and the other resources consumed in the provision and operation of the total transport system are considered together in a comparison of the total resource efficiency of alternative transport systems, it seems clear that high levels of public transport provision can achieve an overall efficiency advantage in areas where there is a concentrated travel demand in time and particularly in space. In such areas the unrestrained use of private cars would not be possible for reasons of space and cost.

### *2.3.4* Resource Allocation within the Transport Sector

It can be seen therefore that questions of resource allocation within the transport sector, between public and private provision, hinge in very general terms around: - (Report of the international collaboration study of the factors affecting public transport patronage UK, 1980) Firstly, the efficiency arguments favoring public transport in areas of concentrated travel demand; Secondly, the environmental objectives which are particularly important for large cities and historic towns; Thirdly, social objectives in relation to the provision of public transport for those who cannot afford private means of transport, which will be especially important in areas where the efficiency benefits of public transport either do not apply or are not overriding. Fourthly, a safety consideration Thus, any comprehensive comparison of the performance of public and private transport, or different public transport modes, is faced with the difficulty of comparing quite contrasting aspects. For example consideration of the efficiency of public and private modes, purely in terms 25 of their direct transport effects, would have to compare the faster private car which saves travel time but is more expensive to operate against the slower public transit mode which is cheaper but involves its users in spending more travel time.

In principle it is possible to treat other costs and benefits of transport in similar fashion so that the advantages and disadvantages of different modes in terms of the various social, environmental and safety effects could all be estimated in terms of money, though as has already been noted above there are severe practical difficulties in attempting to do so. Thus, considerations of this sort may justify the provision of subsidy to public transport, but unless the various factors can be quantified there is still no answer to the question of how much subsidy should be provided to achieve the transport system which offers maximum benefit to the whole community. In an attempt to overcome some of the difficulties inherent in costing the more indirect social and environmental effects, and so producing a single monetary measure which can be used in a social cost/ benefit analysis (CBA), there have been attempts to develop multiple goal objective functions that rank non-monetary objectives, such as environmental quality and income redistribution effects, in parallel with the direct transport effects.

### *2.3.5* Operational Criteria for Public Transport

The general guidelines under which most public transport providers operate are broad in terms of their objectives. These objectives are often couched in very general 'social' terms, such as 'the provision of public transport facilities to meet the needs of the community'. There is hence the need to translate such overall aims into quantifiable criteria in order to determine optimal allocation of resources within the public transport operation. A range of possible operating criteria is identified below: - (Report of the international collaboration study of the factors affecting public transport patronage UK, 1980);

i. Profit maximization
ii. Use of standards, covering e.g. access to the public transport network, or frequency of service
iii. Maximization subject to constraints;
    a) Turnover maximization with a budget constraint.
    b) Maximization of the benefits to public transport travelers, within a budget constraint. Technically, this corresponds to maximizing 'consumer surplus' i.e. the difference between the amount the traveler is prepared to spend in time and money (and effort) and the amount he actually has to spend in order to travel.

c) Social surplus' maximization within a budget constraint (i.e. maximizing the benefits to society)

d) Demand or output maximization, e.g. the maximization of passenger-kms or journeys or vehicle-kms (or journeys) within a budget constraint. Of these criteria, simple profit maximization is almost completely inappropriate for most public transport operations, because of the increasing importance of social objectives. It would be irrational to treat support payments from Government, regional and local authority funds simply as revenue and to run the operation on strictly commercial lines, because the justification for the subsidy would depend on the extent to which the services provided met the noncommercial objectives. The use of 'standards', on the other hand, has much to commend it. It is a relatively simple and understandable system to operate, although it tends to be insensitive both to differential needs and potential marketing opportunities. Despite these limitations, however, the sheer simplicity of the method has meant that it has become the most common type of criterion applied in practice to public transport operations.

### 2.3.6 Planning Transportation Systems

Transportation networks are compromises between planners' ideals and complex reality. Transportation has always been dictated by such factors as economics, dynamics, social intensity, physical constraints, financial resources, and political desires. Thus planning transportation systems should be a result of the contribution of team experts before final formulation of network. Although concerned professionals such as economists and sociologists may play an important role in forwarding the alternative assumptions in light of the future developments, a final plan should include flexibility alternatives and adaptability to future changes.

### 2.3.7 Public Transport Network

A network is a kind of graph, which is a geometric figure made up of points and lines. In practical applications, the points and lines are always interconnected. Each line has a point at each end, and several lines may meet at a single point. Transportation planners usually refer to a point as a node and to a line as a link. A network is defined as a graph in which there is some sort

of flow. A transit network resembles the route map that a transit operator publishes. The links represent segments of transit routes. For a rail line, a link is a section of track; for a bus route, it is a street on which buses run (Alan Black, 1995).

### 2.3.8 Traffic Management in Public Transport

An increasingly important task in traffic management is the improvement of public transport services. A primary objective of current transportation planning strategy is to encourage more public transport use, and this can be achieved by restraint of personal vehicles and better service levels of public transport. It is necessary not only to improve services but also to provide additional facilities for travelers transferred or restrained, from the use of other modes if the viability of an area is to be safeguarded. Once the specific objectives of the transport plan have 31 been derived, for the respective areas in terms of movement requirements, standard traffic study methods are applied to a number of case studies. These include the location of potential transport interchanges on bus and rail systems and the sitting and size of appropriate car parks. Estimates of existing and future traffic are required to determine generated and diverted traffic. Because catchment areas are likely to be changed, and route patterns affected, particularly for the remaining car drivers, schemes must be carefully assessed for environmental consequences before making changes to the road network. In most cities and towns, the principal public mode is the bus and most of the improvements will be directed towards improving their priority over other vehicle (TPAA, 2011).

### 2.3.9 Traffic Control

The primary emphasis of traffic control is on the safe and efficient flow of vehicles over urban streets and highways. The means of promoting this can vary from simple improvement of local streets by installing traffic signs and road markings to constructing comprehensive motorway control systems. Such comprehensive systems use access-road meters to monitor and control motorway access; closed-circuit television surveillance to detect quickly any deterioration in traffic flow; and emergency services to provide aid in case of accident and injury. Other traffic-control techniques include the use of one-way streets, enforcement of traffic flow regulations, channelization (building traffic islands, turning lanes and so on), and the use of traffic signals. Traffic signs and road markings follow a uniform practice throughout the world and are designed

to convey information with a minimum of words to avoid confusing drivers unfamiliar with the area and the language. Uniform pictorial signs and markings have been adopted throughout Europe and the United States. They include uniform sign formats and sizes, and uniform codes regulating traffic flow (TPAA, 2011).

### 2.3.10 Transport Infrastructure

As a general rule, the optimum urban transport system and the road network should involve the efficient integration of the means and ways of mobility to create ease and comfort so as to maintain local, regional and international interactions. Accordingly, urban road classification depends on the character of services they provide. The role that road network plays in providing access to property and travel mobility is the major part of traffic management. Efficient urban road network classification is derived from blood circulation patterns of living organism. The patterns are hierarchically divided into main roads, secondary roads and tertiary roads. Equally important intersections are in urban road network because of their effect on the movement and safety of vehicular traffic flow. In the planning process of road network system and the overall nature of mobility and accessibility, planners should take environmental dimensions as well into consideration. (Mathewos Asfaw, 1999) Lastly, there is an argument of equity which essentially implies that spatial mobility, provided by infrastructure facilities, is a merit that should be provided at a minimum level to all citizens, irrespective of their ability to pay for it. Hence the need for the government‟s involvement in the provision of transport infrastructure is indispensable.

## 2.4 Conceptual Framework

Addis Ababa is the capital city of Ethiopia and it has 62.5% of the total vehicles of the country and about 44.8 %( 240,349) of the vehicles are service for public transportation while 55.2% of them are used for transporting goods and other purposes.

According to the Addis Ababa Transport Bureau (AATB,2014), in Addis Ababa there are 7,500 blue and white painted minibus taxis, 800 operational buses managed by the state owned Anbessa City Bus Service Enterprise, 500 Higer midi buses 25 privately owned supported by 4,000 white minibuses and 400 cross country buses. The Anbessa buses transport 1.2 million people a day while, the higer mid buses transport 700,000 passengers, while the blue and white

minibuses carry 1.1 million passengers every day and 199 buses transport civil servants to and from work and provide a paid service during the rest of the day (AATB,2014). There are 41 trains and 26 trains provided service every day. The first route is 16.9 kilometers stretched North-South blue line linking Menelik square to Kaliti, serving 23 stations and second route is 17.4 kilometers stretched East-West green line from Ayat to Tor Hailoch serving 16 stations. The two routes are designed to carry 15,000 passengers per hour in each direction at a speed of 30 km/hour (ERC, 2015).

But all these means of transportation are not quite enough to fulfill the ever growing demand that is seen in the city.

### 2.4.1 Costumer perception

Understanding the service quality of public transportation based on user's perception is an important input for local governments and transit service providers in their planning efforts to improve system performance. Using the Addis Ababa Light Rail Transit (AALRT) as a case, this study aims to examine service users' views and perspectives by using 18 quality attributes. Factor analysis and ordered logic model were employed for this study. Factor analysis with principal components was used to extract the most important factors of satisfaction from the 18 attributes. The results showed that safety and security, ticketing system, travel information, crowdedness, frequency, cleanliness, and comfort are the most important factors influencing user satisfaction. The level of importance of these factors varies depending on different socioeconomic and travel characteristics of AALRT users. Riders who use the light rail at afternoon peak hours, have high household income and short travel duration, and use LRT for shopping purposes have a negative perception regarding the crowdedness, frequency, ticketing, and information system of the AALRT. Passengers with longer travel distance, those who use the AALRT frequently, and full- or part-time workers and students have a positive perception towards several attributes of the system. The qualities of the public transit service and customer satisfaction are directly related. The relationship is measured through riders' views and perspectives and their emotional judgments of the service, which can be explained through liking and disliking, or agreeing and disagreeing with attributes of the service. To better understand the satisfaction levels of riders based on their experience, it is important to relate their perception with their usage frequency and socioeconomic characteristics. Frequent users, occasional users, and nonusers have different

levels of satisfaction. Likewise, satisfaction can be segmented based on gender, age group, income, marital status, education level, travel purpose, car availability (mode choice), and job type of passengers. These classifications can help to understand satisfaction based on the sociodemographic characteristics of riders and to devise policies and programs that meet the needs of the existing and potential riders. This then contributes to an effective and healthy public transit service delivery, therefore attracting more riders to the system.

For cities such as Addis Ababa, who launched light rail transit (LRT) service recently, exploring the perception of riders based on their experience is important to improve the quality of the service. For a long time, Addis Ababa's public transport system mainly consisted of buses and shared minibus taxis. The overall transportation system has been characterized by congestion and pollution, a high rate of accidents, a weak traffic management system, and an outdated fleet. The majority of public transportation users are of low- and middle-income groups. In response to these transportation challenges, the city administration launched its first LRT system in 2015. The LRT is serving the city and meeting the high demand of public transportation. However, little is known about the performance of the service from the riders' point of view. There is a gap in the understanding of which of the service attributes are more dissatisfying or satisfying for passengers. This study uses the Addis Ababa Light Rail Transit (AALRT) as a case study, perspectives, and satisfaction with the quality attributes of the service. The research also aims to determine the effect of sociodemographic factors and the travel characteristics of riders on their satisfaction by calibrating models where overall satisfaction is considered a dependent variable. The results of the study contribute to filling the literature gap as well as improving the current service quality and providing insight for the future expansion of LRT.

### 2.4.2 Safety of passengers

**Security**: in many transport system, passengers are not secured from pickpocket both on buses and at bus stops and terminals. In some cases it is common that passengers are violently robbed. The way in which transport is operated determines the level of insecurity. While the presence of inspectors or conductors on the vehicles, good lighting on buses and at bus stops have a beneficial effect in reducing the opportunities for the crime of pick pocketing, overcrowding of

buses and poor discipline at bus stops and terminals increases passengers vulnerability to pickpockets (Iles, 2005). On public buses particularly, stealing is common and people loose their wallets due to pick pocketing. These acts often create a sense of insecurity among passengers and diminish their satisfaction with public transportation services (http://www.nctr.usf.edu).

**Comfort**: is an important element of service quality considered by passengers using public transportation services (http://www.nctr.usf.edu). Good seats with available space to move easily, good heating and ventilation systems, high proportion of seated to standing passengers, low step heights (to facilitate access by disabled passengers), good maintenance standards so that the interiors of buses are in a good state of repair and good standards of cleanliness, low level of crowding, smoothly driven buses particularly where standing passengers are carried, good protection and resting facilities for waiting passengers at bus stops and stations, good discipline at bus stops and on boarding the vehicle so that passengers are being protected from jostling or losing their places in a queue are highly required by passengers and determine their level of comfort and satisfaction (Iles, 2005; Height and Cresswell, 1979).

### 2.4.3 Vehicle standards and imports

Ethiopia is not a vehicle-producing country. Vehicles are imported mainly from Europe and the Middle East (Gulf States), with fewer from Asia and the United States of America (USA). Most passenger cars, motorcycles, Heavy Goods Vehicles (HGV) etc. are imported, either as new 31 New Car Assessment Programmed (NCAP), a car safety performance assessment, and awareness programmer. The mission is to save lives, prevent injuries, and reduce traffic-related health care and other economic costs associated with motor vehicle use and highway travel. 32 Vehicle-to-Person ratio (1:100)

Vehicles as completely built unit, some as semi knocked-down and/or completely knocked-down with local assembly or as second-hand vehicles. Currently, Ethiopia poses no restriction on the age of vehicles that can be imported. It is estimated that new vehicles constitute less than 15 percent of the vehicle fleet. The majority of vehicles imported are Japanese brands, particularly Toyota, with a few other companies only assembling and modifying bodies for buses and trucks.

However, both new and second-hand cars are subject to the rules and regulations relating to vehicle import and registrations, without giving due consideration to minimum safety requirements and without United Nations type approval or certification schemes. The customs tariff for imported vehicles is based on CIF cost of the vehicle, unlike other goods, which is based on contractual price. Ethiopia's ageing motor vehicle fleet can be traced in large part to the ages at which second-hand motor vehicles have been imported. Over the years, the average age at which motor vehicles are imported has risen from 15.5 in 2000 to slightly less than 20 in year 2016. This is an increase of over 25 per cent. There are several possible explanations for this increase. However, there is no certainty that a vehicle, once imported, can be registered for road use. According to Proclamation No. 681/2010 ratified by the House of Representatives for vehicle identification, inspection and registration, for purposes of registration, all vehicles entering Ethiopia must conform to the Imported Currently Ethiopia produces 8,000 commercial and private vehicles annually for the local market – something the Government admits is way below the country's potential. So far, the country has no vehicle age limit but, in a bid to reduce traffic crashes there is ongoing policy discussion and a draft law to limit the importation of second-hand cars that are more than 5 years old. However, the age of a vehicle is no guarantee that the vehicle is safe. Often manufacturers have several versions of a given model, producing vehicles for foreign so-called "third markets" that do not comply with minimum safety and environment requirements. The custom and other applicable taxes (tariff) in relation to vehicles are thus calculated based on Cost-Insurance-Freight (CIF) method, as provided under the applicable customs tariff and respective tax laws (Proc. No. 622/2009). CIF is considered a more expensive option. This is because the car seller uses a forwarder of his or her choice who may charge the buyer more in order to increase the profit on the transaction.

Vehicle Standard Inspection Form, i.e. criteria set by the Transport and Custom Authority focusing the vehicles on the Ethiopian road network. However, the Form makes no specific reference to compliance with environmental or safety requirements of vehicles, focusing rather on number of axles on the vehicle, width and length of the vehicle (dimensions), engine capacity/displacement, age of the vehicle, Vehicle Identification Number, and steering-wheel system. Ethiopia tends to follow other African countries where United Nations Agreements for Vehicle Regulations and Global Technical Regulations practices regarding new and imported

vehicles are not taken into consideration. Since Ethiopia has not acceded to or applied United Nations vehicle agreements such as the 1997 agreements on uniform conditions for periodical technical inspections of wheeled vehicles and the reciprocal recognition of such inspections in place, vehicles manufactured within and outside the continent and vehicles imported into Ethiopia in particular do not need to comply with these standards and regulations (UNGTR). The result is that these vehicles generally have lower safety standards and specifications than their European counterparts as evidenced by the recent NCAP tests report conducted on a number of African-built passenger cars. For instance, whereas legislation provides a long-discussed minimum statutory standard of safety for cars, it is the aim of predictive vehicle safety rating systems like NCAP to encourage manufacturers to exceed these minimum requirements in a short space of time.

# CHAPTER THREE

# RESEARCH METHODOLOGY

## 3.1 Study Area

Addis Ababa is the capital and largest city of Ethiopia. It has a population of 5,384,569 according to the 2011 population census, with an annual growth rate of 3.8% (CSA, 2011). Addis Ababa has the status of both a city and a state. It is where the African Union is and its predecessor the OAU was based. It also hosts the headquarters of the United Nations Economic Commission for Africa (ECA) and numerous other continental and international organizations. It lies at an elevation of 2,300 meters (7,500 ft) and is a grassland biome, located at 9°1′48″N 38°44′24″. From its lowest point, around Bole International Airport, at 2,326meters (7,631 ft) above sea level in the southern periphery, the city rises to over 3,000 meters (9,800 ft) in the Entoto Mountains to the north. For the purpose of political administration, the City is divided into 10 sub-cities and 116 Woredas.

## 3.2 Research Design

For the purpose of this study descriptive research approach and cross-sectional study design was applied. In ordered to accomplish the proposed research with respect to the objective and the nature of research questions of the study, quantitative data collection and analytical technique was employed.

## 3.3 Population, Sampling technique and sample size determination

This study uses multiple stage random sampling to draw an appropriate sample size. In the first stage, Mexico, Megenagna, Saris, Kaliti and Kera main roads was purposively selected. In the second stage, 150 samples were selected using random sampling technique to get representative sample. Yemane (1967) provides the following simplified formula. Accordingly, the required sample size at 95 % confidence level with degree of variability and level of precision equal to 8% is used to obtain a required sample that represents a true population.

$$\frac{N}{1 + N(e2)}$$

Where N- 239,545 (Estimation of population traveled on the mentioned above roads) Yemane (1967)

e = 8%

### 3.4 Source and Instruments of Data Collection

The sources of data collection were both primary and secondary data. There was direct observation which is primary sources and written documents were referred to support the given study. The researcher visited Addis Ababa transport service agency, Addis Ababa traffic management office, Addis Ababa Road Authority office and School of Aygoda attendance record office to refer written documents so as to consolidate the primary data. The researcher used camera to capture pictures on the streets, personal observation carried out and questionnaire papers were used to gather information and published and unpublished documents were referred.

### 3.5 Procedures of Data Collection

Primary and secondary data were collected using the expected process in which the researcher took written paper from St. Marry University and submitted to Addis Ababa transport service agency, Addis Ababa traffic management, and Addis Ababa Road Authority and School of Aygoda offices and showed to the participants. All of them were cooperative to fill the questionnaire papers and provide written documents. Necessary materials like pen, paper and camera were used. The researcher has also prepared a schedule on how and when to collect data and visited the above mentioned offices twice. After data collection, the researcher handled it properly by putting in order, symbols and numbers to avoid confusions.

### 3.6 Validity and Reliability of the Data Collection Instruments

Cronbach's alpha is often used to measure the reliability for a set of two or more constructs where the alpha coefficient values may range between 0 and 1 with higher values indicating higher reliability among the indicators. A measuring instrument is reliable if it provides consistent results, (R. Kothari, 2007)

Accordingly, the reliability of the questionnaire used by the present study has been tested by using Cronbach Alpha. The SPSS result shows that the questionnaire's reliability is 0.946 Cronbach's Alpha and hence is highly reliable.

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .946 | .945 | 46 |

### 3.7 Methods of data analysis

Collected data was coded, transformed for analysis using SPSS version 23. Descriptive statistics such as frequency and percentage were used to characterize the demographics of the study population.

### 3.8 Ethical consideration

The researcher followed the procedures and ways of writing research paper. Methods of data collection, analyzing and interpretations and stating references were followed based on the rules and regulations of writing research paper. The participants' willingness has been checked by showing the written letter from St. Marry University a head of distributing the questionnaire papers. The confidentiality of the respondents was properly handled by making not to write their name on the questionnaire papers.

# CHAPTER FOUR

# RESULTS AND DISCUSSIONS

## 4.1 Socio- Demographic Characteristics of Respondents

One hundred fifty (150) participants were participated in the study by giving the response rate of 96.7 %.Majority (52.7%) of the participants were female, and fifty-seven percent (57.3 %) of the respondents are found within the age range of 21 to 30 years old. Seventy- seven percent of the respondents were government employee followed by student (20%) in their occupation. Around sixty nine percent of the respondents were single in their marital status whereas fifty-two percent of the respondents were Degree holder in their education level (Table 1).

Table 1: Socio-demographic characteristics of the study participants, 2021

| **Variables** | **Response category** | **N (%)** |
|---|---|---|
| Sex | Male | 71 (47.3) |
| | Female | 79 (52.7) |
| Age | < 20 | 27 (18) |
| | 21- 30 | 86 (57.4) |
| | 31- 40 | 28 (18.6) |
| | >40 | 9 (6) |
| Occupation | Student | 30 (20) |
| | Government employed | 116 (77.3) |
| | Unemployed | 4 (2.7) |
| Marital status | Single | 103 (68.7) |
| | Married | 46 (30.6) |
| | Divorced | 1 (0.7) |
| Educational level | Primary education | 5 (3.3) |
| | Secondary education | 12 (8) |
| | Certificate | 19 (12.7) |
| | Diploma | 25 (16) |
| | Degree | 77 (52) |
| | Masters | 11 (7.3) |
| | Others | 1 (0.7) |

### 4.2 level of customer expectation on quality transport service

As part of service taker or as a costumers the service they received is, study participants were made to desirable about the service receivers not fulfilling the level of their expectation and satisfaction. On asking about the service they receiving from the transport service 127 (84.7%) said they satisfied with the service they got (Figure1).

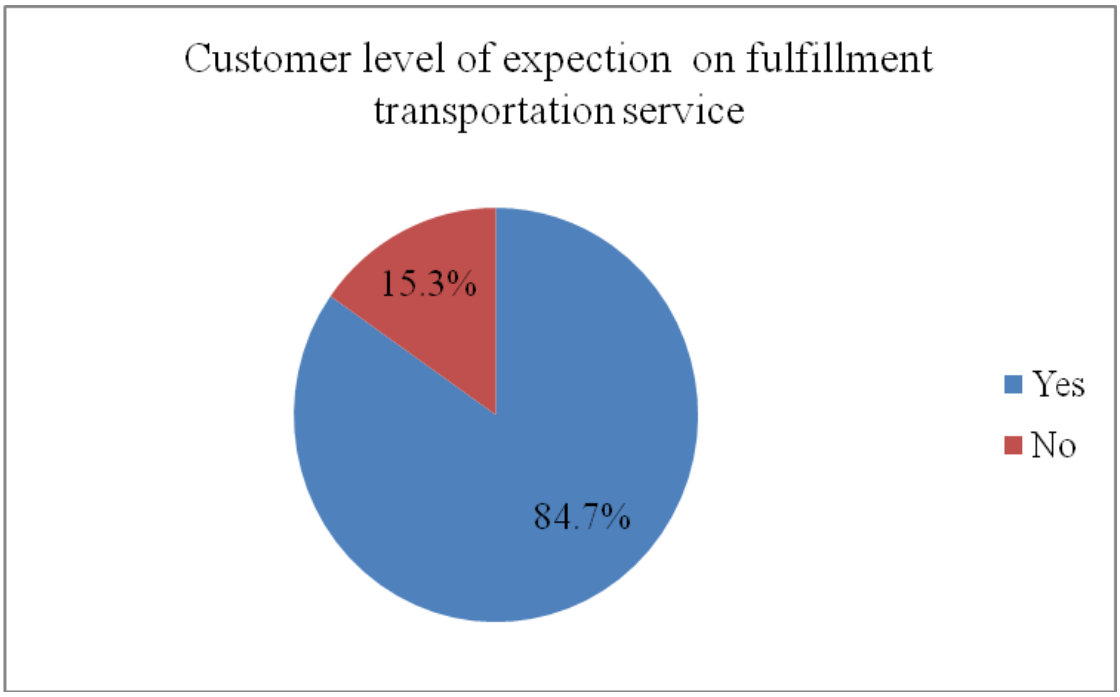


Figure 1: Customer's level of expectation on fulfillment of transportation services, 2021

### 4.3 customer satisfaction towards the transport service

As part of service providers' responsiveness to customers, study participants were made to desirable about the service provider integrity and readiness in solving passengers problems likely to occur while using the service and more than half of the respondents (68.4 percent) responded that the problem-solving approaches of transport operators was mission. Only 26 of the total (31.6 percent) agreed that operator's willingness towards solving customer's problems to be satisfying.

The study participants were asked about their opinions on how motivated service operators were in providing quality service to all passengers. Many of the service users selected for the study asserted that service provider's initiative to provide quality service was satisfying, while 36.4

percent agreed and strongly disagreed on the operators' endeavors towards meeting the quality service demands of public transport riders (Table 2).

Table 2: Readiness and integrity of transport service providers, 2021

| Readiness and integrity of transport service providers | Frequency | Percentage |
|---|---|---|
| Yes | 127 | 84.7% |
| No | 23 | 15.3% |
| Total | 150 | 100% |

### 4.4 Mode of transportation customer used

The table below shows the mode of transport used by the respondents and it shows that majority of the respondents used taxis which accounts about 77.3% of the total respondents. The reason why they used taxi is not because the prices of taxi is less than the others rather taxis are easily accessible and save time compare to the other mode of transport. Those respondents' said 'though buses are cheaper than taxis it consumed more time until it got full since it carries large number of passengers at a time.

About 12% of the respondents used Higer bus their place of destination is close to their home residences. Besides there are many people who can't afford the price of any mode of transport since their daily or monthly income is too small. About 5.3% of the respondents were found using Anbessa bus and they appreciated the habit of covering long distance at a trip while taxis are covering short distance compare to Anbessa buses. Some of the respondents stated that many of the taxi drivers are tricking people to pay more money by splitting the stipulated price for a given kilometers. The rest of the respondents were Sheger bus users (2.7%), train users (2.0%) and other mode of transport users (0.7%) out of the total sample size population.

Table 3: Mode of transportation customer's used in Addis Ababa, 2021

| Mode of Transport | Frequency | Percentage |
|---|---|---|
| Higer | 18 | 12% |
| Sheger Bus | 4 | 2.7% |
| Taxi | 116 | 77.3% |
| Anbessa Bus | 8 | 5.3% |
| Train | 3 | 2% |
| Other | 1 | 0.7% |
| Total | 150 | 100% |

### 4.5. Challenge of quality transportation service

#### 4.5.1 Payment for transportation

There are times people are forced to pay more than stipulated fare and the respondents stated it as follows.

Table 4: Payment more than stipulated fare in Addis Ababa, 2021

| Are there any instances where you are forced to pay more than the estimated fare on taxi transportation? | Frequency | Percentage |
|---|---|---|
| Yes | 127 | 84.7% |
| No | 23 | 15.3% |
| Total | 150 | 100% |

The above table shows the response towards stipulated fare in which about 84.7% of the respondents agreed on there are times and reasons where they are forced to pay stipulated fare while about 15.3% of the respondents argued that they don't pay stipulated fare at any time. The majority of the respondents stated that there are many reasons why they are forced to pay more than expected or the stipulated fare such as:

- Shortage of transportation service giver vehicles. About 31.5% of the respondents stated that people are forced to pay more than the stipulate fare because there is no alternative rather than paying more money not to be late to work places and home since the existed service giver cars and the need doesn't match at all.

- Lack of follow up from the side of traffic management office in which the travelers are forced to pay whatever amount ordered by the driver and the conductors at pick hours. About 18.1% of the respondents mentioned that there is poor follow up from the traffic management office in which they don't take serious action upon the taxi drivers who are demanding more extra payment while there is no any good reason to pay more than the stipulated fare.
- People are forced to pay more than the stipulated fare when it is getting dark by afraid of thief and robbery. About 16.5% the respondents agreed that people are exposed to different problems including loosing materials while they are standing on the roads waiting transport services.
- Many of the taxi conductors are not willing to give changes. Though the stipulated fare is known but many of the conductors are not willing to give changes. About 12.6% f the respondents stated that they always lose 25 to 50 cents per each trip and when it is calculated for four and six trips it is going to be two to three birr per day averagely.
- The number of service rendering cars doesn't match with the transport service user population. About 6.3% of the respondents stated that the population of Addis Ababa is growing fast while the transportation service is showing little progress or sometimes remained constant.
- About 4.7% of the respondents also mentioned that passengers pay more than stipulated fare willingly to save time and reach on time to their work places and home when they return from their working places.
- About 4% of the respondents mentioned that there is lack of awareness from the transport users. Many of the passengers do not know their right or do not want to secure it rather. This is observed while three people are sat down on a two people's seat, not asking conductors to give back changes mainly cents, not telling drivers to take them to the proper destination. There are origin and destination which are fixed by the transport authority but many of the taxi drivers do not apply it to earn more money.
- About 3.2% of the respondents mentioned that passengers are forced to pay more than stipulated fare while taxi drivers are forced to use another way instead of the given road because of road construction or traffic jams.

- About 3.1% of the respondents stated that people are forced to pay more money while it is rainy days. Taxi drivers and conductors use such opportunities to make passengers to pay more than stipulated fare since they knew the psychology of the people.

### 4.5.2 Time consumed on Travelling to Destinations

Table 5 shows the average time consumed on waiting for transportation and about 40% of the respondents consumes between 30 minutes to one hour every day. This is only for one day trip and 1 hour to 2 hours are wasted every day. About 37.3% of the respondents stated that less than 30 minutes are consumed every day and less than one hour is wasted every day. About 17.3% of the respondents mentioned as they always waste 1 hour to 1:30 hours every day and it goes from two to three hours every day that wasted almost one-fourth of the day. About 4% of the respondents stated that they do waste 1:30 to 2:00 hours every one trip and three to four hours or one-third of the day is wasted every day. About 1.4% of the respondents also stated that they are consuming more than two hours per trip that goes more than four hours every day.

Table 5: How long does it takes on average to get public transportation? 2021

| Time Interval | Frequency | Percent |
|---|---|---|
| < 30 minutes | 56 | 37.3% |
| 30-60 minutes | 60 | 40% |
| 1hour-1:30 minutes | 26 | 17.3% |
| 1:30 -2:00 hours | 6 | 4% |
| > 2□00 hours | 2 | 1.4% |
| Total | 150 | 100% |

### 4.5.3 Frequency of Trips Per day

The table below shows frequency of trips per day and about 42% of the respondents mentioned as they are traveling twice daily, about 20% of the respondents travel three times a day, 14% of the respondents travel four times a day, 11.3% of the respondents mentioned as they don't use transport every day, 9.4% of the respondents travel more than five times a day while about 3.3% of them travel five times a day.

Table 6: Frequency of trips per day customer travelled in Addis Ababa, 2021

| Frequency of Trips per day | Frequency | Percent |
|---|---|---|
| Does not use transport daily | 17 | 11.3% |
| Twice | 63 | 42% |
| Three times | 30 | 20% |
| Four times | 21 | 14% |
| Five times | 5 | 3.3% |
| > Five times | 14 | 9.4% |
| Total | 150 | 100% |

### 4.5.4 Advisable time to Travel Easily

Table 7;-Shows advisable time to travel

| No. | Advisable Time to Travel | Frequency | Percentage |
|---|---|---|---|
| 1 | Early Morning(6:00 a.m-7:00 am | 91 | 60.7% |
| 2 | From 7:01am -8:00 am | 43 | 28.7% |
| 3 | From 8:01 am- 9:00 am | 4 | 2.6% |
| 4 | 10:01 am-11:00 am | 1 | 0.7% |
| 5 | No idea | 11 | 7.3% |
| **6** | **Total** | **150** | **100%** |

As it is mentioned on the above table, the sample population suggested convenient time to travel mainly time to go for work or learning as follows: About 60.7% of the respondents stated the best suggested time is early in the morning starting from 6:00 am to 7:00 am in which there are small population and car movements and there is no traffic jam as well. About 28.7% of the respondents recommended from 7:01-8:00 am, about 7.3% of the respondents have no idea about the convenient time to travel and 2.6% of the respondents suggested between 8:01 am-9:00 am while one person (0.7%) suggested between 10:01 am to 11:00 am as advisable time to travel.

### 4.5.5 Punctuality Problems and its Consequences

Table 8: How often you reported late to your working place

| Frequency of lateness per month | Frequency | Percent |
|---|---|---|
| two times | 56 | 37.3% |
| three times | 60 | 40% |
| four times | 26 | 17.3% |
| five times | 6 | 4% |
| six times | 2 | 1.4% |
| Total | 150 | 100% |

Based on the above table about 37.3% of the respondents stated that they do report late to their working two times per month and learning places repeatedly because of transportation problems such as huge traffic jam, shortage of transport service rendering cars, large number of people making long queue. They are also indicated that they had no any record of lateness to their working or learning places since they walk up early in the morning some of them lives closest to their working or learning places and few of them found unemployed.

Out of the respondents who reported late three times are about 40% said 'yes we do face lateness's' about 89.3% of them mentioned as the problem emanated from poor transportation services while 17.3% of them reported late four times per month, 10.7% of them indicated the lateness occurred because of personal problems like walking up lately and leaving their home late for different reasons. About 4% of the respondents are late five times per month, about 1.4% of them are late six times but they stated as they walk up early in the morning, but they mentioned as they live far from their working or learning places and about 8.3% of the respondents stated they don't get late because they don't have job currently.

As to the respondents arriving late to their working or learning places has its own consequences while some organizations are providing written warning some others are deduction salary on their employees. The students also indicated as there are consequences like making the students to sign a conference and calling their parents and making them to sign conferences to send their children to the school early in the morning. The following chart shows the number of lateness recorded and number of staff who got salary deduction in school of Aygoda on randomly selected 50 staff members. The randomly selected staff members included 40 teachers and 10 administrators.

Eight months of attendance 50 staff members has been checked and they were selected to participate on the questionnaires and they all reasoned out that they were getting late arrive to their working place was caused by transport problems.

### 4.5.6 Passengers safety

Table 9 shows the response given towards losing of materials while traveling or waiting transport and about 58.7% of the respondents stated that they lost materials such as mobile phone and money. The reason why they are forced to lose materials is there is no proper queue while waiting transport and many people observed pushing each other front and back and this is good opportunity for the thieves to steal materials from the pockets of the passengers. Besides there are times while passengers are travelling without getting seat and they cannot protect their pockets since large number of passengers are standing together and their hands are hang onto the bus' iron ring. About 41.3% of the respondents mentioned as they never lost materials while traveling or waiting transport which is good to have such kind of carefulness.

Table 9: Passengers safety on transportation in Addis Ababa, 2021

| Have you ever lost materials while travelling or waiting transport? | **Frequency** | Percentage |
|---|---|---|
| Yes | 88 | 58.7% |
| No | 62 | 41.3% |
| Total | 150 | 100% |

### 4.5.7 Street shopping

The respondents mentioned the disadvantages of shopping on the pedestrians roads in which it makes people to go along the main roads mixed with the cars since the pedestrian road is busy of shopping. About 84.6% of the respondents stated that street shopping is another factor that caused car accidents because pedestrian road is not maintained to serve the people rather business makers are dominated the pedestrians' roads. On the other hand about 15.4% of the respondents argued that though it has its own side effects, this is not a serious problem that caused accidents compare to its advantage just providing different materials with faire prices.

### 4.5.8 Age of cars

When the age of vehicles in Addis Ababa studied, it was found that 53.5% vehicles were more than 20 years old while 29.3% were more than 30 years old.

The respondents stated that using second hand vehicles in Ethiopia is one major problem that contributed to face accidents. Most of the time used vehicles are imported to Ethiopia and some are imported even after finished giving service in its manufactured countries.

## 4.6 Private sector contribution for transportation services

As to 84.7% of the respondents, though the private sectors are involved on transportation service, their reachable doesn't fit to the contemporary service. According to the respondents, one reason that they are not able to solve the existed transportation problem is the country's taxation system as cars are under luxury goods and its taxation is double of its price and individuals are not encouraged to import or buy cars. Privatization policy is not granted fully in which some of the mode of public transportation like Anbessa bus and the light rail way are fully under the control of the government.

On the other hand, about 15.3% of the respondents stated that the role of the private sectors is satisfactory as compare to the previous years because there are some motivations and individuals are allowed to form a kind of group and import public transport givers with some discount on taxation.

Table 10: The role of private sectors on transportation services in Addis Ababa, 2021

| Rating the role of private sectors on transportation availability | Frequency | Percentage |
|---|---|---|
| Fit to the contemporary period | 23 | 15.3% |
| Unfit to the contemporary period | 127 | 84.7% |
| Total | 150 | 100% |

### 4.7 Level of satisfaction on the availability of mass transport service in Addis Ababa

Table 11: satisfaction on the availability of mass transport service in Addis Ababa 2021

| Level of satisfaction | Frequency | Percentage |
|---|---|---|
| High | 1 | 2% |
| Medium | 24 | 16% |
| Low | 124 | 82% |
| Total | 150 | 100% |

Based on the above table about 82% of the respondents stated that they are not satisfied with the availability of mass transport in Addis Ababa because of the number is not much the need. Out of the respondents who said medium level of satisfaction about 16% of them mentioned as the problem emanated from poor transportation services while 2% of the respondent have highly satisfied by the availability of transport because the government is trying to import high number of mass transport giver vehicles.

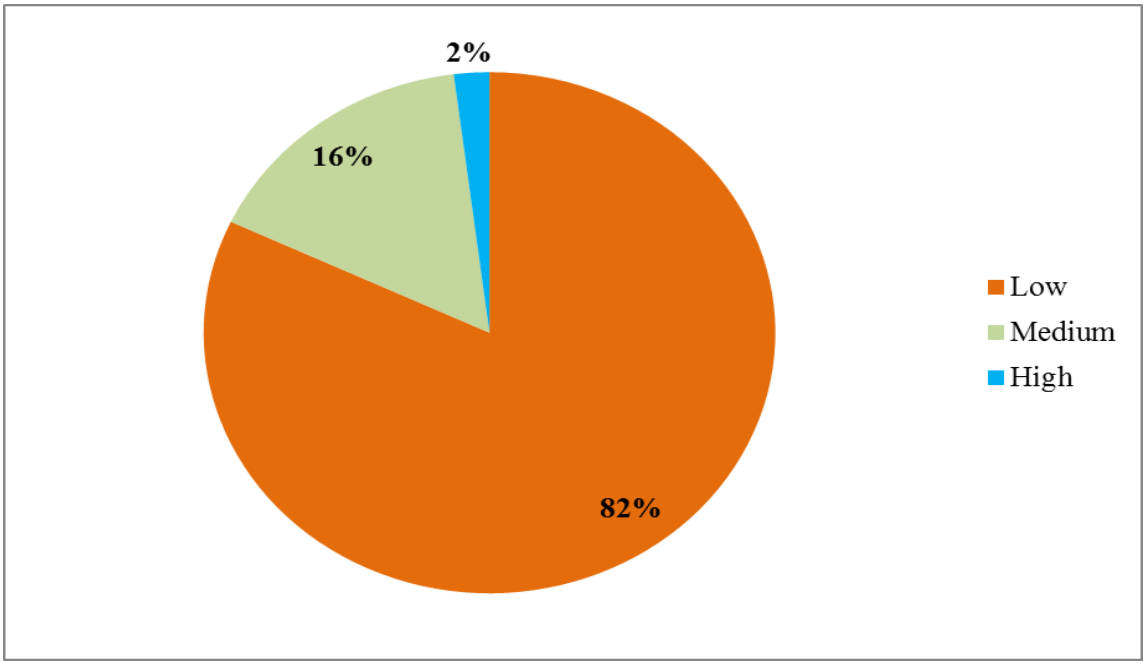


Figure 2: Level of satisfaction on the availability of transport service

# CHAPTER FIVE

# SUMMARY, CONCLUSION AND RECOMMENDATION

This final chapter of the thesis presents a brief summary of the study. Then, it presents conclusion drawn from the major findings of the study. Finally, it presents some recommendation based on conclusion of the study.

## 5.1 Summary of the Findings

This is the most important chapter in which the researcher stated the final squeezed points based on the data gathered from the respondents in the form of questionnaires and written documents.

Though 62.5% of the total vehicles of Ethiopia are found in Addis Ababa but about 44.8 % of them are serving for public transport, and there are various factors that affected the transportation service quality in the capital.

Large numbers of people are wasting their precious time waiting transportation in different roads of Addis Ababa city. Not only wasting time and energy but also many passengers are forced to lose materials (money and cell phones) from their bags and pockets while waiting transport.

Poor quality transportation service is making the passengers to lose economic profits for the reason of wasting more time on waiting transport service. Many employees are forced to get written warnings, salary deductions and dismissing from their jobs while they reported late to their work places. Self-employed are also losing economic profits since they do start their personal jobs late. Students forced to arrive late to their schools and missing some classes and exposed for school punishments.

Passengers are forced to pay more than the stipulated fare for various reasons such as the existence of shortage of service rendering vehicles, lack of strong follow up from the traffic management office, taxi conductors are not willing to give back changes, the existence of large population which doesn't match to the existed vehicles, rainy season and lack of awareness from the users side are some of the major problems.

Pedestrians, animals and street vendors are forced to share the same roads and risky their lives. In the first place, there is no well-designed road for animals and pedestrians and the few existed pedestrian roads are congested by street vendors and even there are shops and restaurants which

stretched their business along the pedestrian roads and the pedestrians and animals are forced to share the asphalt road with the cars which is risky for their lives. This is caused by the poor follow up from the city administration side that failed to create awareness among the users. Pack animals are travelled to the center of the city since the animal markets are found in the center while it was supposed to be situated around the periphery areas. The loss of human lives and properties are increasing from time to time. For example in 2019, about 458 passengers died and estimated loss of properties was 550,055,300 birr.

Poor infrastructure affects the transportation service in which the roads are not constructed based on the international standards and they don't have proper drainage, sewerage and pedestrian roads. Besides the roads do not have proper protections from Addis Ababa Road Transport Authority and the users too. The existed roads are not used for its purpose rather the pedestrian roads are used for street market businesses, dumping places for construction materials (sand, stone, cement and iron) and parking for heavy vehicles. There is no zebra crossing within fixed distances and pedestrian are forced to cross roads outside of zebra crossing which exposes them to fatal accidents. For example the Kaliti-Piassa rail way has no enough zebra crossing ways and people are forced to travel long distance to get zebra crossing roads.

The road network coverage of Addis Ababa is still too small that covers about 6256 Kilometers (23.43%) and many of the roads are taking longer time to construct and maintain.

The existence of large number of small taxis, pickups and mini buses than buses is another challenge of transportation service in Addis Ababa. Though the small taxis have its own advantages it cannot carry large number of passengers at a time and it creates crowdedness and traffic jams.

Although the role of private sectors on transportation is invaluable, the expected service standard is not realized in Addis Ababa city for different reasons but mainly the government taxation system, privatization policy and the infrastructure problems are the front line issues. Though there is some discount of tax on importing of public transport vehicles, still it is difficult to buy or import more vehicles since its tax is double of its original price. There are still some mode of transport which needs to be transferred to the private sectors such as Anbessa bus and the current light rail way service. Government is supposed to encourage the private sectors by providing loan and ease the process instead of involving itself on making profits.

In conclusion, the existence of large number of population made the transport service difficult to improve from its previous status. Though there are attempts like introducing light rail way service, public buses, Sheger, as compare to the population size no swift improvement is observed on the transport sector.

### 5.2 Conclusion

As it was mentioned in the previous chapters Addis Ababa is international city which deserves the most modern transportation service to accommodate the ever growing population. As a result, Addis Ababa city administration designed general and specific policies to improve the infrastructure related issues and traffic management problems so as to uplift desired level of usage of vehicles, Standard of desired environment, and cost of improving the environment by changing existing physical patterns. Though there are attempts to improve the transport service, it is slow as compared to the existed population size. Passengers are forced to waste their precious time on waiting transportation and exposed to lose materials from their pockets and to pay more than the stipulated fare.

The existed roads are congested with pedestrians, animals and street vendors in which there is no standard road designed to pedestrians, animals and place for the street vendors. The Addis Ababa Road Authority and the traffic management offices are not strong enough to manage the roads and stop illegal activities such as dumping constructional material on the roads, street vendors, and parking of heavy trucks and so on. There are some attempts to stop the illegal activities by the traffic management office and the people called 'Denb' but there is no improvement. It is common to see street vendors running from one corner to the other and sometimes crossing the roads blindly to escape from the controllers and risky their lives. The major findings of the research paper are summarized on the above topic and possible solutions are stated below.

### 5.3 Recommendation

This paper has focused on the factors affecting transportation service quality in Addis Ababa City tried to dig out the causes and consequences on day to day economic and social lives of the society and stated the findings on the summary part of this chapter. Hence the following points can be indicated as possible solutions;

A. The Federal and Addis Ababa city administrations should give strong emphasis towards improving the transportation service in Ethiopia particularly in Addis Ababa by revising the previous policies;

- Taxation system on importing vehicles and manufacturing locally. Vehicles are categorized under luxury commodities and government is collecting huge amount of tax from the imported vehicles that discouraged private sectors not to import more transportation vehicles. Though there is slight difference between the tax of private cars and public transport vehicles still is too much that affects the importers not to sell more vehicles. On the other hand there is a difference between imported and locally manufactured vehicles that a little bit encouraging the local manufacturers but still expensive that cannot be afforded by many buyers (BBC Africa,2017).
- Encouraging private sectors to more participate on transport service. Though private sectors are allowed to participate on transport service, there should be financial support from the government side so as to make them capable to solve the existed problems. The light rail way is under control of the government and it should be shared to the private sectors so that help on improving the transport service of the city.
- Tightening the poor traffic management system. Traffic management system is not as such strong in Addis Ababa and there are lots of problems including bribing the traffic men instead of following the rules and regulations that shows lack of honesty from both sides (the drivers and the traffic men). This needs a campaign from the traffic management office to create awareness among the society.
- Improving the infrastructure status on constructing internationally standard roads. The constructed roads are facing standard issues and some others are wasting more time on its construction and the city administration and the Federal governments are supposed to double

their effort on solving the observed problems. Besides the government is responsible to uplift the capacity of the engineers who are working privately or in the transport offices.

B. Poor transport service is affecting the punctuality of the students and employees in their learning and working places and passengers are supposed to walk up early in the morning so that they can reach to their destinations on time. As per the discussion on chapter three the most advisable time to travel is early in the morning between 6:00 am to 7; 00 am. But commonly it is observed passengers are making long queues along the city roads late after 7:00 am. Home going times can be varied depends on the nature of the tasks.

C. The shortage of transport service render vehicles is making passengers to lose materials from their pockets and the best way to be safe is making proper lines and not rushing and pushing each other while entering the cars. It was observed at Mexico some thief stands equally with the passengers and making some noises and disturbing the queue to create good opportunity to snatch materials and some passengers were not careful too.

D. The traffic management office should take serious action on the drivers who collect money more than the stipulated fare and the transport users should stand for their right to avoid such unfairness on transport service.

E. Importing large number of buses than increasing small taxis, pickups and minibuses to reduce the transport problems.

F. In long range plan, reducing the number of migrants from the rural areas to Addis Ababa by creating job opportunities and good living standards in the regional cities equivalent to Addis Ababa so that the population and the transport service rendering vehicles can be matched.

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# 7 Annexes

This questionnaire is designed to gather data on the **factors affecting transportation service quality in Addis Ababa City**

Your response to the questions given below has a crucial value to achieve this purpose and to deeply investigate the case. Therefore, you are kindly requested to read the questions carefully and give accurate and real data which exists on the ground. The response that you reply will not be used for any other purpose other than this research work, so be free and give your honest and genuine response. Thank you in advance for your Cooperation!

**Instruction**: Circle the letter of your choice or fill the blank spaces for the following questions. You may respond more than one answer if it is necessary.

**Part I**

Background Information of Sample Respondents and socio-economic status

1. Sex

A. Male ☐ B. Female☐

2. Age A. < 20 ☐ B. 21- 30 ☐ C. 31- 40 ☐ D. >40 ☐

3. Occupation A. Student ☐ B. Employee ☐ C. Unemployed D. Other (specify)…….

4. Marital Status; A. Single ☐ B. Married ☐ C. Divorced ☐ D. Other (Specify)…….

5. Educational background; A. No Schooling (illiterate) ☐ B. Primary education ☐ C. Secondary Education ☐ D. Certificate ☐ E. Diploma☐ F. Degree☐ G.Second Degree ☐ H. Other (specify)……..

**Part ii; kindly put tick mark on the given box or write your reason shortly.**

1. Do you think the service you are receiving from the transport service fulfills the level of your expectation and satisfaction?

A. yes ☐ B. No ☐

2. Which transport mode do you usually use? A. Walking ☐ B. Higer ☐ C. Sheger Bus ☐ D. Taxi☐ E. Anbessa Bus F. Train ☐ H. Other (specify)_____

3. Do think the readiness of the transport service employees to give solution for each complain and questions rose by clients.

A. yes ☐ B. No ☐

4. In relation to the service quality improvement of service quality, if your desire is accepted and implemented, do you think it will help to improve the service?

A. yes ☐ B. No ☐

5. How many trips do you make per day?

A. Twice ☐ B. Three times ☐C. Four times☐ D. Five times ☐ E. >Five times ☐

6. How long does it takes on average to get public transportation?

A. < 30 minutes ☐ B. 30-60 minutes ☐ C. 1hour-1:30 minutes ☐ D. 1:30 - 2:00 hours ☐ E. >2:00 hours ☐

7. At what time of the day do you get transportation easily? _____

8. Are there any instances where you are forced to pay more than the estimated fare on taxi transportation?

A. Yes ☐ B. No ☐

If yes, reason_____

9. Is there improvement on mass transportation service quality? A. Yes ☐ B. No ☐

If yes, _____

If no, _____

10. How often you reported late to your working place?

A. two times ☐ B. three times C. four times ☐ D. five times E. six times

11. Have you ever lost materials from your pocket while waiting transport service?

A. Yes ☐ B. No ☐

12. What is the negative or positive impact of street shoppers to transport service quality? _____

13. Do you think aged cars can affect transport service?

A. Yes ☐ B. No ☐

14. Do you think the payment for taxi transportation is fair?

A. Yes ☐ B. No ☐

15. How much you satisfied with the availability of mass transport service in Addis Ababa?

A. High ☐ B. Medium ☐ C. low ☐

16. Do you think transport service giver vehicles are confortable and safe for the passengers?

A. Yes ☐ B. No ☐

Source;(own survey)

Figure shows pack animals using the main road.

Source;(own survey)

Figure shows pack animals using the main road.

Source;(own survey)

Pedestrian population during Christian holiday

Source;(own survey)

Car accident happened in Addis Ababa

Source;(own survey)

Car accident happened in Addis Ababa

Source;(own survey)

Heavy rain that caused flood during the summer season

Source;(own survey)

Figure shows heavy rain that caused flood.

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Source;(own survey)

Queue waiting transportation service

Source;(own survey)

Construction materials dumped on the road.

Source;(own survey)

Figure shows pedestrian road digged to cover pipe

Source;(own survey)

Figure shows street market business