FACTORS AFFECTING THE ACCESSIBILITY OF ANBESSA CITY BUS SERVICE IN ADDIS ABABA: A CASE STUDY OF KOLFE–KERANIYO SUB-CITY

KELBESA WAKUMA KENEA

BA (Public Administration and Development Management)
MA (Public Administration)

A Thesis Submitted in Partial Fulfilment of Master of Business by Research

School of Business and Law, Central Queensland University

Supervisors: Professor Susan Kinnear

Dr Delwar Akbar

Submitted: September 2017

Revised: June, 2018

DECLARATION OF AUTHORSHIP AND ORIGINALITY

I, the undersigned author, declare that all of the research and discussion presented in this thesis is original work performed by the author. No content of this thesis has been submitted or considered either in whole or in part, at any tertiary institute or university for a degree or any other category of award. I also declare that any material presented in this thesis performed by another person or institute has been referenced and listed in the reference section.

Kelbesa Wakuma Kenea June 21, 2018

ACKNOWLEDGMENTS

First, I praise and honour the Almighty God for enabling me to accomplish this study. I would like to express my sincere gratitude to Professor Susan Kinnear for her meticulous and constructive supervision throughout my Masters by research program. I thank Dr Delwar Akbar for his kind supervision during my candidature. I express my deep appreciation and thanks to both of my supervisors for their dedication to my study and the time, they have committed to enable me during this journey.

This research higher degree candidature was supported under the Commonwealth Government's Research Training Program. I gratefully acknowledge the financial support provided by the Australian Government. I am indebted to Central Queensland University Research Division team for their kind cooperation and assistance during my study. Professional editor, Grant Dobinson, provided a proofreading service.

I have sincere gratitude to Ruth Cole and Lorna Grant for their commitment to care for my family. Finally, I thank my dad, mom, sisters, brothers and friends for their moral and spiritual support through the journey of my candidature.

I dedicate this thesis to my children Kolu, Birmadu, and to my wife Yerusalem Kenea.

Kelbesa Wakuma Kenea June 21, 2018

Contents

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

ABBREVIATIONS

ACBSE = Anbessa City Bus Service Enterprise

ATA = Addis Ababa Transport Authority

ATMA = Addis Ababa Traffic Management Agency

ATP = Addis Ababa Traffic Police

ARA = Addis Ababa Roads Authority

ARTB = Addis Ababa Roads and Transport Bureau

ETB = Ethiopian Birr (currency)

KKSC = Kolfe Keraniyo Sub-City

TPO = Transport Program Office

CBD = Central Business District

DEFINITION OF TERMS

Accessibility – refers to the availability of Anbessa bus service within a required time, at a suitable proximity to the user, and with regard to the connectivity of buses between different routes. The term accessibility also refers to the aspects of reliability, safety, comfort and affordability of the bus service, particularly to lower or middle income class users, who are the focus of its delivery.

Stakeholders - in this study, 'stakeholders' refers to Anbessa bus users, the wider community, and organizations that closely work with Anbessa City Bus Enterprise in the service provision. This includes the regulators (the government bodies), the operator itself and the law enforcement bodies. Here, the regulators are Addis Ababa Transport Authority, Addis Ababa Transport Program Office. The Operator is Anbessa City Bus Enterprise. The law enforcement bodies are Addis Ababa Traffic police and Addis Ababa Traffic Management Agency. Other entities, such as citizen advocacy groups, could not be included as these are absent in the case study context. In adopting this broad definition of stakeholders, it is the intention to capture a wide array of experiences and opinions about the status of the public bus transport service. It is important to note that this should not be interpreted as indicating that all these individuals, entities and/or organisations have a defined right or responsibility in regards to delivering improved accessibility of the bus system; but rather; that that are participants in the ecosystem.

ABSTRACT

An effective public transport system is vital to the socio-economic status and growth of major population centres. This is particularly the case for cities in developing countries, where it is critical that an accessible and affordable service is available to cater for large populations of low-income urban dwellers. However, the accessibility of urban transport services is influenced by many factors including reliability, resource availability and management, coordination of stakeholders and community engagement, involvement of the private sector, and the transparency and accountability of the various government and/or regulatory bodies that are involved in service delivery. Unless properly managed across the transport ecosystem, these variables can contribute to dysfunctionality and poor outcomes for transport users.

Addis Ababa City is one of the fastest-growing cities in the world, yet it is constrained by an ineffective city bus service. Some 33% of the people living in Addis Ababa are low-income citizens who dwell in the peri-urban regions of the city, and who rely on the bus transport service to connect with employment, education, health, recreation and other opportunities. Unfortunately, previous studies have indicated that there is significant dissatisfaction of users in terms of the quality of public bus service. Despite this, to date, there have been no studies to assess the overall accessibility of the bus services; the factors that contribute to poor accessibility; and how different components of the public transport system should be modified for better service delivery outcomes. This exploratory research project examined the factors affecting the accessibility of Anbessa bus service via a case study of Kolfe-Keraniyo Sub-City, using a mixed-method approach comprising in-depth interviews, a user survey and development of a proposed new model for Anbessa bus service.

First, via a review of relevant literature, a conceptual framework for public transport service delivery was developed, with a specific emphasis on city buses. This framework showed that effective delivery comprises of – but is not limited to – factors affecting the accessibility of public transport, coordination of public transport, stakeholder engagement in public transport, and the mandates of regulatory bodies in public transport governance; each of which are relevant characteristics of public transport in sub-Saharan African countries.

Next, a total of twelve interviews were conducted with key informants, including managers or experts from the Addis Ababa transport authority, Addis Ababa traffic management agency, Anbessa city bus service enterprise and Addis Ababa transport program office. Thematic content analysis of these data revealed that Anbessa bus service currently lacks good

stakeholder coordination. The interviewees also observed that the transport policy and regulatory instruments are not well designed, and that accountability and jurisdictional boundaries relating to Anbessa bus service delivery are quite weak. Moreover, interviewees believed that issues of poor resource allocation and management, weak law enforcement, and inadequate transport and traffic facilities coupled with poor transport planning and management have greatly contributed to the inaccessibility of Anbessa bus service in Addis Ababa.

Quantitative data analyses were made possible via a survey of Anbessa bus users from Kolfe Keraniyo Sub-City (total n = 196). In agreement with the interviewing results, these data revealed that Anbessa bus service lacks safety and comfort within the service; that it experiences considerable mismatch of demand-and-supply; that it is impacted by poor law enforcement, and that it relies on a traditional – and now outdated – operational model. Chi-squared tests and logistic regression models confirmed that Anbessa bus service is poorly accessible due mainly to the unreliability of the bus service, extended waiting times, and user dissatisfaction with the poor connectivity of the service between different routes.

Collectively, the research analyses indicated that Anbessa bus service delivery does not currently possess a suitable service delivery model to provide accessible public transport in a dynamic urban setting. The research findings were therefore applied to the development of a new model, designed to address existing gaps in resource allocation and management; stakeholder coordination and networking; and awareness of, and engagement by, the community in terms of the policy and regulatory instruments relating to public transport in Addis Ababa. The principal recommendations arising from this model is that Anbessa bus service would reach better accessibility standards through an operational approach that includes active participation of the local community; together with a willingness and commitment of politicians and regulatory bodies to allocate essential resources to service delivery in Addis Ababa. Alternative arrangements that might be considered also include the introduction of a public-private partnership; structural and operational adjustment of the operator to the city's dynamics; and procurement of semi-domestic innovations (buses) that are manufactured with a standard quality to match the demand and supply.

This study has provided new insights into factors impacting public transport accessibility in the context of developing nations; has developed recommendations specific to improving service delivery in Kolfe-Keraniyo Sub-City of Addis Ababa; and identifies several new areas for ongoing research in the field of urban transport accessibility.

PUBICATIONS ARISING FROM THE THESIS: DECLARATION OF CO-AUTHORSHIP AND CONTRIBUTION

Title of Paper	Accessibility of Anbessa City Bus Service in Addis Ababa, Ethiopia: An Analysis of Stakeholder's Opinions
Full bibliographic reference for Journal/Book in which the Paper appears	Paper presented at Australia and New Zealand Regional Science Association International 40th Annual Conference
Status	Published *(Australasian Journal of Regional Studies*, Vol. 23, No. 1, 2017)
Nature of Candidate's Contribution	70%
Nature of Co-Authors' Contributions	Prof. Susan Kinnear (15%), Dr Delwar Akbar (15%)

Title of Paper	Factors affecting the accessibility of public bus service in Addis Ababa, Ethiopia: a quantitative case study of Kolfe-Keraniyo sub-city
Full bibliographic reference for Journal/Book in which the Paper appears	Presented at Regional Science Association International, Australasia Conference 2017. Sydney, Australia
Status	Conference Presentation (Publication Pending)
Nature of Candidate's Contribution	70%
Nature of Co-Authors' Contributions	Prof. Susan Kinnear (15%), Dr Delwar Akbar (15%)

Candidate's Declaration

I declare that the publication above meets the requirements to be included in the thesis as outlined in the Research Higher Degree Theses Policy and Procedure.

Kelbesa Wakuma Kenea June 21, 2018

CHAPTER ONE: INTRODUCTION

1.1. BACKGROUND OF THE STUDY

In the major population centres of developing countries, public services and facilities are often unevenly distributed due to poorly managed spatial structures and the socio-economic characteristics of different areas. Lower-income urban dwellers are often located in the inner city or in peri-urban (peripheral) areas, which are considered by the wealthy as less considerable locations. Being challenged as they are by proximity to employment, education and medical services, essential public services and recreation centres, poorer people's accessibility to reach these services directly impacts on their quality of life (Abreha, 2007).

Urban planning plays major role in the provision of equitable and adequate services to peri-urban dwellers, particularly in regards to public transport. Planning conditions influence patterns of development, economic viability, environmental impacts, and the ability to maintain socially acceptable levels of quality of life. Good planning can also contribute to pro-poor policy by providing access to opportunities, security enhancements through reduced isolation, and provision of job opportunities in the sector (Abreha, 2007; Bliemer, Mulley, & Moutou, 2016; World Bank, 2002).

Public transport is a necessity as a means of mobility in cities across the developing world. Particularly, the lower income communities heavily depend on various means of public transport service. Increasing urbanisation and population growth in developing countries is an alarming situation in relation to the (in)accessibility of public transport (Mbiba & Huchzermeyer, 2002). Mostly, the urban poor bear the impact of these problems, which curtails them from fully participating in development endeavours. It is also common that the conjunction of rapid and high growth of urban populations outstrips the capability of the city administrations to provide adequate transport infrastructure and deliver optimum services (Tiwari, 2012).

Poor accessibility of public transport in urban areas of developing countries is related to inadequate infrastructure, limited modalities of commuting and (transport-related) social exclusion (Preston & Rajé, 2007). For low income-dwellers, their economic level and absence of empowerment limit their ability to influence the local or state government in addressing the inaccessibility problems they experience (Kombe, 2005). The other key challenge is that the urban growth is rapid and unregulated where land management and housing are neither regulated nor planned (Jaramillo, Lizárraga, & Grindlay, 2012). The overall land consolidation process and provision of infrastructure service is therefore spontaneous. In the absence of intervention and support from local and state governments, provision of accessible public transport becomes challenging (Kombe, 2005; Narain & Nischal, 2007).

Deteriorating public transport service conditions constrains the productivity of individuals resulting in different consequences. At an individual level, public transport is the means of accessibility to jobs, health, education and social services essential to the welfare of the city residents (Kasahun, 2007). A study conducted by Cervero and Day (2008) on 'Suburbanization and transit-oriented development in China' confirms that residents of urban poor areas are impacted by poor public transport accessibility, increased travel cost and time to jobs and other travels. Transport issues also affect particularly the poor through the risk of dismissal from work due to frequent delays, and an increased length of the journey to work and other essential services. Experiences from different African countries can be summarised that inaccessible public transport services predispose users to vandalism and theft. In many cases public bus drivers assault particularly women commuters, at bus stations or during commuting, with overcrowded buses that the poor have least option to mitigate (Jones, 2011; Kasahun, 2007; Kumar & Barrett, 2008).

Finally, lack of adequate public transport service imposes high financial loads on the lower income households – especially in areas where integrated transport systems are not available, increasing transfer costs to reach the core of the city (Jaramillo *et al*., 2012). These conditions challenges are mostly attributed to weak transport governance with inadequate financial and non-financial resources to provide organised transport services that meet the requirements of poor neighbourhoods.

1.2. PUBLIC TRANSPORT IN ADDIS ABABA, ETHIOPIA

With more than 90 million people, the population of Ethiopia is increasing rapidly with a growth rate of 2.6% per annum, equating to two million births per year (Tadesse & Headey, 2012). This growth is chiefly the result of high fertility in rural areas. Addis Ababa is a rapidly urbanizing city at an annual growth rate of 3.8 % per year (Fenta, 2014; World Bank, 2014a). The population explosion in the rural areas, combined with emerging industrialization in the city, are key drivers for rural-urban migration, as the working age seek employment and better living conditions. However, this is placing unprecedented demand on urban public transport service. City transport services are particularly important in the country's economic development, as urban areas are key nodes of economic activity. This is particularly emphasised in Addis Ababa City, which is responsible for 60% of the country's industrial production and 50% of its gross domestic product (Wondifiraw, Kibret, & Wakaiga, 2015; World Bank, 2015).

Achieving effective public transport service delivery is not easy in Addis Ababa city. City buses and shared taxis are the dominant means of transportation, accounting for 40% and 60% of the public transport service provision in the city, respectively (Gebeyehu & Takano, 2007). These are mainly provided by a public-owned Anbessa City Bus Enterprise (ACBSE), and informal buses and taxis operated by the private sector (Fenta, 2014). The Addis Ababa city road and transport bureau has a vision of providing an affordable transport service to the residents of the city and its surroundings (Abreha, 2007). In reality, however, the services delivered by buses and taxi modalities have limited capacity and are characterised by accessibility concerns, with demand for the public transport being much higher than the existing supply (Gebeyehu & Takano, 2008). The limited number of buses and taxis that are available to service the ever-growing commuter population has resulted in low quality, safety and accessibility of the service delivery across the city (Berhan, Beshah, & Kitaw, 2013; Kumar & Barrett, 2008; World Bank, 2014a). As one example, the small number of busses leads to many the being are congested with passengers and their bulky belongings, amounting to loads that are more than double the carrying capacity of vehicles (Anbalagan & Kanagaraj, 2014). For example, although Anbessa buses have 30 seats each, they often carry more than 120 people in a crowded situation (Abreha, 2007; Gebeyehu & Takano, 2007). The narrow and inadequate nature of paved roads, coupled with unplanned growth, poor road surfaces and narrow streets also means that the geographic reach of bus services is seriously circumscribed.

Some studies claim that poor institutional performance of transport agencies has resulted in inaccessibility of the city buses and, in turn, ineffective service provision (Berhan *et al*., 2013; Kumar & Barrett, 2008; World Bank, 2014a). The accessibility of the city bus service is unreliable, as the buses take excessive time to transit a few kilometres, and make frequent stops over short distances for loading and unloading. Further, Kumar and Barrett (2008) confirmed in their study that the city has ten bus seats per one thousand residents, which is the minimum figure and the least effective service delivery in Sub-Saharan Africa countries. The number of buses operating are continually fluctuating due to age and maintenance problems (Berhan *et al*., 2013). This limited availability of the public transport service results in commuters having to transit in highly congested buses, with poor safety and quality conditions. Despite this, and due to the low rate of private car ownership, the majority of urban residents continue to depend on buses and taxis for their day-to-day mobility; although walking remains a basic means of transportation for some residents (Gebeyehu & Takano, 2007).

Considering other possible modes of commuting, the use of bicycles is insignificant in Addis Ababa due to the topography of the city (which makes riding difficult) as well as the absence of dedicated bicycle lanes along the roads. The newly built railway transit in the city has become another mode of transit since October 2015, however this remains in the early stages in order to be accessible to deliver the expected service. At this stage, users from different regions are not able to access the service easily as the metro system has an outlet to limited number of sub-cities only. In time, the rail metro service is expected to commute a large number of users at a time, given that the mobility route will be extended mainly along densely populated sub-cities. Nevertheless, adoption and expansion of this new mode will take time, and so buses and taxis are expected to continue to represent the main forms of transport in the near term.

Accessibility of public transport in Addis Ababa could be compromised due to a number of factors. These include poor infrastructure, scarcity of adequate number of mass mobility systems, reliability, availability, time management, financial scarcity, ineffective regulatory system, and poor safety and comfort while commuting and at transit stations (Litman, 2015). A number of studies have suggested that role confusion exists between the different institutions responsible for public transport provision (for example, Addis Ababa transport authority, Addis Ababa traffic police, Addis Ababa Traffic Management and Addis Ababa Roads Authority) as well as the misconduct of the city bus operators towards Anbessa bus users (World Bank, 2014a; Yilak, Yoshitsugu, & Hirokazu, 2011). The current level of service provision is

therefore unsustainable, despite not meeting growth in demand. Overall, weak governance arrangements in the urban transport sector appears to be the primary factor for poor networking among the operators, the users and the state institutions. This is also accompanied by fast urbanization and high population growth – which drives an unrelenting demand. The overall result is that the city bus transport service is rendered inaccessible, unreliable, inadequate and unsafe for the users.

Despite the volume of literature pointing to challenges relating to the city's bus transport service delivery, it is apparent that no studies have yet examined the factors specifically affecting the accessibility of Anbessa bus service. Accessibility of city buses is likely to be one of the most critical factors in achieving an effective urban transport service delivery in Addis Ababa. However, a coordinated effort between the state, the operator and the society is necessary for effective service delivery to meet the ever-increasing demand. This research was, therefore, intended to fill the knowledge gap through exploring the factors that can affect the accessibility of Anbessa bus service; and to address the question of how the current service delivery model might be transformed to provide improved accessibility of public transport across the capital city in the future.

1.3. PROBLEM STATEMENT

In most developing countries, it is common to see deficiencies in the coverage, access and quality of basic services and infrastructures such as water supply and roads. While there are several contributing factors to service and infrastructure failings, the fundamental problems are often governance-related issues where transparency, responsiveness and effective accountability mechanisms are lacking (Beuran, Gachassin, & Raballand, 2015; Teshome, Tolossa, Mandefro, & Alamirew, 2012).

The availability of various modes of public transport provides the traveller with a choice about how to balance time and money to maximize utility. Anbessa bus service is currently challenged by weak coordination and networking, poor law enforcement and ineffective accessibility and regulation of service delivery (Teshome *et al*., 2012; World Bank, 2014a). The difficulty of the city to enforce transport regulations increases the risk of unsafe conditions and inaccessibility of the transport service. For example, a study by Persson (2008) showed that a poor road network, absence of knowledge on road traffic safety; mixed traffic flow system;

poor legislation and failure of enforcement; and poor vehicle conditions were identified as key effects of transport accessibility problems in the country.

A review of the current government arrangements for urban transport delivery in Addis Ababa shows that the city's roads and transport bureau is responsible for regulating the transport service provision under the jurisdictions of agencies. Whilst there are several informal transport providers in the city, Anbessa city bus service enterprise (ACBSE), the Public Bus, Sheger bus, and Alliance city bus are the only institutionalised bus service companies operating in Addis Ababa. Except Alliance bus, other operators are belonged to the city government. A newly established operator knowns as 'Public Bus[1]' service bus is mainly engaged in commuting the city government's employees during the peak hours of a day; and Sheger bus company owns a very limited number of buses (Tsegaye, 2015). In terms of service provision, Anbessa bus has the highest network coverage and number of buses, compared with others. However, in practice, the city-level regulatory bodies (Addis Ababa traffic police, Addis Ababa transport authority, Addis Ababa traffic management agency) are characterised by poor accountability, lack of coordination, and diffusion of commitment at all levels (Kumar & Barrett, 2008). The ineffective urban transport regulation, absence of integrated planning and the prevalent challenges of public transport governance adversely affect the user's experience of service accessibility (Admassie, 2015; Kumar & Barrett, 2008; Teshome et al., 2012).

The Anbessa bus routes have large coverage across the city; however, in terms of accessibility and customer satisfaction, the enterprise unfortunately leaves much to be desired (Abreha, 2007). To address this in the short term, the city government has made interventions through encouraging private owners to participate in the city's transportation service delivery. Contrarily, however, the government also applies a high car-importing tariff which discourages (new) entrants to join the market. Moreover, the city's regulatory and policy instruments regarding public transport are too poor to attract private firms (Ministry of Transport, 2011; World Bank, 2014a). The two- or three-wheeled tuq-tuq (Bajaj) is the common method of choice for getting around in Ethiopia's regional cities (Anbalagan & Kanagaraj, 2014). However, unlike the capitals of neighbouring countries and Ethiopian regional cities, the newly

[1] 'Public Bus' is a name given to a transport service providing company for Addis Ababa city government employees.

emerging services like tuq-tuqs have not been introduced onto Addis Ababa city roads for two main reasons. First, the narrow road pavements increases the level of congestion and result in a high accident rate; second, the topography of the city is hilly and therefore quite inconvenient for tuq-tuq operations. Generally, private financing for new market entrants is virtually non-existent, '*partly because of risk aversion (the possibility of losing large capital investments to accident or theft) and because the payback periods for new vehicles are longer than for second-hand vehicles*' (Kumar and Barrett, 2008, p.39). These conditions illustrate that the opportunity for a new type of service provider to join the market is limited. In the long term, the government has also considered the establishment of bus assembly lines and railway systems as remedies (Berhan *et al*., 2013), however these will not be able to quickly alleviate the demand crisis that users are currently experiencing .

Notwithstanding the efforts made, the short-run interventions have not satisfactorily addressed the high demand for public transport in Addis Ababa. The long run interventions (such as rail lines) cannot fully substitute for an effective bus service, and it is not considered economical to make city buses accessible to sparsely populated corners of the city. Moreover, the expansion of city roads and increasing the number of buses does not address the problem without efficient utilization and scheduling of the buses through a collaborative service delivery system (Abreha, 2007; Ministry of Transport, 2011). Whatever systems are in place as an interim solution, where there is no efficient and proper use of the networking among the stakeholders, it may instead create an additional problem of mismanagement and wastage of resources (Berhan *et al*., 2013).

Effective coordination and networking is a core element in institutional goal achievement. The current mode of state and private city buses service provision is not coordinated in terms of network coverage, fares, and travel schedules and having regard to the demand that has been expressed from the community (Gebeyehu & Takano, 2007; Kumar & Barrett, 2008). Inaccessibility and poor service delivery arrangements are considered to be the product of weak law enforcement, inefficient use of resources, limited collaboration with private companies and the local community (World Bank, 2014a).

Industrialization and rural urban migration have become reasonable factors for high population growth and fast urbanization across the city (Berhan *et al*., 2013). The uncontrolled and fast urbanization coupled with high population growth are arising from high fertility rate (Mengistu, 2014). An average fertility rate of five children per mother is occurring in the rural areas followed by high migration rate with 430 per 1000 population travelling to the capital city, Addis Ababa, from outlying regional centres (Berhan et al., 2013; Central Statistical Agency, 2013; Tadesse & Headey, 2012; Wondifiraw et al., 2015). The city has proved to be less equipped to absorb the migrants because social services are overburdened to cope with the growing industrialization, while the poor infrastructure has also limited the capability of city's mass mobility service (Abreha, 2007). Given the pre-existing limited capacity, and ineffective coordination, the pressure of urbanization and population growth is exacerbating the inaccessibility of Anbessa bus service delivery.

Despite the growth in travel demand, no considerable expansion of Anbessa bus service delivery is observed at the city level, although the light metro system is appearing across limited routes since October 2015. A study undertaken by Gebeyehu and Takano (2007) and Berhan et al. (2013) showed that by 2020 the population of Addis Ababa City is estimated to exceed 5.5 million. The high population explosion of the city without an effective city transport service (e.g. buses) is a challenge for the socio-economic wellbeing of the dwellers (Admassie, 2015).

The absence of an effective network among the actors (the government, private sector and the society) has resulted in the current inadequate state of the Anbessa bus service delivery system, which lacks the required quality and safety standard (Abreha, 2007; Gebeyehu & Takano, 2007). Similarly, the absence of effective coordination and systematic planning of business operation hinders the private operators from joining the market system, due to its uncertainty. Effective urban governance is therefore important to identify and mitigate the socio-economic impacts of the city's transport system.

The low-income dwellers of Addis Ababa mainly rely on public bus service for their day-to-day mobility. Given this, the poor public transport regulatory situation and management, spontaneous settlement in the peripheral sub-cities, unplanned spatial expansion, inadequacy of

infrastructure and poor transport planning has negatively affected low-income users (Mekuriaw, 2012; Mengistu, 2014). In total, the impacts of public transport deprivation are far-reaching, negatively affecting not only the low-income individuals and households, but also the rural-urban linkages and sub-regional economy more generally. Thus, the user's dissatisfaction with the limited bus networks, longer travel time and unreliable service of the bus is significant not only from the perspective of the low-income population, but also the city's economic status more generally.

The problem statement of this research was, therefore, the identification of factors that affect the accessibility of Anbessa bus service in Addis Ababa, using a case study of Kolfe-Keraniyo sub-city (KKSC). In particular, it was important to examine this in the context of the significant, negative effects that this situation creates for the day-to-day lives of Addis Ababa city bus users, as well as for the socio-economic growth of the city and country overall.

Various scholars have tried to conceptualize the existing features of Addis Ababa city bus transport including infrastructure issues and the increasing accident rates. However, a thorough review of the research indicated that there was a knowledge gap in determining the factors affecting the accessibility of public transport delivery in developing countries, and most particularly, the Anbessa bus service in Addis Ababa. This research was, therefore, intended to fill the knowledge gap through exploring factors leading to inaccessible and uncoordinated city bus service delivery, particularly in KKSC-Addis Ababa.

1.4. RESEARCH AIM, OBJECTIVES AND QUESTIONS

The aim of the research was to examine the factors affecting the accessibility of Anbessa bus services in Addis Ababa through a case study of Kolfe-Keraniyo sub-city. To achieve this, the following objectives were addressed:

Research Objectives

- To diagnose how effective involvement by stakeholders may influence the accessibility of Anbessa bus service;
- To determine user's experience or perception(s) about the nature of accessibility of Anbessa bus service in the sub-city;

- To examine the current features of Anbessa bus service in relation to its accessibility, and propose a suitable service delivery model; and
- To provide evidence-based recommendations to improve the current accessibility situation of Anbessa bus service, particular to Addis Ababa city.

1.5. RSEARCH QUESTIONS

The research answered the following questions.

- How does the nature of involvement of stakeholders influence the accessibility of Anbessa bus service?
- What is the experience (and perceptions) of users regarding Anbessa bus service accessibility in KKSC-Addis Ababa?
- How do the current features of service delivery affect the accessibility of Anbessa bus in Kolfe-Keraniyo sub-city?
- How might the service delivery model be adjusted to ultimately realize a more accessible and effective Anbessa bus service in Addis Ababa?

1.6. SCOPE OF THE STUDY

The study scope has been limited to an examination of factors that affect the accessibility of Anbessa bus service in Addis Ababa, using a case study of Kolfe-Keraniyo Sub-City. Although the city has ten sub-cities, the remaining nine were not considered in this study. Moreover, the accessibilities of other mode of public transport service such as taxis, tuq-tuqs, train metro system and privately owned city buses and shared taxis (formal and informal service providers) across the city were not considered as part of this research. Anbessa city bus is publicly owned and almost the sole operator in the region, which provided a nicely bounded case study for the research. Using the other the informal service providers like the shared taxis would have been a very complicated case study, which would makes it difficult to ascribe impacts to any single particular factor.

1.7. SIGNIFICANCE OF THE RESEARCH

The research has been positioned to provide a better understanding of the features relating to accessible urban transport service delivery within Addis Ababa City. In particular, it explored how accessibility affects the provision of the Anbessa bus service, with a focus on the experiences and perception of users, as well as on stakeholder coordination. The research is important in informing spatial development of urban communities, in the context of a developing nation with a high population growth rate. Furthermore, the outcome of this research may be used as a springboard for further studies in the urban transport area especially in Ethiopia and similar developing nations. This study also has academic significance because it is the first in kind to apply a standard mixed methodology to a public transport service case study in Ethiopia, which is considered to provide new information in the transport planning and management for the city. Finally, this study could be considered significant in terms of providing the necessary resource in light of the possibility of future studies and urban transport intervention projects that might be proposed or even carried out.

1.8. RESEARCH METHODOLOGY

The study was conducted through a mixed research approach. The qualitative aspect included in-depth interviews of twelve respondents from different stakeholder groups, excepting civil society groups. Those interviewees represented the service provider, regulatory and law enforcement agencies, including ACBSE, ATA, ATA and TPO. At least two respondents from each of these organisations participated in the in-depth interview sessions. Unfortunately, no civil society group currently exists to advocate for the transport service provision in Ethiopia; thus, this aspect of the stakeholder group was not represented in the in-depth interviews. In order to collect detailed data from bus users about their travel experiences, the most appropriate option was to conduct a user survey in the study area. This involved a survey of Anbessa bus service users in KKSC. An exploratory research method was followed through a triangulation of the qualitative and quantitative research findings. The qualitative research method was particularly important in supplying information about how the stakeholders think, feel, or act regarding the accessibility of Anbessa bus service in Addis Ababa (Freitas, Oliveira, Jenkins, & Popjoy, 1998). On the other hand, the quantitative research approach helped to determine the views of the bus users through an in-depth analysis the relevant statistical figures (Fowler, 2008). The mixed research approach was important not only for cross validation of the

qualitative and quantitative research findings, but also for complement each other through concurrent triangulation of the findings. This method has helped to understand the features of current mode of Anbessa bus service delivery and propose a suitable model to fill the residual gap.

Researcher observation is a tool that can allow a better understanding of data collected through quantitative or qualitative means; offering the ability to appreciate, criticise or propose changes to reach a more meaningful transformation of the data to research findings (Leavy, 2014). The researcher engaged this method as a means to understand the physical conditions of the built environment and real life experiences of the (Anbessa) bus users. The researcher observed different challenges attributed to the accessibility of the service during the fieldwork in Addis Ababa city, which was undertaken between April 1, and June 30, 2016. However, it should be noted that researcher observations were used as supplementary material only; and not as a primary method to collect the primary data. In particular, the researcher used observation as a supportive method to justify and strengthen the findings reported from the in-depth interviews and survey of bus users.

A conceptual framework related to accessibility of public transport service in urban settings was designed to better understand the research problem. This constituted, but was not limited to, factors impacting public transport accessibility, theories and practical aspects of urban public transport governance, participation of stakeholders, and different approaches to public transport service delivery. Using this basic understanding, the concept of public transport service accessibility was explored through the practical experiences of Anbessa bus users, engagement of ABSE and the regulatory bodies distinctively.

The data analyses engaged the statistical and in-depth interview findings. Descriptive statistics, Chi-squared tests and logistic regression models were used to determine the viewpoints of users through manipulation of the data within the SPSS software program. Three logistic regression models were built to determine each of the reliability of the service, the waiting time and the satisfaction of users in connectivity of the between different bus routes; and these three were ultimately considered to reveal the accessibility the bus service in the sub-city. Similarly, a series of in-depth interviews were conducted with the in-depth interview respondents from different regulatory bodies and ACBSE. In this case, the main themes were figured out and

thematic content analysis was done to determine their opinion with regard to the accessibility of Anbessa bus service, particularly in KKSC.

The concurrent triangulation method was used to understand the current features of Anbessa bus service delivery and propose a suitable model in the dynamic settings of Addis Ababa city.

1.9. STUDY AREA RATIONALE AND DESCRIPTION

Since the overthrow of the military regime in 1991, Ethiopia has engaged in different forms decentralisation in the political and administrative structures. Each city or town in Ethiopia is organized through smaller units called sub-cities. Depending on the size of the city, the sub-cities are further divided into 'Woredas'(districts). The Woredas, or sub-cities, are organized in a similar fashion and mandated to administer matters in their jurisdiction, and provide support for the 'grass roots' community (UN-HABITAT, 2008).

Addis Ababa city has a special administrative status that differs from other municipalities in Ethiopia. As such, the capital Addis Ababa and Dire Dawa cities have been granted some level of autonomy, and thus directly report to the Federal government rather than the state governments they are located in. Thus, the two largest cities are able to administer their own affairs subject to the constitution, by implication of relevant other laws under the jurisdiction of the federal government. This is similar to the autonomy of other nine regional states (UN-HABITAT, 2008). Addis Ababa city is divided in to ten administrative sub-cities, namely Arada, Kirkos, Bole, Addis Ketema, Gullele, Nifas Silk-Lafto, Lideta, Akaki-Kality, Yeka and Kolfe-Keraniyo. Each sub-city is accountable to the Addis Ababa City Council (Central Statistical Agency, 2013).

The chosen study area was Kolfe-Keraniyo sub-city (KKSC) in Addis Ababa. This is located at the western peripheral part of the city and covers 61.25km^2, accommodating 546,219 residents (Central Statistical Agency, 2013). The sub-city is further divided in to fifteen districts (boroughs). Kolfe-Keraniyo is the most populated sub-city in Addis Ababa, but it is the fifth least densely populated sub-city, having 7448.5 persons/km^2 due to its wider spatial coverage (Central Statistical Agency, 2013). Of particular note is KKSC's high unemployment rate

(approaching almost 25%); which further serves to highlight the importance of an accessible and affordable public transport system, thus enabling jobseekers to reach employment opportunities in other city sub-regions.

Table 1.1. Socio-demographic and economic characteristics of Kolfe-Keraniyo sub-city, Ethiopia

Socio-demographic/Economic Factors	Percentage (%)
Population of the Sub-city	16.6
Proportion of young and working age population (15-64)	72.5
Proportion of population being paid employees (ages 14+)*	14
Unemployed population**	24.8

Source: Addis Ababa Employment Survey; Central Statistical Agency (2013)

** Paid employees category does not accommodate the business community. Rather informal employments which can involve the young age (14-18) were considered under this category.*

*** Females share higher percentage (39.1%) of the unemployed population of the sub-city.*

KKSC one of the peripheral sub-cities in Addis Ababa. It comprises of new settlement areas but the narrow road pavements and poor transport networks have resulted in congestions and unreliable Anbessa bus service delivery. The number of Anbessa bus serving along the three routes (from Legehar, Piassa and Merkato) to Kolfe-Keraniyo and the vice-versa is limited, leading to limited accessibility (Dagnachew, 2007). Thus, the accessibility of Anbessa bus service and shared taxis along the routes, compared to other sub-cities, is compromised but the dwellers continue to depend on the bus for their routine mobility.

Anbessa bus generates a relatively small number of trips to the inner or peripheral residential areas of KKSC, from other sub-cities. The central zone and the sparsely populated peripheral zones have no access to a bus network that takes passengers to different sub-cities, nor to other districts within KKSC itself see *Figure 1. 1* below. This could be partly attributed to poor road facilities and the inability of the buses to manage bumpy roads, in order to be accessible to the users living at the inner and peripheral districts of the sub-city. Apart from Anbessa bus, some of the informal transport service providers are taxis and buses, which tend to only partly fill the perceived demand and supply gap in the sub-city, with affordability being the key concern

preventing the low-income dwellers from using these modes of commuting. However, these issues are not necessary unique to KKSC, and so it is believed that the findings and recommended models in this study could also be replicated to other sub-cities of Addis Ababa, particularly those relying at the peripheries, as they share similar factors impairing the accessibility of Anbessa bus service.

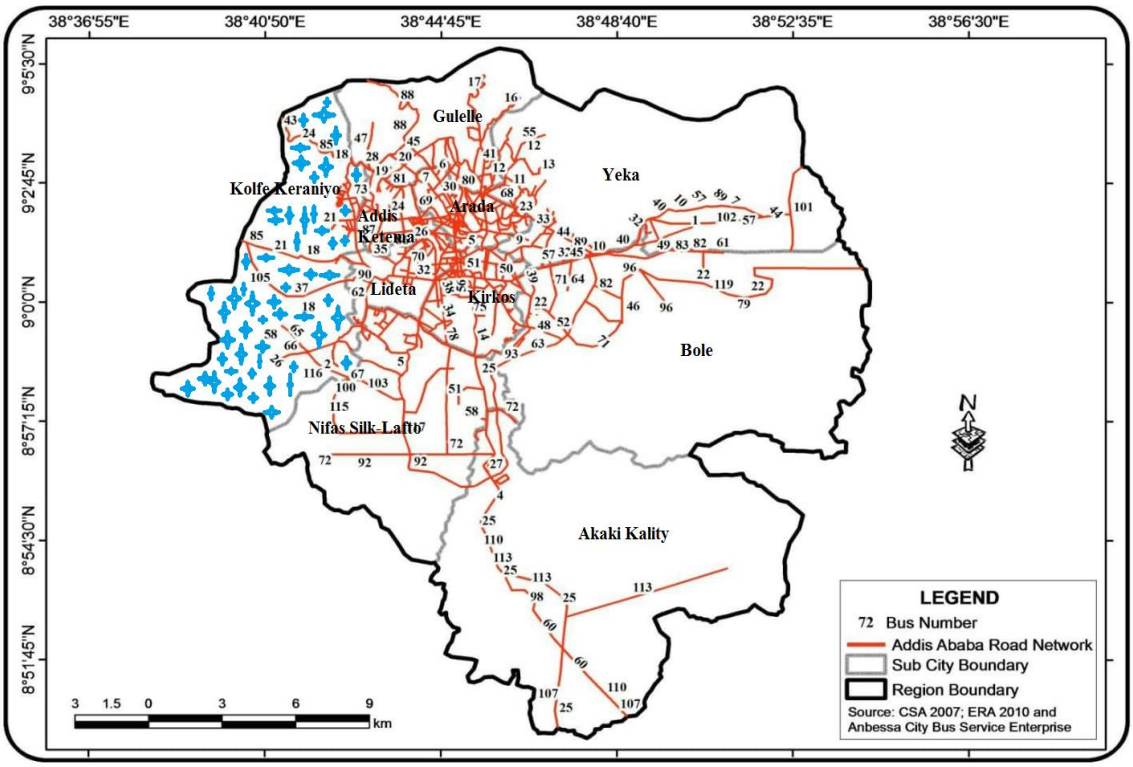

Figure 1. 1. Anbessa bus networks in the sub-cities of Addis Ababa (as at 2015).

Source: Modified from Eshete (2015)

1.10. ORGANISATION OF THE STUDY

This thesis is divided in to seven chapters. The first chapter is the introduction (this chapter) in which involves background of the study, problem statement, objective of study, research questions, overview of the methodology; the study areas and organization of the study were explained. The conceptual background of public transport accessibility with some emphasis to city bus services is covered in the second chapter. Chapter three explains the methodology engaged in this research. Here, the research design and approach, data collection including the survey and in-depth interview, and data analysis methods are elaborated on. Thematic content analysis of the in-depth interview findings and the accompanying discussion is described in

chapter four; whereas chapter five contains the summary descriptive data, results of Chi-squared tests and logistic regression models built to determine the accessibility of Anbessa bus service. Chapter Six is concerned with description of the current features of service delivery and a newly developed model, designed to suit the context of Addis Ababa city. The last chapter summarises the key findings of the study, pinpoints the limitation and delimitations of the study, presents key recommendations that need to be considered to address the service delivery gap and indicates areas that need further research of public transport service delivery in Addis Ababa.

CHAPTER TWO: REVIEW OF THE LITERATURE

2.1. INRODUCTION

The purpose of this chapter is to give a brief insight about the accessibility of public transport in urban settings with a close emphasis on bus services. Various sources of literature were reviewed to elaborate the role of stakeholders; the concepts of governance particularly in relation to public transport service in urban areas; the importance of regulatory frameworks in coordinating public transport service; and factors influencing accessibility of public transport and approaches to public transport service delivery. The review of these conceptual items and frameworks played a vital role in selecting an appropriate research design, data collection method, analysis and discussion of the findings in the next chapters.

2.2. PUBLIC TRANSPORT ACCESSIBILITY

Public transport can be defined as a mobility system that provides ongoing general or special conveyance to the community (Tran & Kleiner, 2005). However, this does not include school buses, chartered operations and sightseeing services. Rather it includes many means of mobility such as buses, subways, rails, trolleys and ship or boats (Tran & Kleiner, 2005). In many developing countries, public transport is largely accepted as the conventional transportation alternative for travelling to work places, shopping or to social events, enabling people to access jobs and services (Chan, Dridi, Mesghouni, & Borne, 2005). Effective management and communication can help the public transport service delivery to be well regarded, follow regular schedules, be safe and timely, guarantee high quality of service, and utilize the resources efficiently.

Accessibility is a broad and flexible term in the study of public transport. The extant literature states that the concept of accessibility is related to spatial planning, topography, or network analyses in transport studies. Nonetheless, there is no clear-cut definition that exactly constitutes accessibility; which can be related to distance between two spaces, cost, time, consumption possibilities and connectivity. For example, a location is said to be ‘accessible’

if it is connected with other locations via a link to a road or railway, airport or a harbour. The extent of accessibility depends on the number of different links and modes that a specific location is connected with (Lekakou & Vitsounis, 2011). Accessibility in transport is an essential element for the commuters to be able to move around and pursue the activities they wish, thereby enabling them to achieve better quality of life (Karekla, Fujiyama, & Tyler, 2011). Generally, accessibility refers to the ease of reaching opportunities, and/or the ease of being reached. It is therefore an attribute of people and goods, rather than transport modes or service provision, and describes an integrated system from the user viewpoint (Halden, 2011).

Most government bodies consider accessibility as their secondary responsibility next to healthcare, education, employment and other services; however, accessibility is also strongly related to social justice; being social inclusion or exclusion. For example, social inclusion in accessibility planning may involve five key stages: strategic accessibility assessment, local accessibility assessment, option appraisal, accessibility plan preparation, performance monitoring and evaluation through extensive stakeholders' involvement and the development of national and local indicators (Preston & Rajé, 2007; Witter, 2010). On the other hand, lack of access to public transport problems mainly affects a certain group of the community. Jones (2011) indicates that there are different forms of inaccessibility to public transport for the lower income group, older people, and (single) mothers with young children without access to a car. These include:

- physical restrictions: difficulties in walking to bus stops and accessing public transport with buggies or older people with restricted mobility;
- psychological restrictions: particularly relating to fear of traffic accidents and of personal injury from groups of young people hanging around on the streets;
- lack of information about public transport (e.g. timetable, fares);
- restricted accessibility of public transport services at a given times and places;
- scheduling problems arising from lack of coordination between agencies in their delivery of services; and
- high cost of bus fares and taxes.

Overall, an accessible public transport with reasonable cost is a necessary means of mobility, particularly for the lower income urban dwellers in developing countries, in order to be able to maintain their socio-economic quality of life.

2.3. PUBLIC TRANSPORT ACCESSIBILITY AND COORDINATION

Strong partnerships between government authorities and public transport operators is vital in achieving the optimum accessibility of public transport for all clients of the transport system. Without close dialogue and co-ordination among those in charge of the road infrastructure, roads and pavements, and those responsible for the public transport vehicles and systems, effective accessibility of public transport cannot be realized. In many cities of developing nations, lack of co-ordination between local authorities and public transport operators has been one of the key barriers to improving accessibility in public transport (Kumar & Barrett, 2008; Lau & Chiu, 2003). The collaboration amongst the stakeholders is important as it helps to further identify ways in which national or regional governments can contribute to the implementation of better accessibility. This could be through setting regulatory framework that facilitates better co-ordination among the actors at a local level, and offering guidelines and incentives to encourage local authorities and operators to fully integrate accessibility considerations into their long-term transport planning. A public transport system accessible to all is an essential element of sustainable travel (International Association of Public Transport, 2004).

2.4. FACTORS IMPACTING THE ACCESSIBILITY OF PUBLIC TRANSPORT

Accessible public transport is an enabler for the users to be able to reach their preferred destination. In this regard, mobility means '*having transport services going where and when one wants to travel; being informed about the services; knowing how to use them; being able to use them; and having the means to pay for them'* (Suen & Mitchell, 2012, p. 1). Thus, accessibility and mobility are the main factors of satisfaction in usage of public transport.

Access to public transport services can be assessed on several levels. First, one aspect to be considered may be the extent to which any particular user is within easy geographic reach of a

bus line. Second, there is the matter of carrying capacity of the buses relative to demand. Data on fleet sizes and bus capacities can be converted into an indicator of seat availability per thousand urban residents (Kumar & Barrett, 2008).

Studies show that the potential of interaction between any two places increases as the cost of movement between them decreases, either in terms of money or time (Brinckerhoff & Douglas, 1998). Similarly, land use pattern and urban form is influenced by the level of accessibility provided by transport system between different activity areas (Dagnachew, 2007). On the other hand, Litman (2015) asserts that a range of further factors also affect the accessibility of urban public transport (Table 1). From this work, it is clear that accessibility is a layered concept with many contributing and interrelated factors.

Table 2. 1. Factors Affecting Accessibility of Public Transport

Accessibility Factors	Elements included in the factors
Motor vehicle travel conditions	Automobile travel speeds, affordability, safety
Quality of other modes	Walking, cycling, public transit, telework, delivery services speeds, convenience, comfort, affordability and safety
Transport network connectivity	Density of paths and roadway connections, directness of travel
Land use proximity	Development density and mix
Weak regulatory system	Ineffective regulation and law enforcement system; Users are hardly accessible to public transport

Source: Litman (2015, p. 8)

2.5. USER'S PERCEPTONS OF THE EFFECTIVENESS OF PUBLIC TRANSPORTATION

Numerous studies regarding the effectiveness of public transport have been conducted through surveys of customer's perception (Noor, Nasrudin, & Foo, 2014). In their study on 'analysis of user perceptions on transit stops and stations', Iseki and Taylor (2010) and Noor et al. (2014) revealed that accessibility and reliability of public transport are the two important factors in

evaluating the effectiveness of the services at the bus stops and terminals, and these are followed closely by the safety factors. By contrast, the authors also showed that physical factors (such as number/quality of bus stops and terminals) are not considered priorities. Eboli and Mazzulla (2007) measured customer satisfaction perceptions in the context of bus services and found that many issues impact the effectiveness of public transport; with the principal factors being physical condition, suitability, security and comfort of the bus. On the other hand, Abreha (2007) confirmed that accessibility and reliability are key factors that contribute towards the effectiveness of public transport. Veliou, Kepaptsoglou, and Karlaftis (2010) also stated that the number of passengers increased by increasing the effectiveness of the transportation, since this results in better passenger perception and therefore usage. Overall, it appears that user's satisfaction survey provide a wealth of data that is helpful in understanding the features of an effective (or ineffective) public transport service.

2.6. GOVERNANCE CONCEPTS

Public services, both in politics and in public management, must deal with the quality and evaluation of services provided to the needy, as well as counterbalance the pressure for greater system efficiencies (Canonico, De Nito, Mangia, Mercurio, & Pezzillo Iacono, 2011). In part, the nature and strength of the relationship among the actors determines the quality of service for the public. Thus, there is an increasing need to redefine the structures of coordination that regulate the relations among the actors of the public sector.

Governance refers to one or more institutional processes which pave the way for dialogue between parties, such as between the state and different stakeholders affected by the activities of the government (Eversole & Martin, 2005; Uzun, 2010). Governance is a system in which some parts of the state lose power and influence, but other parts of the state gain power through empowerment and win-win approach of the actors (Minnery, 2007). Eversole and Martin (2005) also define governance as institutional processes that provide an opportunity for dialogue between the state and different stakeholders affected by the activities of the government. Governance incorporates the process of public policy making and implementation

approach which specifically determines the roles of formal government, the market and civil society (Maiello, Christovão, Nogueira de Paiva Britto, & Frey, 2013; Minnery, 2007). Good governance ensures a wide range of desirable values including efficiency, productivity, participation, transparency, social responsiveness, flexibility and accountability (Chakrabarty, 2001). The nature of governance is crucially important in the sustainable development strategy of developing countries to change the livelihood of the citizens, as well as enhance best practice in the socio-economic development agenda.

In this research, the term governance is used to refer the structure of rules and practices by Addis Ababa city government and public transport regulatory agencies to ensure fairness and transparency in their relationship with all the stakeholders, namely the city bus operators, the government and the community. Governance therefore consists of explicit and implicit interactions of the regulators and other stakeholders (e.g., the operating company and market) for distribution of responsibilities; and procedures for reconciling the sometimes conflicting interests of the stakeholders in accordance with their duties, privileges and roles. It also includes proper supervision, control and information flows to serve as a check-and-balance system, in the realization of effective city buses transport service delivery across the city (Teshome *et al*., 2012). Hence, the term governance is used to describe the relationship amongst the operator (Anbessa City Bus Service Enterprise), the regulatory agencies and the bus users in determining factors influencing the accessibility of Anbessa bus service in Addis Ababa.

2.6.1. Participatory Urban Governance

Urban governance is a collective measurement used to determine the effectiveness of institutions in terms of efficiency, equity, participation, transparency and accountability. Participatory urban governance, on the other hand, refers to the processes of direction-setting, policy making and implementation in which various constituents of service delivery are organised to increase the welfare of all stakeholders. This continues through states (government bodies) managing and partnering with non-state actors in addressing the needs of urban dwellers (Minnery, 2007). Fragmented responsibilities within the coordination of cities leads

to the realisation that only institutional effort can improve cities and their competitiveness (Nallathiga, 2008). Thus, regardless of one's philosophical or political position, participatory urban governance broadly implies coordinated effort and management of resources to direct and guide for future growth.

It is clear that citizen engagement is a route to innovative ideas, although the final implementation of ideas-to-action, and the outcomes that these create, may be heterogeneous in terms of success. The spirit of cooperation in the system of urban governance promotes efficiency, choice and innovation originating from the three actors in the urban governance (Warner, 2011). The involvement of lower tiers and "grass-root" community in public service goods and services provision is also a basic principle for effective and sustainable urban institutional arrangement. Scholars have noted that greater citizen involvement and information, through both top-down and bottom-up accountability mechanisms enhances the transparency of local public good provision (Díaz-Cayeros, Magaloni, & Ruiz-Euler, 2014). Furthermore, it forms clarity around allocation of funds, as it provides the citizens access to information about the performance of the government and defines the role of the community.

Urbanization by itself does not change the livelihoods of city dwellers. Rather, it tends to accentuate problems such as inadequate housing and urban services (water, sanitation, transport and so on), proliferation of slums, pollution and deterioration of the urban environment (Chakrabarty, 2001). Participative urban governance remains an instrument in adopting a combined management approach in resolving the conflicting interests of multiple stakeholders and achieve equity, while keeping in view of urban dynamics and uncertainties. The cooperative style of urban governance features local authorities moderating or initiating cooperation instead of a command-and-control system (giving orders). In an effective system of cooperative urban governance, state and non-state actors such as business associations, chambers of commerce, local companies, banks, research institutes, universities, welfare associations, churches, unions, grassroots initiatives, and community organisations each play significant role in the common effort to attain the desired goal (Uzun, 2010). The advantage is that participation of multiple stakeholders creates an opportunity to exploit policy options from various angles of the participants.

2.6.2. Importance of Urban Management

Urban management is concerned with a set of physical and socioeconomic activities in shaping and developing urban livelihood, and interventions in promoting the urban development and wellbeing (Horn, 2014). It ensures that the system is well managed in a way that the dwellers are able to meet their needs for shelter, access to utilities and services and income generating opportunities (Horn, 2014). Good urban management broadly implies coordination, direct control, and management of resources towards future growth. Nonetheless, lack of appropriate policies coupled with limited resources can exacerbate chronic and enduring urban management problems (Arefi, 2013). This is an important note to make, considering that studies by Chakrabarty (2001) and Hughes (2012) show that urbanization and the economic development status of a country are intimately linked. An integrated urban management approach plays a key role in resolving the challenges of city buses transport accessibility and its conflicting interests of multiple stakeholders.

2.6.3. Decentralization of Urban Governance

Scholars of modern development theories and practices acknowledge decentralization as an important vehicle for governance. It is a tool that can enhance democratic principles through citizen participation, subsequently reducing inequality and improving service delivery (Rosenbaum, 2013). Effective decentralization provides empowerment for local authorities, values citizen's preferences, enhances accountability and improves fiscal management and market security. These elements can lead to more efficient, less corrupt governments and increased democratization (Kauneckis & Andersson, 2008).

Cuadrado-Ballesteros, García-Sánchez, and Prado-Lorenzo (2012) have shown that the implementation of decentralisation brings urban governments closer to the people and improves public service delivery. Addis Ababa city is one such local government that may benefit strongly from promoting local participation that allows the city government to better understand the people's city transport needs and improve public transport policy, strategy and service delivery.

2.6.4. Stakeholders in Urban Pubic Transport

The question of an effective regulatory regime and success strongly depends on the effectiveness of the relationship between government, the private sector and the users (Hansson, 2013). The effectiveness of the system can be determined where the stakeholders tend to exercise similar discretion in their decision making (see Figure 2.1). The public transport networking and communication system refers to the context in which public authorities seek to coordinate resources to enhance the collective goals of public transport. Stanley and Smith (2013) confirm that delivery of efficient and effective public transport systems and services require skills, integration, funding and communication. The involvement of private sector is an opportunity for the state and the users to enjoy efficient and effective service delivery, introduction of innovative products, service and price reduction. Participation of citizens in interactive public transport management is a means of empowerment and sharing of responsibility to achieve a common goal (Verma & Priyadarshee, 2015). Government is the third stakeholder in public transport accessibility where effective service delivery can be achieved when it protects the public interest through enforcement of regulatory framework (Sohail, Maunder, & Cavill, 2006). Such intervention is important in Addis Ababa bus transport service delivery to protect the user's interests, as well as avoid market failure.

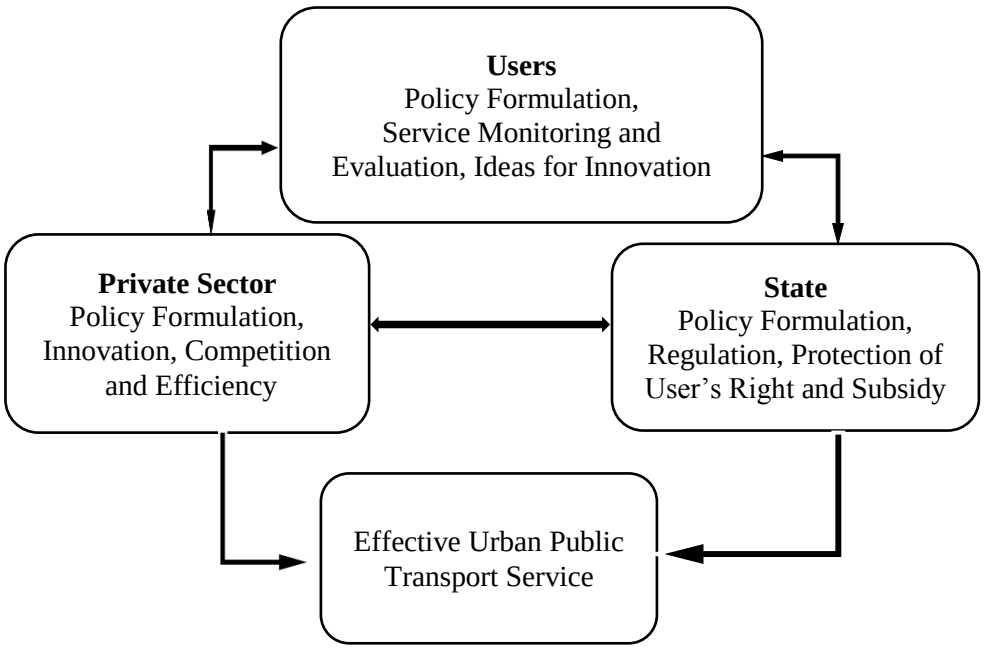

Figure 2. 1. Stakeholder's Relationships in the Urban Public Transport system

Source: Author's Own

2.6.5. Community Participation in Urban Public Transport

Citizens can be actors or agents within patterns of urban governance (Minnery, 2004). While the actors of governance make coalitions, a state itself can also open up "new forms and sites of social agency" and empowering these groups to be able to effectively partner with it (Newnam, Mamo, & Tulu, 2014). Various institutional deficiencies of urban local bodies could be successfully addressed by making distinctive partnerships with users of the transport service. Encompassing the community keenly from the beginning and proposal stages also illustrates an assurance towards making this project people friendly. Such comprehensive decision-making, where city people can actively engage with decision-makers regarding the city buses transport service delivery may even support in extending the sense of citizenship among the local community. For example, this kind of positive outcome has already been experienced by the Living City of Chile (Sagaris, 2010) and Kristiansand areas of Norway (Lindseth & Reitan, 2007). Both cases elicit that urban governance relations can change from a sector focused mode of accessibility to a more open and inclusive style in shaping new discourses.

The work of Sagaris (2010) also asserts that political pressures from energetic, well systematized and prepared community organisations can play a role in attaining all forms of workable transport onto policies and programs. In urban areas that are evolving plans to improve land use and public transport, community engagement supported by good governance maximizes those improvements to ensure quality of facilities and services. Improving democratic governance is, therefore, crucial in building effective urban public transport accessibility particularly in developing countries where the low and the middle income groups enjoy less political influence (De Graaf, Van Hulst, & Michels, 2014; Desouza & Bhagwatwar, 2012).

In Ethiopia, the deficiency of public discourse is reflected in the challenged relations between the government and advocacy groups. The government is suspicious of the motives of many these organisations, particularly international non-governmental organisations (NGOs), and thus prefers local and party-controlled alternatives (Rahmato, 2003). Despite the fact that more than 7,000 NGOs are registered across the country, it is almost impractical to openly challenge

the state or follow programs that are not aligned with official policy. For example, the country has no public transport advocacy groups (civil society organizations) that can collaborate with the government or lobby on the urban transport policy issues (International Crisis Group, 2009). Given the scope of this research, it was not feasible to include a study design incorporating public transport advocacy groups, as part of the key informants interviews used in this study (see more detail later in Chapter 3). However, it should be noted that a broader study, or follow-up work, may consider groups that are indirectly involved with transport policy, such as neighbourhood organizations, women's groups, cyclist groups and/or community centres.

2.6.6. Coordination in Public Transport Accessibility

The prime purpose of coordination and networking is to manage, steer, direct or guide the community, the civic organisations and the market to achieve their intended goals (Pathak, Singh, Belwal, & Smith, 2007). In order to improve the current socio-economic environment, a simple, morally acceptable, accountable, responsive, and transparent system of coordination framework is required (Pathak *et al*., 2007). The coordination concept articulates that government operates in an environment increasingly shaped by non-state actors. For both state and non-state actors, improving policymaking and service-delivery processes is an important objective through mutual understanding and cooperation.

While local government are enablers and facilitators of both local enterprises and local communities, coordination is an intangible asset that underpins the ability of local governments or municipals to meet the expectations of its primary stakeholders (Brusati, Fedele, & Ianniello, 2013). Similarly, good local governance infers high performance in managing local services to satisfy the community and enabling them to solve their own problems and create better future (Bovaird & Löffler, 2002). Thus, empowerment of local communities and enterprises, as well as local government bodies, is a crucial step in developing and achieving the fundamental principles of good governance.

2.7. URBAN GOVERNANCE IN ETHIOPIA

Urban governance in developing countries is challenged by absence of appropriate policies coupled with limited resources and (un)stable management (Arefi, 2013). Despite the low urban population, Ethiopia has experienced challenges of fragmentation of responsibilities and roles, a multiplicity of actors, and a lack of inter-sectoral coordination and public participation in urban governance (Schmidt & Kedir, 2009; World Bank, 2015). Urban governance in Ethiopia is also constrained by a combination of high urbanisation and unemployment rate, limited professional skills in coordination and networking, poor infrastructure and public transport service, and the scarcity of municipal finance and/or revenue generation schemes (Tiwari, 2012). Urban population pressure particularly causes delays in urban service provision, with a significant impact on peoples' living conditions. In effect, the governance system of the country is in its infancy (Schmidt & Kedir, 2009) The overall effect is that most city administrations are overwhelmed with the challenges of the mismatch in public demand and goods and services delivery.

Public transport in Ethiopia is one of the day-to-day needs of urban dwellers but the quality, accessibility and affordability of the service can be strongly dictated by the system of coordination. Governments need to distinguish the preferences of the local people so that the appropriate level and type of public goods can be provided. Achieving an effective public transport system through good governance also requires officials to prioritise the provision of public goods such as education, health care, transport, garbage collection and electricity (Hankla & Downs, 2010). Mainly, quality urban governance occurs when government officials focus on providing citizens with public goods that they desire.

Well-governed cities can play a significant role in reducing urban poverty by offering employment opportunities and improved services (Schmidt & Kedir, 2009). The city government can address the public demand through citizen and private sectors involvement and prioritizing the public demand. Delivery of efficient and effective public transport systems and services also requires skills, integration, funding and effective governance (Schmidt & Kedir, 2009). Overall, then local governments can play a key role in creating environments for good governance.

The core values of governance, namely mutual accountability and participatory decision-making are at their early stage in Ethiopia (Hofmann, Kaatz-Dubberke, & Kos, 2012). Traditionally, the actions of public authorities are not questioned very much, and the public generally avoid involvement in local administrative matters. On the other hand, the ruling party derives its power from a grass-roots movement and considers itself as a legitimate representative of the people, thus enabling it to build up strong support among the public for its various development initiatives (Hofmann et al., 2012; International Crisis Group, 2009). In the absence of effective check-and-balance mechanisms, however, there is a risk that urban decision-making fails to meet the demands of urban residents. Thus, the community may lose interest and display lack of trust in their local authorities, and citizens become discouraged from active participation in decision-making processes.

2.8. URBAN TRANSPORT SERVICE DELIVERY THROUGH PUBLIC–PRIVATE PARTINERSHIP

A public private partnership (PPP) refers to a collaboration among regulators, service providers, government policy makers, financial institutions and users towards effective urban public transport service delivery (Cavill & Sohail, 2005). Partnerships do not absolve the regulators from their public responsibility, but merely shift the government focus from managing the inputs of service provision to managing outcomes. It is one possible regulatory mechanism to secure service improvements, and sustainable delivery as well as easy accessibility to the middle- and lower-class citizens.

DeCorla-Souza and Barker (2005) stated that mixed type of public transport service delivery method is getting more consideration because public officials prefer to evade choosing between a purely public owned and private owned service delivery system. The mixed public–private service delivery lets governments to follow different kinds of objectives. Primary, it benefits to decrease regulatory expenses. The government can evaluate operating firms' operation processes and costs, while retaining uninterrupted participation in service delivery. Second, the mixed service provision method nurtures competition. The use of competitive offering increases the number of possible suppliers in the control (Warner & Hefetz, 2008). Third, it

enables public–private collaboration. A public firm can be accountable for some parts of the service delivery and the private firms can take care of other facets. Fourth, it lets setback of the privatization policy if necessary. In a mixed public transport service delivery system, the urban governments can choose either to subcontract further or to return to public delivery, increasing the regulator negotiating influence over the concessionaires. Lastly, a mixed public transport service delivery model disciplines public operators' workforces: public firm executives and labour unions may feel vulnerable by the possibility of privatization; this can lead to improved concern for efficiency and lessen the possibility of strikes (Daniel, Germà, & Joan, 2012).

Table 2.2 conceptualizes that each regulatory option has its own features, advantages and disadvantages. Generally, market monopoly, less accountability, opportunity for corruption, and downsizing of the workforce are likely to negatively dictate the regulatory mechanisms while competition for price, quality and efficient utilization of resources can be regarded as positive opportunities. It may be difficult to determine which one of the regulatory mechanisms is preferable. Rather, governments can select among their preferences depending on their convenience in the socioeconomic environment. Furthermore, in Ethiopia, there is little reported difference between public and private modes of public transport operation in terms of accessibility, safety and reliability. As such, this study will focus entirely on the public transport operation, as this is dominant in terms of market share.

Table 2. 2. Regulatory Options in Urban Public Transport Systems.

Service Delivery Mode	Characteristics	Advantages	Disadvantages
Public Monopoly	Transport operations are exclusive to one operator under permit from public agency.	Can be sub-contracted to other operators.	No competition; mismatch of demand/ supply.
Gross Cost Service Contracts	Public authority procures services from another party. The operator has no any direct commercial responsibility for the financial performance of the service.	Competitive tendering amongst a number of private and public operators for efficient service.	Less accountability of the operators; potential for corruption as contracts are negotiated.
Net Cost Service Contract	Operator is responsible for service revenues, costs of provision and overall commercial performance of the service.	Efficient utilization of resources and cost minimization.	Negotiation of contracts may be open for fraud.
Management Contract	The public authority usually owns the operational assets, and the operator is responsible for the management of the operations, within agreed parameters.	Performance responsibility for the management contractor may cover production costs, service quality, administrative and financial performance.	Cost reduction and profit maximization may lead to downsizing of the workforce.
Franchise	Exclusive right to provide a service, which meets a number of quantity, quality, and price standards laid down by the authority.	Franchisee may be paid to provide service/ fare combinations that are not commercially viable.	Less competition.
Concession	Granting an exclusive right to provide a service.	Maximum fares or minimum service requirements are set.	Over exploitation of the assets during the service contract.
Quantity Licensing	Numbers of vehicles allowed operating a defined service type in a defined area.	The assets are used efficiently, and costs are reduced.	Demand and supply may not match; less competition.
Quality Licensing	Operating a public transport service is possible for anyone receiving a licence and complying with conditions attached to it.	High opportunity for competition and price reduction and efficiency.	Strict quality standards may deter the entry of potential service providers in to the market.
Open Market	No restrictions except general laws for vehicle construction/use, highways & traffic matters, and business practices.	High opportunity for competition and price reduction and efficiency.	Below standard operators may abuse operational efficiency.

Source: Modified from Barter (2008) and Fox (2000)

2.9. REGULATORY MANDATES

A regulator is viewed as a self-interested utility maximizer who represents pro-regulatory political interests (Robert, 2000). Regulation is necessary to elicit the rules under which both service providers and regulators operate, whilst simultaneously considering the interests of both sides and protecting the users (Sohail *et al*., 2006). For example, the role of urban transport regulators is crucial in meeting the state and user's need, as well as to protect the system from unhealthy practices. Regulators need to ensure that the supply of public transport services is of sufficient quantity and quality to meet the demand, and that the service is provided at an affordable price to urban dwellers (Tsamboulas, Verma, & Moraiti, 2013; Zhang, 2014). In doing so, a service would thus have the potential to operate to the public advantage, putting into practice the policies of government as efficiently and effectively as possible (Sohail *et al*., 2006). Urban public transport regulation is therefore intended to ensure that standards are maintained through testing, monitoring and benchmarking of city transport provision (Daniel *et al*., 2012; Sohail *et al*., 2006). However, regulatory effectiveness depends on the independence of the regulator in order to prevent regulators being 'captured' by those they are supposed to be regulating. Developing countries need effective regulation backed by participatory urban governance in transforming their service delivery pattern.

2.10. WAYS TO DETERMINE EFFECTIVE URBAN TRANSPORT SERVICE DELIVERY

The accessibility of public transport service in urban settings is subject to some basic factors determining its effectiveness. Three of these basic factors are indicated in the following sub-sections: operational reliability and management, cost effectiveness, and user satisfaction.

2.10.1. Operational reliability and management

Public transport requires reliable management and service delivery. However, in most countries, passengers feel that the actual service delivery is unreliable (Van Oort, 2014). Simona (2010) asserts that vehicle performance, specialization in passenger transport, coordination, availability, comfort and convenience are good indicators of operational

reliability and management. However, it is important to note that operations reliability and management may not be achieved solely through the strength of regulatory framework. Rather, effective coordination and management, where the three actors share responsibility, can be considered as a potential mechanism to pave the way for better operations and the service reliability of the city bus transport system.

Reliability of service is a key sign that determines the quality of public transport and has become increasingly important in recent years. Service reliability is defined as the certainty of service compared with the schedule as one of the most important quality aspects of public transport (Van Oort, 2014). The impacts of unreliable services on passengers are average travel time extension, increased travel time variability, and a lower probability of finding a seat in the vehicle. To improve service reliability, Singh (2005) identified short term measures such as one-way traffic, improvement of signals, traffic engineering improvements for road network and intersections, and introduction of bus priority lanes to all cities, especially in metropolitan areas to increase the existing road capacity and road-user safety. Road infrastructure improvement measures, like new road alignments, hierarchy of roads, and introduction of service roads introduction in to cities are considered as a medium term solution. Likewise, long-term measures involve technology upgrades and the introduction of high-speed, high-capacity public transport systems particularly along high-density traffic corridors in assuring transport operations reliability. Citizens and private operators can be considered as sources of innovation and policy options given that the regulatory framework allows these stakeholders engaged.

2.10.2. Cost Effectiveness

Public transport modes should be cost effective as they use less urban road and consume considerably less fuel per passenger when compared with private automobiles (World Bank, 2014b). The users are also free from fixed and overhead costs such as insurance, registration, maintenance and running costs that private automobile owners periodically incur. City buses are said to be the most preferred mode of commuting for low-income dwellers in big and congested cities of developing world. When effectively provided, it has the dual advantage of being environmentally friendly and also affordable for the users (Tiwari, 2012). In Ethiopia,

city buses are the cheapest mode of urban public transport. Their fares are a quarter of the shared taxis carrying twelve passengers at a time (Trans-Africa, 2008). Nonetheless, achieving a low-cost service delivery scheme is not an end in itself. Customers also demand safety, quality and quantity of the service supply in a way that the regulatory bodies are not the only decision makers but should also involve the stakeholders in meeting user expectations.

2.10.3. User Satisfaction

Public transport is one of the daily needs of urban dwellers. Urban dwellers tend to prefer personal motor vehicles than public transport although income level determines their ability to access that preference (World Bank, 2014b). Nonetheless, the scenario may be the reverse in developing countries where personal car is considered as a luxury good and unaffordable. The accessibility, adequacy and reliability by which an individual can make a journey to work, school, health and other social services and visit to family members via this mode of transport also have the potential to determine the user's satisfaction. Similarly, the quality and safety of service, the match of demand and supply greatly influence their perception (World Bank, 2005). In cities like Addis Ababa, where bus transport is unreliable and ineffective, users satisfaction may be achieved through participatory coordination and communication in which the users themselves express their opinions and involve in formulating effective policies and strategies.

2.11. ACCESSIBILITY OF PUBLIC TRANSPORT IN URBAN SETTINGS

Access to public transport is a factual and an important necessity of people because it delivers access to education, health care services and employment opportunities. Moreover, it is a constituent of community integration because it enables the fairness of opportunities and defines the quality of life (García et al., 2015). Transport experts have become more sensitive to this and have stimulated studies, commendations and legislature with the objective of evolving public transport systems that reflects the needs of poor (García et al., 2015).

An accessible public transport service could be considered as an outcome of an effective urban management system. This encompasses the commitment of the regulatory bodies to identify a

suitable means to address the mobility need of the local community and allocate adequate resources in such a way that it addresses the prevailing gap (Díaz & Charles, 2015). Regulatory bodies also need to consider the socio-economic condition of users, spatial expansion of cities versus the population and adequacy of mobility options for users because the lower income community mainly depend on public transport in their daily life (Daniel et al., 2012). The stakeholders, principally including (but not limited to) the regulators, the service providing companies and the user community are actors in public transport service delivery in which the triad should exercise influencing capacity to maintain better accessibility and quality of service.

2.12. CHAPTER SUMMARY

This chapter has presented the case that public transport plays a pivotal role in the socio-economic life of urban dwellers, particularly in developing nations. The low-income users particularly depend on public transport for their day-to day mobility. The effectiveness of public transport accessibility is influenced by the nature of urban governance. Urban public transport governance involves different stakeholders including regulators, law enforcement, service providers, and the community. It seems clear that active engagement of these stakeholders in public transport governance results in better accessibility of the service. Notwithstanding this, an effective public transport governance involves strong horizontal relationships between the state, users and the private firms to work together in creating an enabling environment for accessible public transport service provision.

The reviewed studies also indicated that accessible public transport requires better regulatory instruments, public accountability for both public and private operators, and a mix of actions within jurisdictional boundaries. Similarly, the literature review also indicated that accessible public transport requires adequate financial and non-financial resources and suitable transport operation in order to address the service accessibility gap.

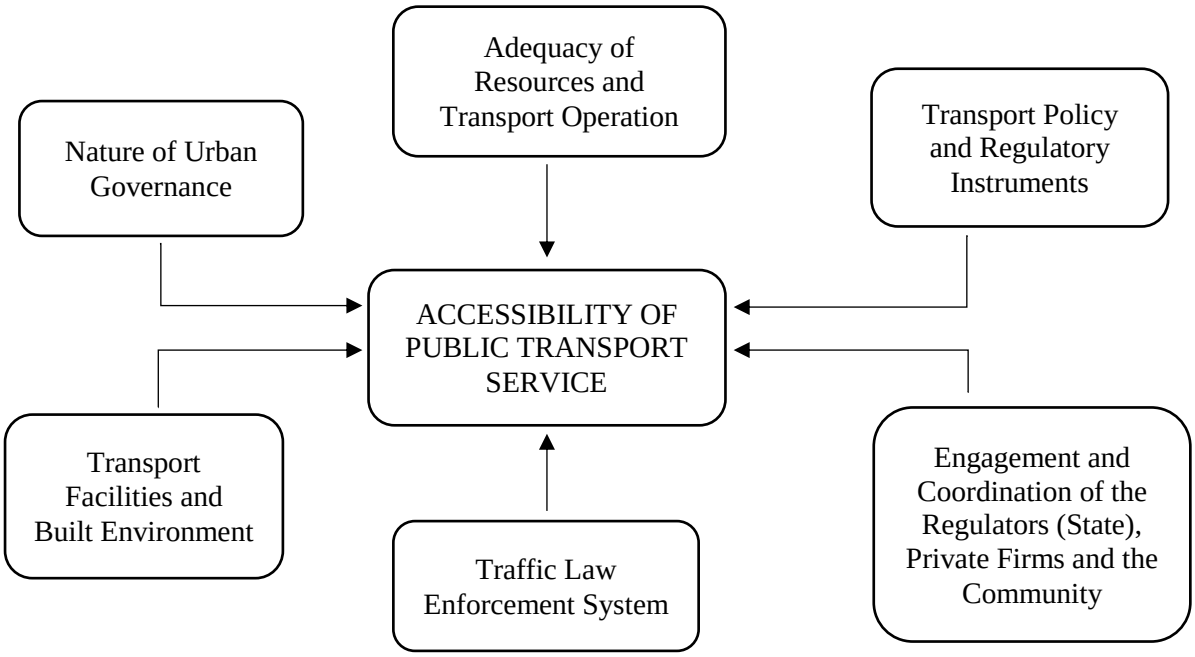

Figure 2. 2. Conceptual Framework Indicating System of Public Transport Accessibility

Source: Author's Own

This conceptual framework has significant role in designing research methodology, data analysis, discussion of the findings, proposing new model (s) and setting recommendations in the next consecutive chapters.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1. INTRODUCTION

The purpose of this chapter is to give a detailed understanding of the methodology and methods that were followed to explore the research objectives. The chapter discusses the research design, approach and data collection methods; and then explains the qualitative and quantitative data analysis methods how these were engaged in this study.

3.2. RESEARCH METHOD: MIXED APPROACH

Mixed-method research is increasingly recognised as a more efficient way to exploit the respective strength of qualitative and quantitative approaches. Different writers have given varying and specific definitions for the meaning of mixed method research and its rationale. As one very recent example Creswell and Clark (in press) defined mixed method research in Johnson, Onwuegbuzie, and Turner (2007, p. 119) as 'mixed method research is a research design in which the researcher collects, analyses, and mixes (integrates or connects) both qualitative and quantitative data in a single study or multiple program of inquiry'. It can also be viewed as an approach, which draws up on the strength and perspectives of each method. In support of this, Rossman and Wilson (1985) in Johnson *et al*. (2007) identified the reasons for combining qualitative and quantitative research. First, combinations were used to enable confirmation or corroboration of each other through triangulation; to undertand the similarities and differences between the findings under each method; and also to complement the findings of one method with the other (Sale & Brazil, 2004). It also enables a deeper analysis in order to provide richer data; and may provide for the devlopment of new theories by amalgamating the similarities and differences that emerge from the qualitative and quantitative data sources.

Greene, Caracelli, and Graham (1989) in Johnson et al. (2007, p. 16) also identified five basic rationales for mixed methodological studies:

(a) seeking convergence and corroboration of results from different methods studying the same phenomenon,

(b) seeking elaboration, enhancement, illustration, clarification of results from one method with results from the other method,

(c) using the results from one method to help inform other method,

(d) discovering paradoxes and contradictions that lead to a reframing of the research questions; and

(e) seeking to expand the breadth and ranges of inquiry by using different methods for different inquiry or components.

In this chosen transport research study, data were collected through in-depth interviews, survey questionnaire and researcher's personal observation. As these required proper manipulation and analysis, adopting a mixed method research approach was of paramount importance. This study therefore followed a mixed method approach, which referred to the use of both quantitative and qualitative data collection and analysis (Onwuegbuzie & Combs, 2011). Engagement of qualitative and quantitative data analysis was helpful in understanding the operational, policy and strategic influences and how these were separately or collectively impacting the accessibility of Anbessa bus service in Addis Ababa and its peripheries. The mixed research method was an important means of increasing the likelihood of reaching potential respondents, minimizing the non-response rate, as well as being able to compare and contrast the viewpoints of the users and regulators in order to validate the data from both sides (Bordens & Abbott, 2014).

A concurrent triangulation mixed research method was also followed in this study. This approach helped to cross validate and complement the findings of the in-depth interview with survey of Anbessa bus users in properly addressing the research questions.

3.3. RESEARCH DESIGN

An exploratory research design was used to examine the factors affecting accessibility of Anbessa bus service in KKSC-Addis Ababa. This included a determination of the relationship

between factors affecting accessibility of the service and its effectiveness, and how the former affects the later.

The research designed was based on comprehensive literature review, which was useful in identification of the real case problem, setting conceptual frameworks, conducting adequate discussions on specific findings, and formulating a suitable service delivery model in addressing the existing Anbessa bus service accessibility gap. A concurrent mixed-method was used to cross validate and/or complement perceptions of the city bus users, service provider and regulators. The set of structured questions in the survey were similar to the in-depth interview question so that the participants from both sides would have a uniform privilege to brief their views and opinions in different ways. This method proved convenient to analyse the survey and in-depth interview, understand and interpret the reality in of the case study.

The study explored the existing service delivery 'model' of Anbessa bus service. An in-depth analysis of the residual gaps pertaining to resource allocation and management, regulatory and policy issues, and the role of stakeholders in the current service delivery model was done. Finally, a new model considered to be suitable for urban settings of Addis Ababa was built and recommendation and conclusion of the study were drawn.

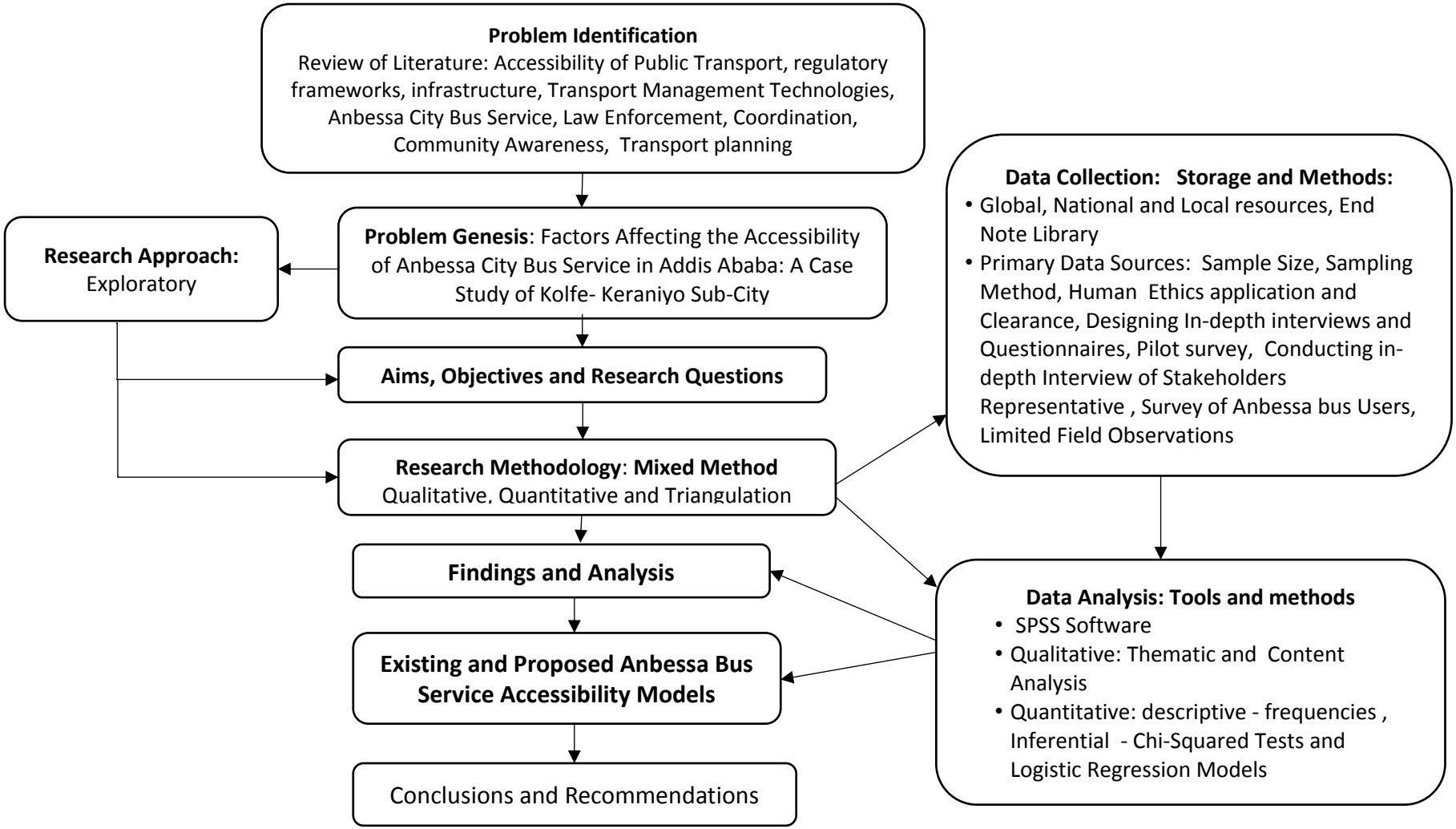

Figure 3. 1 Research Design

Source: Adopted from Bordens and Abbott (2014) & Cameron (2009)

3.4. DATA COLLECTION METHODS

The Human Research Ethics Committee approved to conduct the in-depth interview with the respondents and home-to-home visit for the user's survey with approval number H16/04-091. Detail information about the Ethics Clearance Certificate is found in Appendix A -1 and 2; whereas the data collection instruments are found in Appendix B, C and D.

The study relied upon primary and secondary sources of data. The primary qualitative data were collected via open-ended items, without predetermined responses, while the quantitative data involved closed-ended responses (Creswell, 2014). Adopting the dual method of data collection allowed for the identification of contradictions or paradoxes that could reframe the research questions, with respect to assessing the aspects of factors affecting the accessibility of Anbessa bus service.

3.4.1. Primary Data

Primary data were collected for a specific research problem at hand, using a procedure that fitted the research problem best (Hox & Boeije, 2005). Two types of primary data collection methods were employed in addressing the research questions: key informant (in-depth) interviews and a bus user's survey.

3.4.2. Secondary Data

Secondary data refers to data collected for a different purpose and which may be reused for other research questions (Hox & Boeije, 2005). Utilization of secondary data was cost effective to collect information, which could not be obtained easily through primary data collection. These included, but were not limited to, transport regulations, periodic reports, books and research findings of similar context. This research reviewed and integrated theories and findings identified from similar research, to get better

understanding of the case study (Bordens & Abbott, 2014). A desktop review of recent (e.g. mostly not later than 2005) academic articles, thesis, reports, published and unpublished papers were conducted to better understand the theoretical background and practical aspects of the subject matter.

3.4.3. Sampling Method and Sample Size

A purposive random sampling method was used for the in-depth interview and two-stage random sampling for the questionnaire survey. Purposive sampling was very important in determining a suitable respondent for the interview; and this was principally done by selecting the organisations that were already known as being lead actors in the public transport system, and then approaching each one for possible in-depth respondents amongst their senior staff. To this end, the researcher recruited twelve respondents through purposive random sampling technique from list of staff (managers and experts) of Anbessa city bus enterprise (ACBSE), Addis Ababa transport authority (ATA), Addis Ababa traffic management agency (ATMA), and Addis Ababa transport program office (TPO). A sample of clusters was selected from fifteen districts in KKSC, and then households (elements) were selected from each district randomly to conduct a home-to-home survey.

The proposed survey sample (n) size contained 165 respondents, which was figured out by a two-stage sampling size determination technique as indicated below.

$n_0 = \frac{t^2 PQ}{d^2} de$ t= the value of standardized normal variable to ensure 95% confidence level, P= 0.3 (estimated proportion of an attribute that is present in the population. In this case, it indicates the proportion of city bus users in the sub-city, Q= 1-P= 1-0.3= 0.7 (proportion of city bus non- users in the sub-city), *de* = design effect = 1.0, generally used for two stage sampling design, and d= 0.07, margin of errors (Israel, 1992).

This technique was a key tool in determining whether the city service was demand responsive, effective, safe and adequate for the users at a required quality of service.

Additional respondents were engaged to filter out the more reliable survey responds. In doing so, 31 more survey responses were found to be still reliable. Thus, the sample size eventually increased to 196, considering that engagement of additional number of respondents would contribute to the reliability of the research findings.

3.4.4. In-depth Interviews

The in-depth interviews were held with selected higher and middle level managers and experts of Anbessa city bus service enterprise and transport regulatory bodies. These were based on purposive random sampling. This data collection followed purposive random sampling of respondents at ACBSE, ATA, ATMA and TPO. The group contained five respondents from the service provider and seven respondents from the regulatory bodies. The in-depth interviews were carried out with five respondents of the operator because essential data will be collected from technical, operations, financial and marketing perspectives of the company. Similarly, the number of respondents from the regulatory bodies was determined to be seven in which Addis Ababa Transport Authority, Addis Ababa transport program office, and Addis Ababa traffic management agency were the participants. Minimization of the number of respondents was essential to moderate the size, as well as offer each participant enough opportunity to share self-opinion (Freitas *et al*., 1998). This participant interaction method played major part in understanding the reality of factors affecting the accessibility of Anbessa bus service in Addis Ababa. It tended to be a dialogic method, with the operators and regulators in this research, which could combine data collection methods with opportunity for reflection of tensions that characterize the issue(s) under exploration (Creswell, 2014). Open-ended questions were forwarded to the respondents where they were given the opportunity to provide the feature of the existing service delivery and the role of stakeholders.

Each participant had the opportunity to respond using the working language (Amharic) to be able give a detailed feedback for each question. The researcher took notes from the in-depth interview and transcribed it in to Amharic. The interview helped the research to pinpoint factors affecting the city bus accessibility and the role of stakeholders to realize an effective mode of buses transport service delivery in the stated sub-city.

After completing the in-depth interviews, translation of the data from Amharic to English, and thematic content analysis was conducted. Similarly, the survey questions were prepared in English and then translated to the local language (Amharic) for the easy understanding of Anbessa bus service users. However, the coding process in to the SPSS software was done in English.

3.4.5. Survey Method

Quantitative survey research provides a numeric description of attitudes or opinions of a population by studying a sample of that population. For example, "it may include cross-sectional and/or longitudinal studies using questionnaires or structured interviews for data collection with the intent of generalizing from the sample to a population" (Creswell, 2014, p. 13; Fowler, 2008). A Likert-type scale is commonly used in questionnaire design, as this provides for easy understanding and selection of opinions by the research participants. Thus, Likert-style tools are important for the easy understanding of respondents' attitudes towards factors affecting the accessibility and effectiveness of Anbessa bus service delivery, as it is expected that these responses may vary across negative to positive dimensions (Johns, 2010). The survey respondents were frequent users of Anbessa bus service such as workers, students and different social strata.

A random two-stage sampling technique was conducted to draw the respondents (Creswell, 2014). Modern information communication technology, residential telephone and postal services that could otherwise have been used to engage in to the survey are poorly developed in Ethiopia, and this applies also in Addis Ababa. Thus, traditional forms of data collection was employed through home-to-home visits in fifteen districts of the sub-city, where bus users were asked to complete the questionnaire. In this regard, two research assistants were recruited to conduct the home-to-home survey in KKSC under the researcher's supervision. Although it was a time-consuming technique, the data collection was more reliable because the research assistants were able to record accurately the data for each response from the bus users. This approach also helped address a possible illiteracy issue in some of the bus users, who may otherwise have been unable to participate in the research.

The questionnaire started with two qualifying questions. These were their age and whether or not the respondent was Anbessa bus service user. Any person found to be below 18 years and/or does not use Anbessa bus service was not qualified to be a respondent. Each question was revised a number of times to give more clarity and conciseness. Prior to commencing the main survey, ten pilots were done to understand the shortcomings of the questionnaire, and how it could be improved. This helped to make few corrections on the approach and contents of the selected questions.

The survey questions had five parts. The first part dealt with the socio-demographic characteristics of the research respondents. This section comprised of items relating to gender, occupation, average monthly income, and average daily transport expenditure. The ultimate purpose of these data was to analyse the socio-economic status of the participants in order to understand the possible influences of these in terms of decision-making concerning the accessibility and choice of travel mode. The remaining parts were all about the accessibility, reliability and communication, coordination of the transport service, perceived user level impacts of inaccessibility of the service at the peri-urban sub cities of Addis Ababa,

and open-ended questions for the bus users to express general comments (See Appendix D-1). This enabled the research to explore the relationship between the different factors, and understand how these affect the accessibility of the bus from the users' perspective.

Lastly, a set of questions were included to obtain brief feedback about the status of coordination and communication in the bus service delivery. These included such instances as user's preference to the city bus; experiences and perception about the city government's responsiveness meeting the public expectations; identification of common problems in the service delivery; coordination of the regulators and the service provider, the degree of involvement of private operators and the community in devising policies and strategies of the bus service delivery. In general, this section measured the extent to which the coordination system was transparent, accountable, facilitates engagements with the citizens and the private sector as well as makes intervention to protect the public interest for effective service provision. This paved a way to examine the factors affecting Anbessa bus service accessibility in formulating policies and strategies for better service provision.

3.5. DATA ANALYSES

The data analyses employed a mixture of qualitative and quantitative methods. A thematic content analysis method was used to explore the information collected via the stakeholder's in-depth interviews. This was prepared by considering each interviewee's material case-by-case, and allowing key themes and sub-themes to emerge. Here, a key theme was defined as a broad category that featured prominently in multiple interview transcripts; whereas the sub-theme was one or more sub-categories, which were mentioned by a number of the respondents.

Before applying statistical analyses, any Likert-type response scales were converted by merging the items into two categories: the 'agreement' category incorporated the strongly agree or agree items; whereas the 'disagreement' category incorporated the neutral, disagree and strongly disagree items. This adjustment was applied based on the assumption that users remain neutral when they are not satisfied with the existing service delivery. Of note, some items also had missed cases, which represented examples where bus users selected answers such as 'rather not say', 'I don't know', 'not sure', or 'cannot be determined'. Thus, the final usable sample sizes differed amongst the items in the overall survey. In particular, sample sizes for questions 20 (b) and 22 (b) were considerably lower as these were iterative questions, with answers only sought from participants who had selected 'yes' in the preceding item.

The quantitative data analysis included descriptive statistics, Chi-squared testing and logistic regression models to test the accessibility of Anbessa bus service in the stated sub-city. These methods helped to legitimise the findings through concurrent triangulation or complementation of the finding from either side to make the research complete and justifiable in the next (third) researchable chapter.

3.6. CHAPTER SUMMARY

This chapter has elucidated the methodological approach applied for this research project. The qualitative and quantitative data collection, analysis and discussion were done to understand the findings in each case. A cross validation and/or complementarity of the findings helped to conceptualise factors influencing the accessibility of Anbessa bus service from the regulators, service provider and users perspective and ultimately draw a suitable service delivery model for Anbessa bus service.

Twelve respondents participated in the in-depth interview. This was necessary to conceptualise the views and opinions of the in-depth interview respondents regarding the accessibility of Anbessa bus service in Addis Ababa. Similarly, the survey accommodated 196 Anbessa bus service users living in KKSC.

This method helped to determine the user's viewpoints of Anbessa bus service users and factors influencing accessibility of the service in the sub-city.

Thematic content analysis was engaged in manipulating the qualitative data whereas descriptive statistics, Chi-squared tests and logistic regression modelling were used to determine factors influencing the accessibility of Anbessa bus service. Finally, the mixed research approached helped to reveal the existing features and propose a service delivery model considered suitable for Anbessa bus service in the urban setting of Addis Ababa.

CHAPTER FOUR: STAKEHOLDER PERCEPTIONS OF ANBESSA BUS SERVICES

4.1. INTRODUCTION

Road transport plays a vital role in underpinning the economic growth of developing countries. City transport services are particularly important in urban areas that are key nodes of economic activity. In Ethiopia, the national capital is Addis Ababa City, which is responsible for 60% of the country's industrial production and 50% of its GDP (Wondifiraw et al., 2015; World Bank, 2015).

Addis Ababa city dwellers rely heavily on public transport for their day-to-day mobility, as rates of personal car ownership are low. Within the city's public transport delivery, Anbessa City Bus covers 40% of the available public transport services (Gebeyehu & Takano, 2007). Despite this majority position, it appears that road transport in Addis Ababa encounters a number of different challenges which hinder the bus service from meeting its intended objectives. For example, the limited number of buses and taxis in Addis Ababa have resulted in low quality and inaccessible service delivery across the city (Berhan et al., 2013; Kumar & Barrett, 2008; World Bank, 2014a). Some studies have claimed that institutional weaknesses have resulted in inaccessible and, consequently, ineffective service provision of the buses (Berhan et al., 2013; Kumar & Barrett, 2008; World Bank, 2014a). For example, users are hardly able to access public transport during peak hours or bad weather conditions (Fenta, 2014); and sometimes commuters are required to pay an extra fare to continue their journey, or are forced to disembark mid-way through their route (Kumar and Barrett, 2008). Here, the service providers may be aware that commuters do not have other alternatives during this time, and thus press their advantage, pushing the consumer to pay above the limited fare in order to maximize their profit.

Variously, the (in) accessibility of the city buses in Addis Ababa has been characterised by excessive transit times, poor infrastructure, and scarcity of vehicles. The city bus service has also been challenged

by problems relating to unreliability and/or unavailability of the service(s), the government's inability to allocate adequate resources for operational upgrades, ineffectiveness of regulatory instruments and role confusion, which appears common in developing nation contexts (Kumar & Barrett, 2008; Litman, 2015; Yilak et al., 2011; Yilma, 2014). This chapter explores factors affecting the accessibility of Anbessa bus service in Addis Ababa, using a qualitative research approach based on in-depth interviews conducted with twelve in-depth interview respondents from four key stakeholder organizations. Descriptive and thematic content analyses were used to interpret the in-depth interview data, which provided insights in relation to the factors influencing the service provision, and possible ways to address the accessibility problems associated with the Anbessa bus service.

4.2. PROFILE OF THE IN-DEPTH INTERVIEW RESPONDENTS

Twelve selected respondents each participated in an in-depth interview, as per the methods described in chapter three. These were considered to be an adequate representation of the public sector actors directly involved in public transport planning and management.

The participants were balanced between different managerial and professional levels from ACBSE and regulators[1] (see Table *4. 1*). Among these, ten respondents were male (83.3%) and two (16.7%) were female. This figure could be regarded as being broadly representative of the actual stakeholder demographic, given that in Ethiopia, it is common that females occupy a much smaller percentage of the managerial and professional positions in the national work force. Of the participating respondents, a majority (41.7%) had less than five years of service in their respective institutions. The remaining respondents were spread over a range of different service durations, with three of those from the operator having more than 20 years of relevant work experience each (see Table 4.2). In terms of seniority of role, two respondents were first-line managers/experts; seven were middle level managers/senior experts; and three were executive managers (see Table 4.3).

Table 4. 1. Profile of in-depth interview respondents

Organizational Category	Male	Female	Total
Anbessa City Bus (Operator)	3	2	5
Regulators	7	-	7
Percentage	83.3	16.7	100%
Total	10	2	12

Table 4. 2. Length of Service for the respondents

Length of Service (years)	Operators	Regulators	Total	Percentage
1-5	1	4	5	41.7
5-10	-	3	3	25
10-15	-	-	-	0
15-20	1	-	1	8.3
20 and above	3	-	3	25
Total	5	7	12	100

Table 4. 3. Employment position of the respondents

Respondent	Operational Level Managers /Expert	Middle Level Manager /Senior Expert	Executive Managers	Total	Percentage
Operator	1	2	2	5	41.7
Regulator	1	5	1	7	58.3
Total	2	7	3	12	100

4.3. THEMATIC OVERVIEW: KEY DISCUSSION POINTS RAISED BY IN-DEPTH INTERVIEW RESPONDENTS

In total, eight key themes, each comprising one to six sub-themes, were identified from the interview datasets (see Table 4. 4). These themes covered all aspects of the transport system, including hard and soft infrastructure, the varying roles of users and providers, and the planning and operational frameworks in which the transport sector occurs in Addis Ababa. Overall, the areas of law enforcement,

infrastructure conditions, accessibility and institutional frameworks received the dominant share of frequencies, with items such as transport operations, comfort and safety, and stakeholder engagement receiving fewer mentions.

Table 4. 4 Frequencies of themes and sub-themes mentioned by the respondents

Theme	Theme title	Number of Stakeholder	Subtheme	Subtheme title	Frequency
1	Infrastructure	7	1.1	Road Conditions	4
			1.2	Dedicated Lanes and Bays	8
			1.3	Transit Stations and Bus Stops/Shelters	3
2	Stakeholder Engagement	4	2.1	Engagement with Private and Public Operator	6
			2.2	Community Engagement	12
			2.3	Engagement with Regulators (Government Bodies)	9
3	Law Enforcement	9	3.1	Traffic Law Enforcement	6
4	User Accessibility	7	4.1	Service Coverage	6
			4.2	Fare Affordability	8
			4.3	City bus availability	10
			4.4	Road congestion and Delays (Impact/s)	5
			4.5	Bus Services Access during peak hours	5
			4.6	Service reliability	7
5	Institutional Framework	7	5.1	Application of Policies and Strategies	6
			5.2	Restructuring of Transport Regulatory Bodies	9
			5.3	Anbessa City Bus Institutional Reform	10
			5.4	Duplication of Duties/Role Clarity	9
6	Transport Operations	3	6.1	Promotion of Mass Public Transport	7
			6.2	Automation of Transport Operations	7
			6.3	Traffic Congestion (Cause/s)	8
			6.4	Regular Bus Maintenance	6
7	Transport Planning	6	7.1	Planned Phase-out of Shared Taxis	4
			7.2	Expansion of Bus Depots and Terminals	7
			7.3	Multimodal Transport Integration Planning	2
			7.4	Planning for Rapid Transit System	3
8	User Comfort and Safety	4	8.1	Bus overcrowding	4
			8.2	Drivers' and Cash Collectors' Behaviour	2

Please note definition: Frequency refers to the number of times that each subtheme was mentioned by one or more respondents. Please note that subtheme frequency scores can exceed the total number of respondents score, as a given participant may raise the same issue multiple times.

4.4. ROAD CONDITIONS

The interviewed respondents noted that development of adequate road infrastructure is one of the significant factors promoting the accessibility of the city bus transport service. For example, one respondent (R4) indicated *"...the basic challenge of public transport accessibility in Addis Ababa is that the road infrastructure is not adequate and conveniently built...."* It was noted that development and expansion of infrastructure, especially between residential areas and Central Business Districts (CBDs) is a key factor in determining the community's preference for different modes of mobility.

The respondents also indicated that the road conditions along the sub-cities of Addis Ababa are below standard. In particular, the new peripheral residential areas experience the poorest access to the city bus because of the inadequacy of infrastructure linking those locations to the CBD. Of note, one interviewee explained that to solve these problems, the City Council is currently recruiting domestic and international road contractors to upgrade and develop the infrastructure across the city. This theme was repeated in a number of interviews, with the respondents asserting that the city council is building roads to sustain the city's role in the economy and promoting mobility. However, it was also noted that too-narrow roads and the unavailability of sufficient pedestrian walkways are restricting mobility conditions; and that unavailability of alternative routes is a common concern for both commuters and drivers.

The poor road conditions appear to be worsened by inadequate or irregular maintenance of worn-out road facilities, combined with the slow development of new access roads connecting the sub-cities. In this regard, one respondent (R6) said: *"...the roads are inadequately built without accommodating essential necessities."* In Ethiopia, the regional states and city councils are responsible for developing road infrastructures across their cities and towns. The absence of

genuine quality control creates the preconditions for roads to be quickly worn-out, which exacerbates the inaccessibility of the buses. The accessibility problem thus becomes compounded, as lack of appropriate access roads means that the city buses cannot travel by the most direct routes, thus creating further delays and inconvenience. The poor quality of road pavement also directly influences the comfort of the users: the bus rides are bumpy because of the potholes. Furthermore, in some situations, road-based public transport becomes essentially unavailable, due to buses travelling on the poor roads, and then becoming susceptible to damage and eventually, breakdowns and removal from service. This is particularly the case where the vehicle fleet is already aged.

4.4.1. Dedicated Lanes and Bays

The respondents pointed out that the absence of dedicated bus lanes in Addis Ababa is a key challenge; with a high volume of traffic congestion on the highways resulting in wastage of time on transit. The city government is regarded as being responsible to seek sustainable solutions to this issue, through the expansion of road infrastructure, including dedicated bus lanes. However, unfortunately, a stakeholder representing the regulators (R6) said: "*the operational efficiency is decreasing due to high congestion with* [in] *the mixed traffic system and inconvenience of the infrastructures,* [and] *absence of dedicated mass transport lanes.*" In addition to this, a number of respondents also admitted that whilst the government recognises the traffic congestion problem, there is only a weak or minimum commitment applied to diagnosing the root causes of the congestion. Equally, those interviewed also acknowledged that the design and construction of bus lanes requires considerable budget injection, which may explain why successive governments have not been able to action improvements in the past. Nevertheless, the construction of dedicated bus lanes is regarded as being able to play major role in improving the

service quality through mitigating congestion and increasing user accessibility: this invites further consideration of the overall cost/benefits of infrastructure builds within Addis Ababa.

4.4.2. Transit Stations and Bus Stops/Shelters

This section examines respondents' feedback on transit stations[2] and bus stops[3]/shelter conditions in relation to the accessibility of the city bus. The city currently has only four bus transit terminals (Legehar, Giorgis, Megenagna and Addis Ketema) within the ten sub-cities, which is inadequate compared with the size of the city, and the prevailing demand. These terminals lack basic facilities such as shelter, chairs, information booth, and toilet amenities for commuters. Moreover, the terminals are not only dedicated to Anbessa buses, but also for the clients of shared taxis, other buses and private automobiles. A stakeholder from the regulators (R4) stated: "*currently, there are no adequate facilities such as transit stations, terminals, and bus stops with in the city. Even the existing terminals do not have clear ownership, although they apparently belong to the Transport Authority. So, it is sometimes used as Public Square.*" Thus, the mixed-use nature of the terminals seems to be a key factor contributing to congestion and poorly accessible service. The impacts of this are multiple: for example, bus stops on the transit routes lack shelters, seat and sanitation. At the few places where the shelters were available, it was noted that sanitation was poor and seats are seldom available, as a result of unclear ownership of the property between Addis Ababa transport authority and ACBSE. Thus, users may be commonly exposed to rain, hot weather and other discomforting situations at transit stations.

[2] Bus transit stations are specific areas where multiple buses on various routes are accessible for a large number of commuters at once.

[3] Bus stops/shelters along the service routes are access points along a specific service route, and are valuable in providing shelter for waiting bus users.

Plate 4. 1. *Transit Station at Addis Ketema, the market place in the city during peak hour (5.00 pm).*

Source: Researcher's own, mid-2016.

4.5. ENGAGEMENT OF STAKEHOLDERS

Stakeholders, in this study, refer to Anbessa bus users, the community and organizations that closely work with Anbessa bus service provision. This include the regulators, the operator and the law enforcement bodies. The regulators are Addis Ababa Transport Authority, Addis Ababa Transport Program Office. The Operator is Anbessa City Bus. The law enforcement bodies are Addis Ababa Traffic police and Addis Ababa Traffic Management Agency. The in-depth interview respondents were representatives of the stakeholder (entities) that are working with ACBSE on different aspects. Four of the respondents asserted that they themselves are engaged with ACBSE, and are collaboratively working on capacity building in relation to transport, traffic management and law enforcement systems (see Table 4. 4). These kinds of activities may include professional and managerial training and/or upgrading the educational level of employees. The interviewees indicated that ACBSE works closely with the city government, federal transport authority, the community, ATMA, Addis Ababa roads Transport Authority, and the Addis Ababa traffic police (ATP) in addressing the mismatch of demand and supply. For example, one of the

respondents (R11) pointed out: *"if any gap is observed in the service delivery system, the concerned bodies follow the case closely and find remedies promptly…."* Nonetheless, the challenge is that many of the problems are intractable because of the uncertainty of the budget allocation. This kind of investment is ultimately required to improve infrastructure, assist in the delivery of more effective transport operations and to allow acquisition of an adequate number of buses.

4.5.1. Engagement of Operators

Respondents who participated in the interview were able to provide some feedback on the engagement of public and private operators in the service accessibility ACBSE. The data in the interview transcripts clearly underlined that the business policy, strategy and marketing system of public transport in Addis Ababa fails to attract private operators. Rather, in some cases, it discourages them. For example, private operators are levied high tax rates to import mass transport buses and their spare parts. The regulatory system does not encourage the private firms via introducing suitable incentives, such as policies that specifically favour competition around fares, service quality, and innovative use of technology to achieve best service accessibility outcomes. Instead, private operators are discouraged by the involvement of informal transport service providers (e.g. shared taxis); the high accident rate due to weak law enforcement systems; road congestion; fluctuating fuel prices versus fare schedules; and weak regulatory instruments.

From a land-use point of view, participants reported that it can be difficult for the private operators to access adequate parking areas and transit terminals. Furthermore, there is no policy and/or incentive mechanism to arrange a lease or acquire the facilities; nor payment of subsidies to attract the private operators who could play a key role mitigating the service inaccessibility issues. For example, respondent (R2) indicated: *"...the private firms are reluctant to join the*

public transport market in the city owing to uncertain transport market regulation and arrangements." As a result, private operators consider that entry into the public transport business is unattractive and vulnerable to loss.

Alliance City Bus is the first private operator within the city, after being introduced into the public transport service delivery in 2012. The addition of this new service was welcome, however, referring to this, a stakeholder representing the regulators said: *"…the number of buses are not increasing in line with the steadily increasing number of commuters, whereas their existing fleets are getting older. This is a good example that the government's vehicles and parts import regulation doesn't encourage the private firms to grow."* It is evident that Alliance and other potentially emerging city bus providers lack adequate financial capacity to meet the prevailing demand. The interviewees reported that those parties require financial and non-financial support such as arrangements of parking areas, and institutionalisation of the informal competitors (e.g. shared taxis and buses) that are operated by individual owners or their drivers who are keen to distort the market conditions. Two respondents supported this, observing that better policy and strategy is critically important in engaging and supporting the private operators. For example, one suggestion was that a waiver of import duty should be considered for the mass transport vehicles and their spare parts, as this kind of incentive scheme would encourage the participation of the private operators.

The respondents pointed out that the inconvenience of the infrastructure was another factor discouraging the private firms, because of high maintenance costs. The deteriorating roads, inadequate/poor traffic signals and bad storm-water drainage systems also caused for the frequent accidents and rapid wear of vehicles. Overall, the barriers relating to import regulations for vehicles and parts, a poor law enforcement system, the deteriorated physical environment, the

increasing number of informal competitors and the high accident rates have made the business environment unattractive for private operators, resulting in Anbessa being almost the sole provider in the market.

4.5.2. Community Engagement

Approximately one-third of the respondents mentioned problems of community engagement in being relevant to improving the service accessibility (see Table 4. 4). Some suggested that community engagement is not a common practice that all the stakeholders are aware of. However, in contrast to this, a respondent from ACBSE (R11) confirmed: *"…the discussion with the public is done for* [routine] *planning and review of the implementation of plans and programs.*" The community feedback is often used as a key input for planning and performance reviews such as opening/adjustment of service routes, assigning additional buses, infrastructure improvements, narrowing the demand and supply gap, fare adjustments, and improving the customer service.

The respondents mentioned that there are various ways of canvassing community engagement, and that several of these are already done by ACBSE. Public fora are held at sub-city level and surrounding Oromia towns with efforts to extend invitations to various groups in the society. Very often pro-government groups such as the women's league and the youth league physically attend to represent the community at the sub-city forums. Three respondents said the forums are held every quarter in the sub-cities, whereas another respondent mentioned that they are held twice a year. Possibly, different areas of Addis Ababa follow a different schedule in relation to frequency of community meetings.

Outside of the formal gatherings for community engagement, individuals can also directly provide their feedback (e.g. compliments or complaints about the quality of the service) through a variety of other channels. One is by direct telephone call to ACBSE central office; and another is to report concerns or complaints to the Communication Affairs Directorate, through a dedicated toll-free number. These phone-based opportunities provide a privilege for the users to directly complain to the concerned body. However, there appears to be no evidence about rates of usages and whether appropriate corrective action(s) were taken in response. Third, the community can contact the main transit terminals at Addis Ketema, Giorgis, Legehar and Yeka to report complaints about bus delays (in real time) or request assignment of another bus. It should be noted, though, that assignment of additional non-Anbessa buses already happens in almost all circumstances due to the decreasing in number of Anbessa buses versus the growing demand along the routes. Finally, the interviewees mentioned that suggestion boxes have been used at the four bus transit terminals; with these being collected and reviewed periodically. The physical presence of these boxes were noted during general fieldwork, but no specific observational studies were undertaken to establish how frequently bus users submit items. It also remains very unclear how any input into these boxes is actually actioned (in terms of recommendations made, by whom, and how regularly this is done). The extent to which user input is processed is a key element in developing a strong system of public participation; so these are key questions, but further exploration about this was beyond the scope of this study. The interviewees did mention that, so far, questionnaires have been distributed to the users and analysed quarterly or semi-annually as a means of community engagement. Overall, it appears that the community does have access to a variety of ways of stating their concerns regarding the accessibility and quality of Anbessa bus service. However, there is insufficient evidence from the service providers and the regulatory bodies about the volume/depth of community participation, the topics that are frequently complained about, and/or any measures taken in response to this.

4.5.3. Engagement with Regulators (Government)

The stakeholder's responses indicated that ACBSE is accountable to ATA, and hence both organizations have a direct role in the planning and operations of the service. The coordination and commitment of the regulators is important in closely working with the operator, to implement the mutually agreed duties and responsibilities. However, the interviewee's responses suggested that the regulators appear to lack commitment to form effective collaborations when drafting and implementing mutually agreed action plans.

Addis Ababa Roads and Transport Bureau (ARTB) is the higher city government body that is mandated to monitor and/or solve problems in the event of irregular relationships among the stakeholders and the operator. Two respondents mentioned that coordination with the regulators is critically important especially during the morning and evening peak hours, in order to mitigate congestion by assigning additional buses to high demand routes. In relation to this, ARTB has established a so-called 'command post' at each sub-city level to address the ever-increasing mismatch of demand supply, especially during peak hours. The 'command post' is an ad-hoc committee comprising of ATA, ATMA, ACBSE, Addis Ababa and Police Commission, and Micro and Small Business Enterprises[4]. However, the data collected through the in-depth interviews gave no clear indication that the 'ad-hoc committee' has a defined accountability, nor a policy or procedure to measure the effectiveness of the service delivery. Thus, the model appears to be poorly equipped as a sustainable means to address the ongoing public transport problems.

[4] This body is mandated to monitor and follow up the traffic flows to support the traffic management agency as well as the transport regulators at highly congested locations.

4.6. LAW ENFORCEMENT AND TRAFFIC CONTROL SYSTEM

As Addis Ababa is a congested city, law enforcement plays a crucial role in promoting public transport service accessibility. The respondents mentioned that ATP is delegated to ensure the law enforcement of the city, and that ATP and ACBSE closely work together. For example, respondent (R8) said: *"ATMA works with Addis Ababa traffic police in dealing with the accessibility of the buses, as law enforcement body takes major share to enforce road traffic and transport regulations."* Nevertheless, the respondents also believed that gaps in law enforcement could be clearly observed with respect to protecting the transit terminals and bus stops/shelters as being dedicated to the city bus users only. In the past, poor enforcement of this has resulted in congestion by other users (e.g. private vehicles). The law enforcement is weak and inadequate owing to ineffective coordination across various activities (e.g. fare monitoring, mitigation of congestion, overcrowding of buses, marking traffic signals and information sharing) among the law enforcement body and other regulators, as well as vague road traffic rules. As one of the respondents (R6) mentioned: *'the traffic law enforcement system of the city is not adequately implemented to enhance the traffic flow and accessibility of the city buses.*' This has resulted in users being faced with arbitrary fare charges, road congestion, fatalities and property damages and long waiting times.

ATP and ATMA are mandated to regulate and enforce the road traffic rules of the city. A respondent from the operator mentioned: "*…there are no adequate traffic signals and bus stop marks along the routes which guide the drivers for loading and unloading…. Roads built across the city do not have terminals and bus stop/bays at an even interval."* In this regard, the community has complained because they consider that this limits their accessibility; yet no attention appears to have been given to this issue by law enforcement agencies. Overall, the in-depth interview data depict that the law enforcement and traffic control system is inadequate due to inconsistent and fragmented action of the stakeholders. Moreover, it suggested that effective

teamwork among the law enforcement and the traffic management agency is a requirement to enhance the traffic control system, thereby accomplishing better accessibility of the bus service.

4.7. USER ACCESSIBILITY

Accessibility is a common term, in this study, particularly referring to reliability of Anbessa bus service, waiting time to connect the buses from a certain location, and connectivity of the service between different routes.

Expansion of bus mobility routes across Addis Ababa would satisfy the bus user's expectations to move easily from place to place, shorten waiting times and increase service reliability. However, the respondents pointed out that protecting the public interest is important when opening a new or improving the current service, given that the number of users is increasing because of the city's high population growth. The respondents representing the operator mentioned that it is currently operating across 122 routes across the city. They stated that the operator is revising its route assignments to optimise the resource allocation through sharing separate routes with the new operators coming to the market (e.g. Sheger City Bus, Alliance City Bus) to avoid duplication of assignments.

A further challenge is that the development of access roads are not given priority in the new residential areas, which limits the city bus accessibility to the peripheral dwellers. The effectiveness of this strategy depends on the demand along a given route, as well as commitment of the new operator(s) to service their assigned routes, because the operators are sensitive to the road conditions at peripheral suburbs. In relation to this, a stakeholder representing the operator (R8) said: "…*the community at Bole Bulbula (eastern periphery of the city) are requesting for Anbessa bus assignment along their route to the CBD. However, the road is so narrow and worn-out that ACBSE could not assign a bus to serve the community*." Thus, in cases such as these,

the accessibility of the Anbessa service is constrained by poor transport operations, and inadequacy of financial and material resources (e.g. convenient roads) at the peripheral sub-cities, such as KKSC.

4.7.1. Spatial Service Coverage

The respondents were asked to state what factors may be important to users in preferring the city bus to other transport modes. They indicated that users prefer the bus for long-distance commuting because of the cheap fare compared with the shared taxis and other buses. Anbessa bus routes travel a 40 km radius from the centre through five outlets to connect the city with the adjacent towns of Oromia. Nonetheless, it is common to see that the commuters have to wait for about an hour because other modes of commuting, such as shared taxis, are more expensive for low-income users living on the peripheries.

4.7.2. Fare Affordability

This section examines the respondents' feedback about the affordability of the bus fare in relation to the income of the users. The respondents uniformly said that the fare is affordable to the lower income users. Anbessa bus has been the only public transport service provider of the city with affordable fares for the low-income users over 73 years. The company is dedicated to serve the lower income users that represent 40% of the public transport users through subsidies from the city government. In reiterating this, respondent (R9) asserted: "*Anbessa delivers city transport service with minimum fare to the low income class of the society which doesn't affect the economy of the users.*" The fare structure of Anbessa ranges from 1.35 to 9.70 Ethiopian Birr (ETB). The average fare for a distance between the city centre and city boundary is about 3.65 ETB, which means a daily expenditure of 7.30 ETB for a return trip public transport. In Ethiopia, the average daily income of lower income group of the society is estimated to 36 ETB (Fund,

2015). This implies that Anbessa bus fare is unaffordable to the lower income users, compared with their daily income.

The inaccessibility of the bus mainly affects the lower socio-economic cohorts of the community, who depend on Anbessa bus for their day-to-day mobility across the city. A respondent (R12) from the operator said "*The Federal Government offices or the City administration lease 10–15 buses for dedicated services (meeting, training) for certain consecutive days. At this time, the lower income community depending on Anbessa for their day-to-day mobility is affected.*" This implies that the resource management is influenced by the limited capacity of the operator, as well as being exacerbated by manipulation from other parties for their own interest.

4.7.3. Peak-hour bus availability

Ten respondents confirmed that there was a considerable scarcity of buses across the city, given the environment of high population growth and rapid expansion of the city. This condition has resulted because the existing buses are getting worn-out and additional buses are yet to be purchased. However, Anbessa Bus also lacks a coordinated system of fleet management, with inefficient resource allocation resulting in both over-servicing and under-servicing. For example, the respondents cited conditions where eight buses are assigned on the same route; compared with other routes that lack an adequate number of buses. In relation to this, a stakeholder representing the operators commented, "*…the organization and operation of Anbessa bus is backward – it doesn't accommodate modern public transport operation.*" However, some solutions have been trialled. For example, the government has a view that Anbessa bus, shared taxis and other bus-related transport services in Addis Ababa were not able to solve the challenges of public transport accessibility. This necessitated a short-term solution to cope with the existing demand and supply gap. The respondents mentioned that the transport authorities

noticed the long-distance transport buses usually arrive at Addis Ababa in the late afternoon; and that these domestic, long-distance, serving buses stay idle until the next morning. Since 2012, these buses have been temporarily licenced to render public transport service during the peak hours, especially in the evening.

4.7.4. Road congestion

Referring to the impacts, the respondents said that congestions and delays are factors impairing the accessibility of the city bus due to the poor infrastructure, transport planning, law enforcement system and mixed traffic system. A respondent (R12) specifically mentioned "… *it takes 1.5 hours to travel a normal 30 minutes transit during the peak hours from departure to destination.*" The congestion and delays have resulted in user dissatisfaction as well as the private operator's lack of interest to join the market.

The respondents mentioned diverse causes of traffic congestion with in the city. The narrow roads, absence of bus lanes, poor road conditions and traffic facilities, frequent road disruptions due to construction activities, increasing number of private and business vehicles, presence of street vending, road-side parking, frequent bus stops, absence of pedestrian walkways, mixed traffic system and weak law enforcement were key contributors to road congestions. A respondent (R7) complained, *"The city's public transport operation is facing various challenges due to congestion, road disruptions, poor drainage system on both side of the roads,* [and] *different holes dug by water, telecommunications and electric companies along the routes."* Other respondents also mentioned that the main causes of congestion are violation of traffic rules, with too many vehicles on the road and reckless driving behaviour. The absence of coordinated traffic control and law enforcement system, poor transport planning, limited

awareness of pedestrians, and limited capacity of the government to improve the roads and traffic facilities have exacerbated the levels of road congestion.

4.7.5. Service Reliability

In this section, the respondents were asked their thoughts about the reliability of the city bus. They asserted that Anbessa bus has a time schedule for departures and arrivals. Nevertheless, it appears that the city's land use and built environment was inadequately designed, which hampers the reliability of the service. For example, the standard waiting time is 15 minutes for a given bus. However, the practical waiting time rages from 60 to 90 minutes. Both the length and the uncertainty of the waiting time are factors of discontent and concern for the users. Moreover, the high urbanization rate, population growth, a poor law enforcement system, and traditional bus operation have contributed to the unreliability of the service.

4.8. INSTITUTIONAL COORDINATION

The respondents believed that institutional frameworks of the operator and regulators determine accessibility of the service. One stakeholder, (R11), said: "*...Anbessa bus has built a reputable service delivery institution that is praised by users of all age groups.*" In contrast, a respondent from the regulator's side (R2) asserted that concerned institutions lack coordination, transparency and commitment. Also, the transport and law enforcement institutions lack an inclusive policy and accountability mechanism that fosters the accessibility of public transport service. Here, R11 was a participant from Anbessa bus service itself, whilst R2 was from the regulator. It is evident, then, that respondents representing different actors in the system hold contradictory viewpoints on the strength of Anbessa bus service. This may be problematic, as the stakeholders in the system are not working from a common understanding of the nature of the challenges and opportunities, which may prevent effective working relationships.

4.8.1. Application of Policies and Strategies

The respondents asserted that a multiplicity of organizational interactions is necessary to optimize transportation operations. The city's transport sector organizations were independently organized – no matter how they are accountable to ARTB. The respondents also indicated that the organizations were very poor in their review and implementation of collective policies and strategies, where any existed. For example, Addis Ababa transport authority and ACBSE have not yet been able to reach consensus on the appropriate jurisdiction to manage the bus stops and transit terminals, resulting in misappropriation of the resources and wearing-out of those properties. Adding to this, the interviewees mentioned that the organizations are characterised by inconsistent actions, poor mutual understanding (as demonstrated in 4.8 above) and a weak commitment to any common goals. Consequently, it appears that the city's public transport service delivery system is very fragmented. The absence of clear demarcation of jurisdictions among the regulators and their commitment in enhancing accessibility has also created a loophole in the formulation and enactment of the city's transport policy and strategy.

4.8.2. Restructuring the Transport Regulatory Bodies

The respondents believed that Addis Ababa Road Transport Bureau is not in a position to address the challenges of public transport service across the city, due to its current organisational structure and institution arrangements. The ever-increasing number of the vehicles and traffic congestion, combined with the limited mandate to run the regulatory activities have necessitated the formation of three independent regulatory bodies under the Bureau. The respondents said that there are evidences to suggest that the public transport users queue for long hours to access public transport, especially during the peak hours. These accessibility gaps were partly attributed to absence of better coordination amongst the service providers and regulators. To address this problem, in December 2015 the three core process (units) in Road and Transport Bureau became independent by regulation, and formed the ATMA, ATA, Drivers and Vehicles Evaluation and

Licensing Authority. The notion was to provide more autonomy to the agency and authorities so that they would be capable of resolving the service accessibility and traffic management problems the community is encountering. However, it is currently unclear, based on the interview data, whether this is being achieved.

4.8.3. Duplication of duties

The respondents explained that duplication of duties and/or role confusions occurs within the public transport service delivery in two different ways. Some of them argued that the multiplicity of regulatory organizations and law enforcement bodies does not result in duplication of duties or confusion of roles. In support of this argument, one of the respondents (R1) said: "…*the problem of duplication of duties or role clarity was solved after the fragmentation of Addis Ababa Road Transport Bureau into three autonomous institutions."* The notion of this group of respondents is that the restructuring of the institutions aims to enable the regulators, law enforcement and operators to closely work together in seeking solutions. In reality, however, there is no notable evidence suggesting that the role confusion in the institutional arrangements was resolved.

In contrast to the above argument, four respondents mentioned that duplication of work or role confusion were clearly visible in the institutional arrangements, indicating that it negatively affected the accessibility of Anbessa bus service. They supported this argument with three different examples. First, there is no clear ownership of managing the bus stops/shelters. One of the respondents (R8) confirmed this, saying, '*the jurisdiction to install and look after the bus stops/shelters on main routes propagating to the adjacent Oromia towns is unknown.*' Initially, Anbessa had a long history of installing and managing the property. Currently, the mandate has moved to ATA; and subsequently, there is no clear installation, ownership and management of the bus stops/shelters in the routes surrounding Oromia towns. The role confusion occurred

because ATA is not mandated to look after the bus stops/shelters in Oromia Regional State, and Anbessa is no longer delegated to manage the infrastructure in general. Similarly, the jurisdiction to mark and install traffic signals along the routes were not clearly demarcated between ATMA and Addis Ababa Roads Construction Authority. Role confusion has also been observed between ATP and the Traffic Management Agency. For example, it was planned that the traffic management system (TMS) infrastructure would be installed to automate management. In relation to this, both agencies claimed that the TMS should operate under their mandate. The conflict of interest between the two parties implies that the absence of clear demarcation between the stakeholders is one aspect of ineffective traffic law enforcement in the mobility service. Overall, it appears that the stakeholder institutions lack a clear regulatory and policy framework providing an effective method of coordination amongst them. The organizations themselves are independent, but collectively they are fragmented in action and lack clear demarcation of their area of jurisdiction.

4.9. TRANSPORT OPERATIONS

The respondents believed that Anbessa City Bus operations are challenged by the absence of modern office layout, furniture, equipment and automation of office processes. It also has inadequate skilled human resources and an inconvenient organizational structure that results in a stifled operational and maintenance system. In justifying this, a stakeholder from the operator's side stated: *"…even the human resource of the company is less educated and skilled. They have limited exposure to modern technology and hence intensive training is sought.*" It is believed that absence of a skilled labour force in the operator has resulted in poor performance in terms of providing the expected service.

4.9.1. Mass Public Transport Promotion

Seven respondents from the regulators indicated that the transit routes in Addis Ababa were inadequately built considering the growing number of vehicles. The road system is poorly utilised: all vehicles transit on the same lane in which dozens of private automobiles occupy the road, each carrying a limited number of commuters, despite the fact that a 7–8 metre long city bus can transit more than a hundred of commuters at a time. Therefore, it is obvious that a mass mobility system is far more preferable in terms of mitigating congestion on the narrowly built road of the city. The respondents also asserted that the government was planning to promote the mobility system to match with the prevailing demand, the carrying capacity of the infrastructure, the affordability of the users and environmentally friendly considerations. Adequate mass mobility systems are ideal for cities of developing countries to reduce congestions and environmental pollution, and affordable ridership to the users.

4.9.2. Automation of the Operation

Modern transport operation requires better technology for safety and reliability of the service. In this section, the respondents stated that the effectiveness of transport operation of Anbessa could be evaluated from the perspective of both internal and external factors. The respondents from the operator side believed that the application of intelligent transport system (ITS) would greatly promote the accessibility of the city bus through operational reform and recruitment of skilled professionals. However, they mentioned that the law enforcement system of the city was not supported by ITS. It is therefore very labour intensive work that must be handled by ATP because surveillance cameras are absent, and road traffic marks and signals are inadequate along the routes. Anbessa Bus has not been able apply the ITS because it requires adequate financial resources. ACBSE operates under loss, subsidised from the city government, and less attention can therefore be given to modernise the transport operation. This hampers the bus service's reliability and ability to meet the users' expectations.

4.9.3. Regular Bus Maintenance

Public transport vehicles need periodic maintenance to ensure continuity and safety of the service. The respondents asserted that ACBSE faces many challenges in the bus maintenance procedures. The commonly used Dutch Automotive Factory (DAF) and Mercedes Benz buses are getting worn out due to long service histories (some exceeding eighteen years). This necessitates frequent maintenance and a continuous supply chain for spare parts. The availability of spare parts determines the effectiveness of the periodic maintenance in ensuring an accessible service. The respondents mentioned that high import duty on the spare parts and long delays for customs clearance has resulted in longer down time of the buses.

4.10. TRANSPORT PLANNING

The respondents believed that an effective urban mobility involves a suitable transport plan. Addis Ababa city's transport planning is crippled because the current plan does not accommodate essential elements to lessen wastage of time on transit, encouraging different options of commuting for non-motorised commuters (such as pedestrians and cyclists), and promotion of accessibility of shopping to residential areas. Referring to this, a respondent (R4) indicated *"…the suitability of transport plan helps to discourage wastage of time, money, and energy and road traffic congestion to improve the accessibility of the public transport.*" It appears that the absence of educated human resources specialising in transport management/planning in both city and transport authorities have resulted in weak land use planning, and consequently, inaccessible public transport service provision.

4.10.1. Planned Phase-out of Informal Public Transport Service Providers

Four respondents shared their thoughts on the challenges relating to informal public transport service providers (IPTSP)[5]. In the past, it appears that the IPTSP were able to impose high fares and overload vehicles, and that this was tolerated given the poor infrastructure and limited supply of the public transport service. The stakeholder interviewees also reported that it was common to observe IPTSPs bypassing the speed limit, due to their pro-bribery nature of relationship with the law enforcement bodies and unhealthy competition with each other. The IPTSPS also tend to choose service corridors (routes) based on the prevailing demand, especially favouring evening and weekend times, and this approach certainly affects some (peripheral) suburbs. It means that the IPTSPs focus on high-demand services, such as the heavily trafficked routes to the main city areas and during peak times, and never bother servicing the lesser-known or lower-demand routes to the peri-urban areas. Unfortunately, experience has shown that regulating the IPTSPs is difficult for the ATA and that the law enforcement bodies are struggling to make these providers accountable for any wrongdoing.

The respondents indicated that, given that the IPTSPs currently have no accountability system nor structured market orientation, the Addis Ababa city government is planning to institutionalise the informal shared taxis and buses serving the city. In addressing this, the government planned to encourage the IPTSP to join to form an institutionalised mass transport operator(s) through a '30–70 financing scheme[6]'. However, the opinions of the respondents are that the IPTSP's lack

[5] Informal public transport service providers refers to non-institutionalised buses and taxis rendering public transport in Addis Ababa.

[6]Here, the government persuades the informal service providers to join the scheme in which the government arranges a 70% credit facility, and the shared taxi or medium-sized bus owners contribute 30% of the procurement cost of the buses used for mass transport.

of trust in this scheme, because previous experiences has shown that the government policies and strategies were inconsistent, non-dependable, and poorly responsive to user complaints.

4.10.2. Expansion of Bus Depots and Terminals

Respondents from the regulator and the operator shared their thoughts on the conditions of Anbessa Bus depots, transit terminals and the plan for expansion. Currently, Anbessa bus possesses three depots (Shegole, Mekanissa and Yeka) and four transit terminals (Giorgis, Addis Ketema, Legehar and Yeka). However, the government's current view (as reported by the respondents) is that the three depots were inadequate in number as well as quality of service. In order to fill the gap, ACBSE is upgrading the current depots and building a new depot at Kality suburb, in the south-eastern part of the city. A respondent from the regulators indicated that Anbessa was not competitive with its existing infrastructure and resources, because the bus terminals do not meet the expectation of users.

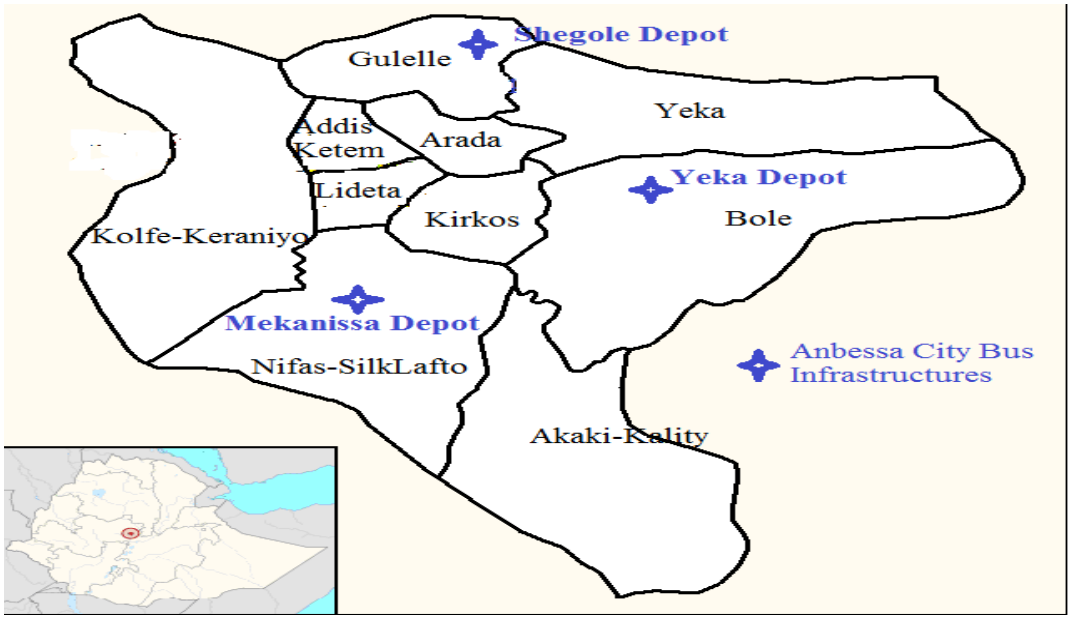

Figure 4. 2 Anbessa City Bus Enterprise Infrastructures in Addis Ababa

Source: Adapted from (Eshete, 2015)

4.10.3. Planning for Intermodal and Rapid Transit Integration

Intermodal transport services, where various modalities are used together, can be an important feature of effective public transport service delivery (World Bank, 2014b) . Two of the in-depth interview respondents shared their thoughts that the current public transport service in Addis Ababa does not have technological, physical, fare and time integration across different modalities. For example, Anbessa Bus transit terminals are not located in a way that connects users with other transport modalities (e.g., light train or other taxis). The government has planned to introduce an intermodal transport system, but no details were given in regards to how and when this project will be applied.

On the other hand, three respondents from the regulators' side expressed their thoughts on the introduction of bus rapid transit system (BRT) in the city. Twelve corridors have already been identified for the BRT corridor and the design phase has already been done for those corridors. These include routes running from Winget Square to Gofa-Gabriel and Jammo Square, and Teklehaimanot to Senga-Tera and Mexico Square. The city government is dealing with the French Development Agency in financing this project. The bus rapid transit and intermodal transport are both considered to represent the evolving strategies of the government in promoting more effective mass mobility through time, fare and geographical integration. A stakeholder (R7) who noted, "*The basic challenges of public transport accessibility in Addis Ababa is that the infrastructure is not adequate and conveniently built.*" It seems that nothing has yet been done for the intermodal transport system, but some progress is taking place in the BRT since the design work is underway and negotiations are ongoing with the French agency.

4.11. COMFORT AND SAFETY OF USERS

User safety and comfort are priorities in routine public transport operation. The respondents expressed that the level of comfort, safety and skill of drivers are important in determining user preference for the Anbessa bus service. A stakeholder (R4) confirmed *'the city's mobility system is challenged by mixed traffic system in which pedestrians, vehicles and cattle transit on the same lane.'* This poses eminent danger to the pedestrians and commuters. Anbessa Bus has significant comfort and safety problems due to wear and tears of the chairs, overcrowding, and inconvenience for children, expectant women, the elderly and those living with physical disability.

4.11.1. Bus Overcrowding

In responding to the loading conditions of the bus, the respondents said that the buses were extremely overcrowded: a stakeholder (R4) stated: "*...the buses are highly overcrowded until it becomes difficult to close their doors"*. Adding to this, others asserted that the extreme shortage of public transport supply, inadequacy of private operators in the market, and the relative affordability of Anbessa bus service for the low-income users had contributed to the overcrowding situation.

A poor law enforcement system could also be regarded as another factor for the overcrowding of the buses. For example, in-depth respondents indicated that the traffic management agency and Addis Ababa Police are aware of the buses carrying beyond reasonable capacity, thus resulting in less comfort and safety of the users. However, the traffic law enforcement turns a 'blind eye' because they prefer that people are able to commute, even if in overcrowded conditions, compared with not riding the bus at all. From the user's point of view, they prefer to

compromise the comfort and safety aspects of 'accessibility', to enable the chance to commute in an overcrowded condition. Here, the notion of safety and comfort is compromised.

4.11.2. Driver and Cash Collector's Behaviour

Public transport users desire a favourable commuting environment where the employees are courteous in serving them. The respondents acknowledged that Anbessa lacks proper customer service orientation, although it is attempting to address it. A respondent (R11) from the operator side stated: "…*there are ethical problems or complaints coming from the community* [about] *our employees. Generally, we are committed and working on taking corrective actions against these problems and poor service delivery system observed across the organization.*" They believed that hospitality problems are common particularly with the cash collectors and bus drivers. Another stakeholder (R1) said, *"The poor customer service behaviour has originated from the poor perception, commitment and expertise of the employees to show courtesy to the users".* The poor customer service orientation originates from the limited capacity of the bus versus the existing demand, poor perceptions held by the staff about the users, and less commitment and expertise to show courtesy.

4.12. RESEARCHER'S FIELD OBSERVATIONS

The researcher's observations of the bus system, whilst present in the field area, was useful in helping to support the findings from the qualitative data collection.

It was observed that majority of bus routes lacked upgrading or reconstruction works, essential quality and protection. For example, the newly built roads (less than three years of age) have no adequate sewerage system; hence, floodwaters easily pools over the road surface, which damages the concrete pavement. This was problematic because there may be extended waiting times for corrective maintenance to the damaged public property. Similarly, it was commonly observed

that the sewerage systems (ditches on both sides of the roads) are blocked by collection of domestic garbage coming through the drainage or because of individuals deliberately disposing domestic waste materials in to it. The pedestrians, bicycles, cart animals and cattle share pavements with the vehicles; further adding to congestion, resulting in poor treatment of the public property, and creating a high chance of accidents. For example, the drivers lose control of the brake and crash with the pedestrians crossing the roads, highways, and roundabouts improperly. It is not surprising, then, that the highest numbers of traffic accident victims in Addis Ababa are pedestrians (Misganaw & Gebre-Yohannes, 2011).

The mismatch of demand and supply is also observed at different places of the city. This problem is not only limited to peak hours, but also off-peak hours and weekends. At time of the fieldwork, it was common to see a minimum of 50 users wait the bus queueing for at least an hour, in the absence of comfortable shelters (see Plate 4. 1). Users waiting for the bus also often experience looting while on queueing at bus stations or in an overloaded bus. For example, the researcher observed during his fieldwork that a young boy was slowly putting his hand into a handbag of a girl who was waiting for a bus during a rainy afternoon. Fortunately, the looter was instantly caught by nearby commuters, watching his deed and handed over to police.

Plates 4. 3. Examples of the Anbessa bus service, the Users and Built environment, as observed in Asco Area (Kolfe-Keraniyo Sub-City)

Source: Researcher's own, April–June, 2016.

It was also noticeable, during the observation period that bus stop bays and timetable are hardly found on the routes. Even where available, the time schedules were not applicable (that is, the buses do not adopt the correct arrival and departure timings). Finally, it could be seen that the overcrowded and obsolescent buses and weak law enforcement system dictate the safety and comfort of the users. The buses were designed to accommodate a maximum of 90 users at a time but the drivers and cash collectors are willing to load until it is difficult to close the doors.

4.13. DISCUSSION

4.13.1. Stakeholder Participation and Institutional Arrangements

Coordination amongst stakeholders and institutional design has been acknowledged as being a key determinant of effective and accessible public transport systems. For example, Xu, Ceder, Gao, and Guan (2010) indicated that the application of systems and technologies, comparison of alternatives, careful application of policy and planning, due consideration of operations and management, and future development are areas where strong collaboration should occur between public transport agencies, the community and private firms. The public transport service operations in Addis Ababa includes multiple stakeholders. However, it appears that the trend for the city is for poor commitment and a poor level of integration and institutional arrangements that fails to go beyond simple dialogue (Dagnachew, 2007). Private operators prefer to join the market on the condition that the cost and benefit analysis is found to be feasible. Currently, the regulatory and operational bottlenecks in the city's public transport system, combined with the absence of government's commitment to improve matters, discourages private operators who have a low appetite for uncertainties.

The stakeholder interviews, as well as existing research literature, showed that the involvement of private operators in the Addis Ababa mass transport sector is very limited, as has been previously reported (Tsegaye, 2015). Weaknesses in transport policy and coordination amongst

the stakeholders, poor law enforcement systems, uncertain market environment, and the absence of incentives from the government to encourage private operators have impaired the interest of private firms to participate in the market (Ministry of Transport, 2011; Kassahun, 2007; Yilma, 2014). Provision of accessible public transport requires a joint effort of the regulators and (private) service providers through a win-win approach. By the same token, agitating for change requires the engagement of the stakeholders through participative transport governance (Díaz-Cayeros et al., 2014). However, it has been previously reported that Anbessa service lacks participatory management where the users and the private firms are privileged to have their voices be heard (Kumar & Barrett, 2008).

Some of the respondents mentioned that, whilst the operator does approach the community through different channels, the practical aspect of Anbessa bus service operation does not reflect the users' needs. For example, during interviews, the respondents noted that Anbessa bus service inaccessibility arises from land use problems, inadequacy of bus stops and/or transit stations, and poor law enforcement systems. These are the kinds of concerns that might be raised by users amongst the community, when given the opportunity to provide feedback. Tsegaye (2015, p. 59) clearly stated: "Complaint handling of the Enterprise has [a] negative outcome". What is problematic is that many of the areas of complaints are items outside of ACBSE direct control, such as land use, transit stations and law enforcement. Hence, whilst the service is trying to encourage community participation in designing a better service (through feedback), there is a disconnection because the solutions that are needed are not within ACBSE's direct control. This implies that a commitment for corrective actions address the users' complaints or are not given due attention, or outside the sphere of influence of the operator itself, thus requiring a much more integrative and collaborative approach to solution seeking (and implementation).

Better institutional arrangements, transparency, coordination and commitment of the stakeholders are important for the effectiveness of accessible public transport service (Hrelja, Pettersson, & Westerdahl, 2016). It was noted during the interviews that ACBSE works with different organizations under ARTB, and the law enforcement authorities, either in direct or indirect fashion. However, it was also evident through the interviewee's commentary that the stakeholder institutions have weak coordination and commitment to realise a properly accessible transport service to the users. For example, the stakeholders lack comprehensive public transport policy and a strategy which clearly indicates the jurisdiction and responsibility of each actor (Kumar & Barrett, 2008). The absence of clear demarcation of jurisdictions among the regulators and their weak commitment to achieve the common goal (here enhancing accessibility) create[s] a loophole in the formulation and enactment of the city's transport policy and strategy. The overarching problem here is that the regulatory bodies lack common understanding and clear boundary to work for common objective.

4.13.2. Transport Planning, Infrastructure and Operations

Contemporary city planning considers the relationship between territory and mobility. Based on this premise, and with an adequate plan, authorities can foresee and avoid problems that users encounter through addressing the perceived weaknesses (Crespo, 2012). Currently, the inaccessibility of public transport in Addis Ababa appears heavily influenced by inadequate/worn-out infrastructure, poor transport planning, and traditional transport operations (Desthuis-Francis, 2002). Abreha (2007) described the Office of Reviewing Addis Ababa Master Plan, which asserted that the road network and capacity is badly constrained by poor quality standards, shortage of pedestrian walkways, misuse and encroachment of the available space.

One of the primary challenges of public transport operations that are characterised by worn-out buses is that the cost of maintenance escalates as the fleets age, with worsening fuel efficiency

and adverse environmental outcomes (Hao, Geng, Wang, & Ouyang, 2014), particularly when compared against modernised technological advances. From an accessibility point of view, the buses are unreliable because they often face breakdowns on the routes and even cause accidents due to technical faults (Fenta, 2014). A dedicated fleet replacement and maintenance program to improve the infrastructure to an acceptable level will demand not only a significant budget allocation, but also commitment of the regulators and other government bodies (city and federal governments) to the recruitment of skilled professionals and supporting technology (Dagnachew, 2007).

Anbessa bus currently serves the ten sub-cities of Addis Ababa and neighbouring Oromia towns via 18 routes. Despite this large number of town administrations with a vested interest in to the service, no financial support exists to the Enterprise or look after the transit stations and shelters, (Tsegaye, 2015). The city bus has only four terminals projecting from the city to the sub-cities and the Oromia towns within a 40 km radius. Compared with the size of the city and surrounding Oromia towns, the number of existing bus terminals, planning and operation are inadequate (Tsegaye, 2015). Exacerbating this problem is that the installation and management of Anbessa bus terminals in the Oromia towns lacks ownership. Addis Ababa is an autonomous city under the Federal Government, but is geographically located in Oromia Region. The difference in administrative and political structure between the region and the city has a negative impact on the accessibility of the city bus and the infrastructure administration.

Anbessa bus currently operates on traditional basis: it is not automated in such a way that users could determine the mobility schedule. Another concern is that the bus ACBSE does not have a standard operation that would enable real-time monitoring of carrying capacity, safety and comfort conditions, and a limit of one year for time-between-servicing of the buses. The bus service is not demand responsive, the waiting times can exceed an hour, and users are not able

to connect between different buses at transit stations easily. Thus, the poor transport operation results in a service that is quite unreliable (Abreha, 2007; Gebeyehu & Takano, 2007).

4.13.3. Traffic Control, Law Enforcement and Safety

Addis Ababa has suffered from an increasing rate of traffic accidents and absence of a single, fully fledged/consolidated traffic management policy (Misganaw & Gebre-Yohannes, 2011; Yilma, 2014). Traffic congestion arises from poor lane discipline by drivers, especially at traffic junctions, which deteriorates the already overcrowded junction situation. The drivers frequently disregard red lights and block the intersection, causing further traffic congestion (Tulu, Washington, & King, 2013). The problems are compounded by poor enforcement practices as identified by the key informants at the transport bureau. The traffic control system in the city is the purview of the traffic police, and is reasonably labour intensive. There are no street cameras, and traffic signals and marks are often inadequate. Traffic police are stationed at some intervals on streets, highways and roundabouts to assist with traffic flow, and to enforce traffic law. Nonetheless, the traffic police are not always available on these places especially during the night and rainy times (Yilma, 2014).

The behavioural patterns of the drivers, pedestrians, the law enforcement authorities and even the regulators is strongly linked with the effectiveness of the traffic control system and public transport accessibility. Public transport drivers lack essential driving skills and customer service behaviour, as a result of a combination of weak training, low literacy, young age and abuse of the licencing procedure by the regulatory bodies (Yilak *et al*., 2011). The poor customer orientation of the drivers and the cashiers has negative psychosocial impact on the city bus users. In Ethiopia, neither alcohol nor drug testing is conducted to determine the cause of traffic accidents. The law enforcement bodies lack road safety instruments like speed radar and breath analysers. These hinder the implementation of speed control and the ability to detect drivers that

are under alcohol intoxication or have been consuming Khat, an Ethiopian grown stimulant legally permitted to consume (Abegaz, Berhane, Worku, & Assrat, 2014; Tulu et al., 2013). In this case, the chance of an accident is very high. Similarly, the community as pedestrians have less awareness of road traffic and safety rules. The absence of pedestrians walkways, combined with the use of (technically poor) worn-out vehicles poses particular challenges to the traffic control system (Persson, 2008). In such unrestrained mobility system, intensive community awareness, strong regulatory and law enforcement system, equipped with modern technology and educated labour force should be employed to address the challenges encompassing the road transport management of the city. However, this involves the commitment of the federal/city government in allocating significant budget to realise an accessible public transport service. It should be acknowledged that this may be difficult given the environment of constrained financial resources in Addis Ababa.

The operator's financial incentive scheme to motivate the bus drivers and cash collectors has a direct negative impact on the accessibility, particularly the safety and comfort, of the users. Tsegaye (2015) indicated that the Enterprise pays an amount of 0.03 and 0.02 Birr to fare collectors and derivers per passenger per trip, as an incentive in implementing business process reengineering (BPR) to board on more passengers along a given route. These employees obviously need to load more users at each bus stop to increase their marginal revenue per passenger, at the expense other commuters' preference. Lower-income public transport users may tolerate the inconvenience and safety problems, by choosing to ride in already overcrowded buses as this allows them to commute to their destination and avoid longer waiting times. On the other hand, users with relatively better income prefer to use shared taxis, avoiding the bus, which cost them more to pay. Here the strategy of the 'BPR' contradicts with the safety and comfort of commuters. Table 4. 5 below depicts that traffic accidents occurring in Addis Ababa are

mainly related to misbehaviour of the derivers. This has resulted in the loss of hundreds of lives, minor and major injuries and thousands of property damages in a year.

Table 4. 5 Road Traffic Accidents in Addis Ababa

No	Causes of Accidents	Injury because of Accidents				
		Death	Heavy Physical Injury	Light Physical Injury	Property Damage	Total
1	Drunk driving		13	7	25	45
2	Wrong way of driving	7	38	20	1209	1274
3	Not ceding priority to vehicles	3	24	45	4059	4131
4	Not ceding priory or pedestrians	323	1117	1051	864	3355
5	Not keeping right distance	5	60	39	3327	3431
6	Overtaking on a mound				124	124
7	Overtaking on a curve		92			92
8	Set off improperly		1		219	220
9	Over speed	4	1	9	485	499
10	Inappropriate overtaking	1	16	4	680	701
11	Inappropriate turning	1	16	30	1102	1149
12	Violation of traffic police order	1			10	11
13	Violation of red lights		1	2	18	21
14	Violation of stop sign	1	1	5	37	44
15	Violation of first sign and symbol	1	3	8	170	182
16	Incidental starting	7	1	6	166	180
17	Inappropriate parking on roads		2	6	92	97
18	Tiredness/Sleepiness		1		14	15
19	Driving without due care				7	7
20	Improper lighting				15	15
21	Overloading		3	4	60	67
22	Faulty break			1	10	11
23	Wheel blow away			3	2	5
24	Fire blast		1	2		3
25	Faulty steering	12	4	3	62	81
26	Faulty Pedestrians	1	33	21		55
	Total	367	1336	1263	12849	15815

Source: *Addis Ababa traffic police annual report (2013) referenced in cited in Admassie (2015, p. 70).*

4.13.4. Fare Affordability

Previous studies had indicated that 20% of the population of Addis Ababa is too poor to afford even the relatively cheap Anbessa bus fare (Dagnachew, 2007). However, in contrast, the majority of interviewed respondents believed that the fare of Anbessa bus service is in fact affordable to lower and middle-income class users. The bus service has a system of flat fares for the route with a range varying according to distance, owing to the continued willingness of the city government to subsidize the services in an atmosphere where fares have long been frozen (Kassahun, 2007; Kumar, 2008). The affordability and long distance coverage of Anbessa is the principal means to connect the low-income users living on the outskirts to other corners if city, other accessibility factors remain the same.

Fare concession is an incentive-based arrangement to encourage the less privileged groups of the community such as students, pensioners and people with disabilities to use the available public transport (World Bank, 2005). There is no literature or firsthand information indicating that Anbessa bus has a fare arrangement for different social groups demanding fare concessions, and nor was this mentioned by any of the respondents during the interviews.

4.14. Improving Anbessa bus service Accessibility

Accessibility is in this study is defined as the availability of Anbessa bus service with in a required time, proximity, and the connectivity of buses between different routes. It also refers to reliability, safety, comfort and affordability of the bus service to lower or middle income class users.

Accessible public transport mobility is a cumulative outcome of reliable, affordable, suitable transport planning and built environment (Nurlaela & Curtis, 2012). The inaccessibility of

Anbessa bus service is a combined effect of poor infrastructure, i.e., worn-out and narrow routes, limited number of transit stations, absence of dedicated and comfortable shelters, poor transport planning and land use, traditional operation of the bus and weak financing scheme of the operator. In this regard, an all-inclusive policy and commitment of actors greatly influences the effectiveness of the mobility system.

The reliability of the service could be increased on condition that adequate number of buses are engaged and the system is supported by intelligent transport system (ITS) to share information, time management and safety precautions (García *et al*., 2015). Though the bus service has nominal timetables, these are characterized by delays, resulting in unreliability and an increased susceptibility for fare evasion (Dagnachew, 2007). Anbessa bus lacks ITS application to deliver a reliable service, and the demand for public transport service is much higher than the supply. The recruitment of information technology, skilled labour force and adequate number of buses relies on the financial capacity and commitment of the operator or the city government to realise all-inclusive change. To date, Anbessa bus has not been working to achieve a vibrant service delivery supported by modern transport operation to become more accessible to the users (Gebeyehu & Takano, 2008; Kasahun, 2007).

From the data collected during the stakeholder interviews, it would seem that productive engagement of stakeholders from the government, private transport business operators and the community could substantially improve the current poor accessibility of Anbessa bus service. This could be made through provision of better roads, and intelligent transport that facilitates the mobility and traffic management. A possible intervention to foster an improved bus service could also be made through structural and operational arrangements in a way that it accommodates modern operation. It appears that dynamic approach of service provision necessitates

capitalization of physical resources, right sizing of organizations, reformation of work cultures, and proper development of human resources. Notwithstanding this, addressing all the concerns of the inaccessibility of Anbessa bus service is likely to be a gradual phenomenon. It requires allocation of significant resources across all the agencies and authorities in the domain plus monitoring and evaluation of the transformation processes and strategies.

4.15. CHAPTER SUMMARY

ACBSE has been acknowledged as a pioneer in Addis Ababa public transport service delivery, being a solely government-owned and long-standing entity in the city. Compared with the private operators, it has a wider service coverage in Addis Ababa and the neighbouring towns. Despite this, the bus has not grown to the required level in the last seven decades, to match the ever-increasing demand in the metropolitan and peri-urban areas.

It appears that Anbessa bus service is not as easily accessible as it ought to be, due to an aggregation of factors. Discussions held with the respondents indicate that the accessibility of the bus is jeopardized partly by poor collaboration amongst the stakeholders, weak institutional arrangements and little attention for the concern of the public. Further, duplication of duties/absence of role clarities between the institutions is hindering the accessibility of the city bus.

The results of this qualitative phase of the research imply that a well-structured traffic control and law enforcement system requires better technology, infrastructure and trained human resources in order to enhance the accessibility of public transport in a rapidly growing urban population centre. The transport system of Addis Ababa city is currently marred by traffic

accidents, congestion, inaccessibility and environmental pollution that are partly created by lack of sufficient infrastructure and traffic control system and weak regulatory framework in the city. Adequate infrastructure, transport planning and operation play major role in enhancing the accessibility of public transport.

Achieving an accessible Anbessa bus service may not be as easy as just enacting operator level activities and accountabilities. It encompasses a wide range of actors, policies and strategies enacted in the framework of each jurisdiction. On the other hand, the effectiveness of providing accessible public transport requires the commitment of each actor in an all-inclusive fashion that extends accountability across the system. This study also revealed that financial and non-financial resources were not adequately allocated nor properly managed to enable an accessible Anbessa bus service delivery. Overall, it could be said that the inaccessibility of Anbessa bus service is not only the consequence of poor organizational and operational weaknesses of the service providers, but also the effect of fragmented actions and commitments of all entities.

Future research should also consider how the existing difficulties could be curbed based on a reliable policy framework that encompasses clear responsibility, jurisdiction and extended line of accountability of each actor.

The next chapter reveals a quantitative analysis and discussion of Anbessa bus user's feedback followed by a concurrent triangulation of the stakeholder opinion versus the perception of users. This information is then used to help identify the key findings and propose a new Anbessa bus service delivery model suitable in the settings of Addis Ababa city in Chapter 6.

CHAPTER FIVE: ACCESSIBILITY OF ANBESSA BUS SERVICE IN KOLFE-KERANIYO SUB-CITY – USER'S EXPERIENCES AND PERCEPTIONS

5.1. INTRODUCTION

This chapter examines the factors influencing the accessibility of Anbessa bus service in Kolfe-Keraniyo Sub-City (KKSC) through a quantitative survey of 196 Anbessa bus users. It includes the results of different approaches to quantitative data analyses including descriptive statistics, Chi-squared tests, and logistic regression models built to test the accessibility of Anbessa bus, and then provides a discussion that compares these results to extant literature, before concluding with a summary of the chapter.

5.2. STUDY AREA OVERVIEW AND METHODS OF DATA COLLECTION AND ANALYSES

Study Area

KKSC is the most populated sub-city (borough) in Addis Ababa, with 546, 219 residents in 15 districts. It is located in the western part of national capital, and covers an area of 61.25 km^2 with a population density of 7,448.5 per km^2 (Central Statistical Agency, 2013).

Data collection and sampling approach

A two-stage random sampling method was used to collect responses of Anbessa bus users living in 15 districts or '*Kebeles*[7]' of KKSC. Two research assistants were enlisted to recruit participants, being Anbessa bus users aged 18 years or above, through home-to-home visits

[7] Kebeles (singular is Kebele) are the smallest administrative structure of local governments in Ethiopia.

during April–June, 2016 (see Appendix D-1). The survey contained a range of questions to elicit the daily experiences and opinion of users about the accessibility of Anbessa bus service in KKSC.

Reliability Testing

Validity and reliability are two fundamental elements in the evaluation of statistical measurements. 'Validity' is concerned with the extent to which an instrument measures what it is intended to measure and 'reliability' is the ability of an instrument to measure consistently (Tavakol & Dennick, 2011). The reliability of a data instrument is closely associated with its validity. In this study, the Cronbach's alpha value was $\alpha=0.76$, indicating that distribution of the data was reliable for the 26 variables. Tavakol and Dennick (2011) indicated that Cronbach's alpha values – ranging from 0.70 to 0.95 – are acceptable when testing the reliability of a data.

Data Analysis Methods

Three statistical methods were used to analyse the survey data. First, the dataset was summarised using descriptive statistics (frequencies and percentages) (Bordens & Abbott, 2014). Following this, Pearson's Chi-squared tests of independence were used to test associations between the variables, and build logistic regression models to identify those that were most likely to influence the accessibility of Anbessa bus in KKSC. The Chi-Squared test and Logistic regression modelling had different p values because it was necessary to widen the range of p value to determine the likelihood in the latter. Apart from the socio-demographic variables, five main independent variables were used in Chi-squared testing to predict the likelihood of service (in) accessibility. These were:

- **walking time** – defined as the walking distance between a user's location and the bus stop in terms of time, assuming other factors remain constant);
- **waiting time** defined as the time spent at bus stop to catch a bus);

- **adequacy and efficacy** – of traffic controllers on the bus routes;
- **experiences of bus users** – in attending public consultation/discussion; and
- **user complaints** – about Anbessa bus accessibility.

Three different logit models were also built, based on the assumption that accessibility of Anbessa bus service is mainly influenced by reliability of the service, waiting time and satisfaction of users in connecting between different routes. In the absence of a direct item measuring accessibility within the survey instrument, it was necessary to explore the select the combined effect of these three dependent variables.

5.3. RESULTS AND ANALYSES

The follow three tables provide an overview of the descriptive data relating to the demographic profile of the participants, and the bus users experiences and perceptions about the accessibility of Anbessa bus service. For further details, see Appendices E and F.

Table 5. 1 Descriptive data summary: socio-demographic and accessibility variables, as surveyed during April-June, 2016.

Category	Component	Response	Frequency	Percentage
Sociodemographic	Gender of the bus users	Male	121	61.7
		Female	73	37.2
	Occupation of the bus users	Employed or student	171	87.2
		Unemployed or retired	25	12.8
	Age category of the bus users	Young (18–44 years)	168	85.7
		Adult (45 years and above)	28	14.3
	Income of the bus users	3,501 and above ETB	113	57.7
		500–3,500 ETB	47	24
	Walking distance of users to the bus stop	Less than 20 minutes	50	25.5
		More than 20 minutes	146	74.5
Accessibility	Satisfaction of users with the bus connectivity	Satisfied	34	17.3
		Unsatisfied	155	79.1
	Users' Opinion regarding safety of the bus	Agree	70	35.7
		Disagree	121	61.7
	User' opinion regarding bus level of comfort	Agree	28	14.3
		Disagree	167	85.2
	Users experience of the bus overcrowding	Not crowded	0	0
		Crowded	193	98.5

Table 5. 2. Accessibility, Reliability and Communication in Anbessa bus service delivery, as surveyed during April-June, 2016.

Category	Component	Response	Frequency	Percentage
Accessibility of Anbessa bus Service (Continued from Table 5.1)	Opinion on fare affordability	Agree	135	68.9
		Disagree	56	28.6
	User experience: customer service behaviour	Good	73	37.2
		Poor	116	59.2
	User experience: finding travel information	It is easy	105	53.6
		It is difficult	89	45.4
	User experience: road conditions	Good	100	51
		Poor	92	46.9
	User experience: traffic planning conditions	Good	22	11.2
		Poor	172	87.8
Reliability and Communication	Average waiting time	Up to 30 minutes	61	31.1
		More than 30 minutes	94	48
	Reliability of Anbessa bus service	Reliable	56	28.6
		Unreliable	119	60.7
	Flexibility of Anbessa bus Service	Flexible	53	27
		Rigid	119	60.7
	Has the user attended public discussion/consultation?	Yes	12	6.1
		No	184	93.9

Table 5. 3. Reliability, Communication and Service Coordination in Anbessa bus service delivery, as survey during April-June, 2016.

Category	Component	Response	Frequency	Percentage
Reliability and Communication (Continued from Table 5.2)	Awareness of Public Consultation via Media	Yes	33	16.8
		No	152	77.6
	Awareness of Complaint Handling	Yes	38	19.4
		No	63	32.1
	Has the user made a complaint to Anbessa bus?	Yes	16	8.2
		No	180	91.8
	Was there feedback received about the complaints lodged?	Yes	4	25
		No	12	75
Service Coordination	Role of traffic police in reducing peak hour congestion	Effective	46	23.5
		Poor	138	70.4
	Bus driver's care to follow traffic signals	Agree	108	55.1
		Disagree	69	35.1
	Provision of extra buses during peak hours	Agree	27	13.8
		Disagree	158	80.6
	Adequacy of traffic controllers during peak hours	Adequate	77	39.3
		Inadequate	116	59.2

5.3.1. Sociodemographic Characteristics

Descriptive statistical analyses were used to understand the features of socio-economic variables of Anbessa bus users (Table 5. 1). The gender distribution of bus users was 61.7 % male: 37.2% female, which is an expected result, given that in Ethiopia, males are generally more mobile whereas females are responsible for childcare and house chores, and thus have comparatively less mobility (Ridgwell & Flintan, 2007). Furthermore, some sampling bias may have been introduced if the male in the household was more likely to respond to an approach from the research assistants, during the home-to-home visits for data collection.

The age distribution of the participants is a typical expression of Ethiopian population pyramid in which the young age brackets (18–44 years) are over-represented compared with more senior adults (45 and above) (see Table 5. 1). This trend results from a combination of high fertility rates and lower life expectancy, unlike what is experienced in developed countries (Central Statistical Agency, 2011).

Lower income bus users (earning 500–3500 ETB/month) constituted 57.7% of the sample (see Table 5. 1). The underrepresentation by the 'higher income group' is most likely a reflection that this cohort have a greater number of choices of transport modes for commuting, such as taxis, private buses, company cars or private cars; whereas the lower income users primarily rely on Anbessa bus as an affordable option. The data also revealed that 25.5% of the bus users walk up to 20 minutes from their location to a nearest bus stop, while 74.5% walk more than 20 minutes (up to an hour). Assuming that these times were applicable in both directions of travel, it is apparent those three quarters (75%) of Anbessa bus users spend more than 80 minutes in walking time each day, for a round trip. The inadequacy of buses to cover all routes in the suburb, lack of attention from the transport authorities and operator to extend the bus routes, transit shelters

and information display to different corners of the sub-city could be regarded as primary factors contributing to extend walking times.

5.3.2. Accessibility measures relating to Anbessa bus service

The accessibility of Anbessa bus is a combined effect of ridership experiences as well as the expectations of the users. Some 79.1 % of the bus users were dissatisfied with the bus connection between different routes. The poor safety condition of the bus was also another key concern, with almost two-thirds (61.7 %) of users indicating that commuting via Anbessa city bus is unsafe (see Table 5. 1).

Users tend to avoid public transport due to bumpy roads, inconvenient seating, overcrowding, and suffocation. An overwhelming 85.2 % of the respondents said that Anbessa bus is uncomfortable (see Table 5. 1). A good example of low level of safety and comfort in Anbessa bus could be overcrowding particularly during peak hours of a day. It is not surprising that 98.5% of the respondents stated that the buses are overcrowded (see Table 5. 1); given the current shortage of buses in recent years, and limited opportunities for the public to choose another affordable mode of commuting.

Low-income communities require an affordable mode of public transport service, if they are to fully participate in the socio-economic functions of a region. Already, Addis Ababa city government subsidizes Anbessa bus service to enable the lower income classes to afford the fare. Despite this, a considerable proportion of the respondents (28.6 %) are not able to afford the fare (see Table 5. 2). Notably, the users who reported fare unaffordability represented more than half of the lower-income respondents in the total sample (57.7%). Even with subsidy, it appears that

fare structure is not an example of a pro-poor public transport policy, because fares are still beyond the reach of many low-income users.

Commuters expect a better standard of customer service from public transport service providers. This includes, but is not limited to, the courtesy of the drivers and cash collectors; responsiveness to complaints; and expectations in realising suitable service to the users. A striking 59.2 % of the respondents believe the customer service in Anbessa bus is poor (see Table 5. 2). Furthermore, 45.4 % of bus users believe that it is difficult to view the real-time travel information for the service, which could be a result of the operator and regulator's lack of concern about good customer service and information sharing.

Better road conditions and suitable traffic planning are important in promoting convenient and accessible public transit system. However, 46.9 % of the bus users believe that the roads in KKSC are worn-out, narrow and lack proper management (see Table 5. 2). Moreover, almost 90% of the respondents believe that the bus routes lack proper traffic planning, facilities and marks to enable safe commuting. Poor road conditions and traffic planning in KKSC clearly have a substantial impact on user perceptions of the accessibility of the bus service.

5.3.3. Reliability and Communication

The reliability of public transport can be characterised by waiting duration. Table 5. 2 reveals that 48 % of users reported a wait duration of some 30–60 minutes, without a defined time of departure. This is one aspect of dissatisfaction of the users regarding poor connectivity of the bus between two distinct routes. Supporting this argument, 60.7 % of the respondents believed that Anbessa city bus service was unreliable. The situation was especially problematic for

students and working class individuals attempting to align with school or office times, especially during extreme weather conditions and peak hours, when other modes of transport were hardly accessible (see Table 5. 2).

The level of reliability of public transport could also be expressed in terms of flexibility[8] of service, taking into account the time and conditions. For example, demand for Anbessa bus is very high during the morning and evening peak hours. The reshuffling of Anbessa from areas of lesser to higher demand, or use of effective communications with informal transport service providers to fill the demand gaps, would increase service accessibility. However, almost two-thirds (60.7 %) of the users believe that ACBSE does not adjust its service accessibility to reflect prevailing conditions on the bus routes.

Productive communication between the stakeholders is important to build a transparent and accessible Anbessa bus service. Effective communication between the stakeholders could be related to user awareness about public discussions/consultation, experience of users in attending public discussions regarding the service, awareness and experience of users in raising complaints about the service, and how those could be managed. However, the survey data showed that 93.9% of the bus users had never attended a public forum concerning public transport (see Table 5. 2). Different justifications could apply here: for example, the bus users could be disinterested or unavailable to attend discussions, or else the information dissemination is weak and does not

[8] Service flexibility is concerned with the demand responsiveness of the operator to be able to arrange different alternatives to buses, which include attractive service features (e.g. comfort, congestion, long-distance coverage) alongside a marginal fare increase.

effectively reach the users (stakeholders). The latter may be true, given that 77.6 % reported they were unaware of ACBSE public consultation held through electronic or printed public media.

Effective communication gives insight to users to address their concerns about the challenges pertaining to the inaccessibility of the service to the operator. The inadequate awareness of users regarding complaint handling and how to complain about the quality of service revealed that a communication gap exists between ACBSE and the users. Almost one-fifth (19.4 %) of Anbessa bus users have awareness about complaint handling, and of this, 42 % have actually lodged a complaint previously. Community empowerment[9] is important because users have the right to demand accessible public transport, and expect a positive outcome. Genuine and prompt feedback followed by corrective action is an indication that the community is empowered. Unfortunately, only 25% of bus users who complained had obtained feedback regarding the service accessibility.

5.3.4. Service Coordination

Strong coordination of stakeholders helps to promote an accessible Anbessa bus service. This encompasses the effectiveness of the law enforcement bodies and traffic controllers to mitigate the congestion during daily peak hours. Nonetheless, 70.4 % of the users believe that the city's law enforcement and traffic control system is poor in reducing the congestion (see Table 5. 3). Adding to this, 59.2% of the bus users claim that traffic controllers were inadequate during the peak hours along the bus routes in KKSC where congestion is commonly detected. These figures indicate that the effectiveness of law enforcement system in addressing congestion is partly

[9] Community empowerment here is related to user's right to claim (complain and receive adequate feedback) for better accessibility of Anbessa bus service.

related to the assignment of an inadequate number of traffic police, because the traffic management of the city is significantly dependent on traffic police force.

Another aspect of effective public transport service coordination could be scheduling extra buses during peak hours. This may occur through collaboration with other (formal or informal) operators. Unfortunately, 80% of the bus users claim that ACBSE and regulatory authorities do not engage with other entities, to facilitate arrangement of extra number of buses to accommodate the rising demand at peak hour times. This has resulted in long waiting durations (up to an hour) and unwanted expenses in cases when the users shift to other more-expensive modes of commuting.

Finally, 55.1% of the bus users believe Anbessa bus drivers have adequate driving skill and behaviour to follow the traffic signals – indicating that almost one in every two Anbessa bus users encounters unsafe driving.

5.4. RELATIONSHIP BETWEEN VARIABLES DETERMINING THE ACCESSIBILITY OF ANBESSA BUS SERVICE

Chi-square tests were conducted to understand the relationship between different predictors and their dependent variables in determining the accessibility of Anbessa bus service. These outputs are presented in the consecutive tables (5.4-5.8) below, which illustrate the correlates of factors affecting Anbessa city bus accessibility, versus travel experiences of users. Further details of Chi-square results are stated in Appendix G.

Table 5. 4. Chi-Squared Test Result

Dependent Variables	Predictors	Respondent's Opinion in %		Chi-Squared test Outcome[10]
Safety condition of Anbessa bus	Age	Agree	Disagree	x^2= 8.165, df = 1 p = 0.005**, significant
	18–44 years	32.7	67.3	
	45 years and above	61.5	38.5	
Safety condition of Anbessa bus service	Occupation	Agree	Disagree	x2 = 4.448 , df = 1 p = 0.035*, significant
	Employed	33.9	66.1	
	Unemployed	56.5	43.5	
Level of Comfort in Anbessa bus service	Income	Agree	Disagree	x^2 = 5.059, df = 1 p=0.025*, significant
	Poor and lower-middle income	17.7	82.3	
	Rich and upper-middle income	4.3	95.7	
Overcrowding in Anbessa bus service	Age	Less Crowded	More crowded	No statistical value computed because overcrowding is found to be constant
	18-44 years	-	100	
	45 years and above	-	100	
Customer Service of Anbessa Bus	Adequacy of Traffic Controllers	Good	Poor	x^2 = 7.285, df = 1 p=0.007**, significant
	Adequate	50	50	
	Inadequate	30.4	69.6	

Note: x^2 = Person's chi-square coefficient, df= degree of freedom, p= significance level at 95%, 'significant' means that p<0.05.

n= 196.

[10] *, **and *** respectively does not mean the strength of the significance technically, but significant at 90%, 95%, 99% level in table 5.2 (i-v)

Table 5. 5. Chi-Squared Test Result (Continued)

Dependent Variables	Predictors	Respondent's Opinion in %		Chi-Square test outcome
Customer Service in Anbessa Bus	Complaints about the service	Good	Poor	x^2 = 4.396, df = 1
	Yes	13.3	86.7	p = 0.036*, significant
	No	40.8	59.2	
Satisfaction with Anbessa Bus route connectivity	Effectiveness of Traffic Police during peak hours	Satisfied	Unsatisfied	x^2 = 5.304, df = 1
	Effective	29.5	70.5	p= 0.021*, significant
	Poor	14.2	85.8	
Finding Travel Information	Adequacy of Traffic Controllers	Easy	Difficult	x^2= 6.467, df = 1
	Adequate	65.3	34.7	p=0.011*, significant
	Inadequate	46.6	53.4	
Road Conditions	Age	Good	Poor	x^2 = 4.210, df = 1
	18-44 years	49.1	50.9	p = 0.04*, significant
	45 years and above	70.4	29.6	
Road Conditions	Adequacy of traffic planning	Good	Poor	x^2 = 6.445, df = 1
	Good	77.3	27.7	p= 0.011*, significant
	Poor	48.5	51.5	
Condition of traffic planning	Adequacy of Traffic Controllers	Good	Poor	x^2 = 8.182, df = 1
	Adequate	18.2	81.8	p= 0.004**, significant
	Inadequate	5.3	94.7	

Note: x^2 = Person's chi-square coefficient, df= degree of freedom, p= significance level at 95%, 'significant' means that p<0.05.

n= 196.

Table 5. 6. Chi-Squared Test Result (Continued)

Dependent Variable	Predictors	Respondent's Opinion in Percentage		Chi-Square Test Outcome
Flexibility of Service with conditions	Adequacy of Traffic Controllers	Flexible	Rigid	x^2 = 11.739, df = 1
	Adequate	46.3	53.7	p=0.001**, significant
	Inadequate	21.4	78.6	
Reliability of Service accessibility	Adequacy of Traffic Controllers	Reliable	Unreliable	x^2 = 19.648, df = 1
	Adequate	51.5	48.5	p=0.000***, significant
	Inadequate	19.2	80.8	
Reliability of Service Accessibility	Arrangement of extra buses during peak hours	Reliable	Unreliable	x^2 = 7.508, df = 1
	Agree	54.2	45.8	p=0.006*, significant
	Disagree	26.4	73.6	
Bus waiting duration	Awareness of users about complaint handling	Short duration	Long duration	x^2 = 7.508, df = 1
	Yes	60.7	39.3	p=0.030*, significant
	No	35.3	64.7	
Awareness about Complaint handling	Gender	Yes	No	x^2= 5.449, df = 1
	Male	45.6	54.4	p =0.020*, significant
	Female	21.9	78.1	

Note: x^2 = Person's chi-square coefficient, df= degree of freedom, p= significance level at 95%, 'significant' means that p<0.05.

n= 196

Table 5. 7. Chi-Squared Test Result (Continued)

Dependent Variable	Predictors	Respondent's Opinion in Percentage		Chi-Square Test Outcome
Awareness of media consultation about Anbessa	Age	Yes	No	x^2 = 3.956, df = 1 p =0.047*, significant
	18-44	15.6	84.4	
	45 and above	32	68	
Awareness of media consultation about Anbessa	Complained about the Service	Yes	No	x^2 = 20.876, df = 1 p = 0.000***, significant
	Yes	66.7	33.3	
	No	14.5	85.5	
Complaint about the bus Accessibility and reliability	Attending Public Discussion	Yes	No	x^2 = 10.802, df = 1 p=0.001**, significant
	Yes	33.3	66.7	
	No	6.5	93.5	
Awareness about complain handling in Anbessa City Bus	Bus waiting time	Yes	No	x^2 = 4.734, df = 1 p= 0.030*, significant
	Less than 30 min	48.8	51.4	
	More than 30 min	25	75	

Note: x^2 = Person's chi-square coefficient, df= degree of freedom, p= significance level at 95%, 'significant' means that p<0.05.

n= 196.

Table 5. 8. Chi-Squared Test Result (Continued)

Dependent Variable	Predictors	Respondent's Opinion in Percentage		Chi-Square Test Outcome
Drivers care to follow traffic signals	Adequacy of Traffic Controllers	Agree	Disagree	x^2 = 10.254, df = 1 p=0.001**, highly significant
	Adequate	74.6	25.4	
	Inadequate	50.5	49.5	
Effectiveness of traffic police in reducing peak hour congestion	Adequacy of Traffic Controllers	Effective	Poor	x^2 = 10.841, df = 1 p=0.001**, highly significant
	Adequate	38	62	
	Inadequate	16.4	83.6	
Arranging extra buses at peak hours	Adequacy of Traffic Controllers	Agree	Disagree	x^2 = 5.145, df = 1 p=0.023*, significant
	Adequate	22.2	77.8	
	Inadequate	10	90	

Note: x^2 = Person's chi-square coefficient, df= degree of freedom, p= significance level at 95%, 'significant' means that p<0.05.

n= 196.

5.4.1. Safety and Comfort Conditions

The safety condition of Anbessa bus has a significant relationship with age of the users ($p<0.01$), with the older age cohort (above 45 years) being more likely to accept the existing safety condition of the bus (see Table 5. 4). Such circumstances are reasonably common in Addis Ababa because more mature adults become resilient to the inconveniences attributed to public transport accessibility.

The income of the bus users was significant in determining the comfort condition of Anbessa bus ($p<0.05$). This could be expected, given that 'higher' income (3501 and above ETB/month) bus users were more likely to criticise the comfort condition of the bus, compared with the lower income group (0<3500 ETB/Month) who essentially depend on the bus and are not in a position to choose a service with a higher comfort level. Thus, it appears that 'higher' income classes are concerned about the comfort (absence of neatness, ventilation, seating chair and overcrowding) in the bus while the low-income class are tolerant just to secure their routine accessibility. Overcrowding is another feature of inaccessible public transport that can threaten the safety and comfort of users. The Chi-squared test to determine the relationship between the age group of bus users and overcrowding condition showed that all respondents, regardless of their age group, stated the buses were overcrowded. A key environmental factor contributing to overcrowding of the Anbessa bus service is the attempt to accommodate as many users as possible at each bus stop, given that the waiting time interval between two buses is undetermined.

5.4.2. Locating appropriate travel information

Public transport users require adequate and reliable travel information to avoid becoming stranded at a bus stop. Table 5. 5 reveals that user's ease of access to travel information is significantly associated with the adequacy of traffic controllers[11] along the bus routes ($p<0.05$). The bus users tend to find it very difficult to find travel information in instances where inadequate number of traffic police or road traffic/transport controllers were on duties.

[11] In Ethiopia, traffic controllers are law enforcement bodies directing the mobility of drivers.

Generally, the law enforcement bodies are important to enable users to identify which bus is going to a desired destination, given that travel information (display) is unreliable and inadequate. The absence of suitable travel information has necessitated users to depend on the traffic controllers to monitor bus routes and inform the users, as it deemed necessary.

5.4.3. Quality Customer Service

Courtesy and friendly customer service is an important component in public transport services. Table 5. 5 reveals that quality of customer service in Anbessa bus is strongly associated with the incidence of bus user's complaints regarding service accessibility and reliability ($p<0.01$). Anbessa bus users who had never complained about the accessibility and reliability of the service tend to consider that the existing customer service is good. Nevertheless, it seems like that some users may avoid complaining due either to lack of adequate information about how to complain and what kind of response to expect, or otherwise, because they feel pessimistic about the eventual outcome of any complaint lodged.

5.4.4. Road conditions

Suitable road and traffic planning is an essential ingredient in an accessible public transport system. Table 5. 5 indicates that the road condition is perceived differently among different age categories of users ($p<0.05$). Older and adult (45 years and above) users tend to consider that the current roads facilities across KKSC were somewhat good for commuting. This age group considers that road construction in KKSC has shown reasonable improvement because construction projects are going on at different sites in the city, compared with the scenario of a decade previously. On the other hand, the younger cohorts (who represent the majority of Anbessa bus users) were uncomfortable with the road condition, citing that it is narrow, poorly built and worn-out.

Convenient road traffic planning could be considered as another element for accessible Anbessa bus service. The Chi-squared testing revealed that the road condition in KKSC is significantly related to the suitability of traffic planning on the bus route ($p<0.05$). The road condition in KKSC is likely to be poor along the ill-planned road traffic system, the traffic

signals do not work well, buses do not have priority lanes and speed limits and zebra crossings are not marked for the safety of pedestrians. Poor road conditions reasonably limit the accessibility of public transport through increased waiting times, accident risk and reduced user comfort.

5.4.5. Influence of traffic law enforcement on reliability and connectivity of the service

Effective traffic law enforcement requires recruitment of skilled and adequate number of traffic police officers, especially in cities of developing nations where modern transport management is not fully engaged. Table 5. 5 reveals that the skills and adequacy of traffic controllers are related to different aspects of transport planning and operation. The Chi-squared relationship suggests that the road traffic planning is more likely to be poor along the bus routes where the traffic controllers are inadequately assigned ($p<0.05$). Such inconsistencies happen in the city because allocation of traffic police versus the need to fill poor traffic planning is not based on evidence (Yilma, 2014).

A Chi-square test also reveals that a significant association exists between the effectiveness of traffic police to lessen the peak hour congestion and improve the satisfaction of users in connecting the bus between different routes ($p<0.05$). Poor performance of the traffic police to lessen peak hour congestion is more likely to worsen the dissatisfaction of the commuters who want to connect the bus between two different routes. Accessible public transport should be flexible with the prevailing time and conditions. The flexibility of Anbessa bus service is also significantly related to the adequacy of traffic controllers along the bus routes ($p<0.05$). Anbessa bus lacks flexibility in response to the prevailing conditions (demand versus peak hours) along the transit stations, where the controllers are inadequately assigned to monitor the traffic flow.

From service reliability point of view, a Chi-squared test also demonstrated that a strong relationship exists between adequacy of traffic controllers and reliability of the service ($P<0.001$), with the service being more likely to be unreliable along the bus routes where traffic controllers were inadequate.

Finally, the bus users without adequate awareness to complain about the (poor) performance of the bus were more likely to wait for more than 30 minutes ($p<0.05$) at transit stations. Here, it could be argued that a user's lack of awareness to rectify their concerns or complaints to the legitimate bodies tends to result in long waiting time. A reliable Anbessa bus service could be possible not only through the commitment of the service provider, but also the user's awareness and empowerment to communicate the performance of the operator in contrast to their complaints.

5.4.6. Effectiveness of communication with the stakeholders

Awareness of Anbessa bus users and their engagement in public consultation on media could be taken as a means of empowerment and building accountability mechanisms between the stakeholders. It allows the users to make open interface with the operator and regulators to complain or commend the conditions pertaining to the service accessibility. Table 5. 7 reveals a strongly significant relationship between the users experience of attending Anbessa city bus service accessibility forum, and complaining about the service accessibility and reliability ($p<0.001$). The bus users who had never attended public consultation are very unlikely to complain about the service. Attending stakeholder's forum to review the performance of the operator enables the users to make a face-to-face dialogue with the service provider and other stakeholders and present the difficulties of accessing the bus. This builds the user's confidence to claim their right to use effective and accessible public transport through the available channels of communication. The Chi-square test also depicts that Anbessa bus users without experience of complaining about the service accessibility are less likely to have awareness about stakeholders forum held on public media ($p<0.001$). Public awareness about the role of media to conduct stakeholders' forum and Anbessa bus users experience to complain about the poor accessibility of the service are very important to disclose existing problems in a way that explains the accountability and prompt solution.

From a socio-demographic point of view, age and gender were important in influencing the effectiveness of communication between the bus users and other stakeholders. Table 5. 6 depicts that female Anbessa bus users are likely to have poor awareness about complaint handling in ACBSE ($p<0.05$). In Ethiopia, studies show that females are less able to access to

public information because they have attained a limited education level, are confined to house chores and are less accustomed to follow the media (Central Statistical Agency, 2011). Similarly, the younger bus users are less likely to have awareness ($p<0.05$) about public consultations held via traditional media; since their medium of choice is much more likely to be social media compared with electronic (e.g. radio or television) or print formats. Less modernised public enterprises in Ethiopia are not accustomed to disseminate information on social media – such as Facebook, or Twitter – to develop an easy two-way communication with their stakeholders in accepting appreciation or critics to improve the service (Chisenga & Chande-Mallya, 2012).

5.4.7. Service Coordination

The skill and behaviour of Anbessa bus drivers play key role in influencing the road congestion, conforming to the road traffic rules and lessening road accidents. Table 5. 8 reveals that driver's care to follow the road traffic signals is significantly associated with the adequacy of traffic controllers along the routes ($p<0.05$). For example, bus drivers were less likely to be careful in following the traffic signals, e.g., speed limits, zebra crossings and traffic lights, along those bus transit routes where the traffic controllers were inadequate. Absence of commitment of the law enforcement bodies to allocate adequate number of traffic controllers along the bus routes coupled by poor skill and behaviour of drivers worsen the accessibility of the bus service in KKSC.

As was noted in Chapter 4, the transport operation of Anbessa bus and traffic management of Addis Ababa city are not currently supported by intelligent transport management system. The series of Chi-squared tests in Table 5. 8 illustrated that traffic controllers (traffic police or transport supervisors) play a major role in reducing congestion, informing the operator to assign an additional number of bus on a given route (if any), and warning the drivers to follow traffic rules. Absence of coordination between the law enforcement bodies and other stakeholders would result in poor accessibility, high risk of accidents and less productivity of the commuters.

5.5. MODELLING ACCESSIBILITY OF ANBESSA BUS SERVICE

Logistic regression models were applied to understand the relationship between variables and how the predictors were likely to influence the accessibility of Anbessa bus in KKSC. These were an important tool to test models that predict categorical outcomes. Three different models were built to assess the accessibility of Anbessa bus, based on the assumption that it is influenced by three principal factors, namely:

a. a user's satisfaction with bus connectivity (switching) between different routes;
b. reliability of the bus service delivery; and
c. waiting time that users spend at transit stations.

The models produced a set of coefficients that allowed prediction of the natural log of the odds of items including reliable satisfaction with the bus routes connectivity or short waiting time (coded with 1), compared with unreliability, dissatisfaction or long waiting time of users (coded 0) in relation to the accessibility of Anbessa bus in KKSC.

Here, accessibility is a combination of three measures, i.e., reliability (p_1), satisfaction of a user in Anbessa bus routes connectivity (p_2), and duration of waiting time (p_3).

$$\text{Logit}(p_1) = b_0 + b_1X_1 + b_2X_1 + b_3X_3 + \ldots b_nX_n \quad (1)$$

$$\text{Logit}(p_2) = k_0 + k_1M_1 + k_2M_1 + k_3M_3 + \ldots k_nM_n \quad (2)$$

$$\text{Logit}(p_3) = c_0 + c_1F_1 + c_2F_2 + c_3F_3 + \ldots c_nF_n \quad (3)$$

where p_1, p_2, p_3 represent the probability that Anbessa bus service is reliable, satisfactorily connected between different routes, and has appropriately short waiting times, compared with unreliable, unsatisfactory, and inaccessible due to long waiting times. The coefficients b_1, b_2, $b_3 \ldots b_n$, k_1, k_2, $k_3 \ldots k_n$, and c_1, c_2, $c_3 \ldots cn$ were estimated using a maximum likelihood method. Similarly, $X_1, X_2, X_3 \ldots X_n$, $M_1, M_2, M_3 \ldots M_n$, and $F_1, F_2, F_3 \ldots F_n$ were predictors determining the reliability, the satisfaction of a user to connect between different bus routes and the waiting time duration for a user, respectively.

5.5.1. Reliability of the service model

Direct logistic regression was performed to assess the factors affecting the likelihood of Anbessa bus service's reliability.

Table 5. 9. Modelling summary: Logistic regression analysis of reliability of Anbessa city bus in relation to travel experiences of Kolfe Keraniyo Sub-City, Addis Ababa

Predictors	Coefficient (B)	Std. Error	Significance[12]	Odds ratio-Exp. (B)
Constant	-13.659	3.703	**.000*** **	0
Opinion of Safety Condition (Agree, Disagree)	0.032	0.518	0.95	1.033
Waiting time (<30 Minute, >30 Minute)	0.588	0.527	0.264	1.801
Comfort Condition (Agree, Disagree)	1.043	0.673	0.121	2.837
Finding travel information (Easy, Difficult)	0.651	0.572	0.255	1.917
Road conditions (Good, Poor)	1.19	0.536	**0.026** **	3.286
Traffic planning conditions (Good, Poor)	1.539	0.73	**0.037** **	4.659
Effectiveness of traffic police in reducing peak hours congestion (Effective, Poor)	1.347	0.567	**0.018** **	3.845
Arrangement of extra buses during peak hours (Agree, Disagree)	0.711	0.66	0.281	2.037
Bus driver's care to follow traffic signals (Agree, Disagree)	1.512	0.708	**0.033** **	4.535
Experience of complaints about Anbessa bus service performance (Yes, No)	0.279	1.118	0.803	1.322

The result shows there is an inverse relationship between the reliability of bus services and factors affecting reliability because B (constant) value is negative. It is also an indication that there are other factors likely to influence the unreliability of the service delivery. This was confirmed through the Chi-squared tests and in-depth interviews with the in-depth interview respondents that ranges of other factors (e.g. diffused commitment and fragmented action of stakeholders, flexibility of the service delivery, and traditional means of transport operation) have contributed to the unreliability of Anbessa bus service.

The model considered ten different predictors to observe how these variables affect the reliability of Anbessa bus service, X^2 (10, N=196) = 48.90[13], P<0.1 (see Table 5. 9). Four

[12] **, and *** refer to level of significance at 95% and 99% confidence respectively.
[13] Chi-squared value (X^2) for the reliability of Anbessa bus service in this model.

predictors were found to be statistically significant; indicating that the model was able to distinguish between respondents who regarded Anbessa bus service is 'reliable' or 'unreliable'. The model as a whole explained between 33.9% (Cox and Snell R square) and 47.2% (Nagelkerke R squared) of the variance in reliability of Anbessa bus service, and correctly classified 80.5% of cases (see Appendix H-1). However, only four of the independent variables made a statistically significant contribution to the model:

- condition of roads along the bus routes;
- adequacy of traffic planning (for example, how the traffic signals work well, use of priority bus lanes, following speed limits, availability of pedestrian crossing marks);
- effectiveness of traffic police to mitigate congestions during the peak hours' time; and
- the propensity of the bus drivers to correctly follow traffic signals.

The strongest predictor for users to state unreliability of Anbessa bus service was the 'condition of traffic planning' with an odds ratio of 4.659. This result indicates that Anbessa bus users who said that the traffic planning in KKSC was poor were more than four times more likely to state that the service is unreliable compared to those who stated that the road traffic planning is good.

The 'safety condition of Anbessa bus' and 'experience of users complaints about Anbessa bus service performance' were least able to predict the service reliability of the service because their significance level were approaching constant values. Likewise, it is determined that 'overcrowding of Anbessa bus' appears to be constant in this model, because the summary of the descriptive table and the chi-squared tests revealed that 98.5% of the respondents said the bus is overcrowded.

In Table 5. 9, beta coefficient (B) values indicate the probability of a predictor falling in to specific category and direction of relationship between the predictors and reliability of Anbessa bus. The negative B values indicates that an increase in the predictor's score of one unit results in a decreased probability that the bus service is reliable. Overall, the probability of Anbessa bus service, which is also stated by the negative B value of 'constant' in the model, predicted the accessibility of Anbessa bus service is 'unreliable'.

5.5.2. User's waiting time model

Modelling of the waiting time for Anbessa bus was performed to explore the influence of different factors on the duration. The model contained eight independent variables, X2 (8, N=196) = 16.699[14], p<0.1 (see

Table 5. *10*). Three of the predictors were statistically significant, and therefore could distinguish between the bus users who experienced waiting times of less than, or greater than, 30 minutes. The model estimated between 11.7 % (Cox and Snell R square) and 15.9 % (Nagelkerke R squared) of the variance in waiting time and suitably categorized 71.6% of cases (see Appendix H-2). Of particular note, the 'condition of roads', 'commitment of the operator to arrange extra buses during peak hours', and 'levels of comfort' were the three independent variables that made statistically significant contributions to the model.

Table 5. 10. Modelling summary: Logistic regression analysis of Anbessa bus user's waiting time with mobility experiences of users at Kolfe Keraniyo Sub-City

Predictors	Coefficient (B)	Std. Error	Significance[15]	Odds ratio Exp. (B)
Constant	-0.12	1.01	0.905	0.887
Condition of Roads (good, poor)	0.965	0.407	**0.018****	2.625
Effectiveness of traffic police in reducing peak hour congestion (Effective, Poor)	0.315	0.45	0.485	1.37
Arrangement of extra bus during peak hours (Agree, Disagree)	-0.972	0.583	**0.095***	0.378
Connectivity condition (switching) bus (Satisfied, Unsatisfied)	-0.827	0.514	0.108	0.438
Finding travel information (Easy, Difficult)	-0.281	0.417	0.501	0.755
Condition of traffic planning (Good, Poor)	-0.128	0.61	0.834	0.88
Experience of complaining bus accessibility and reliability (Yes, No)	0.554	0.708	0.434	1.74
Comfort Condition (Agree, Disagree)	1.252	0.57	**0.028****	3.497

The strongest predictor of this model was the user's reported comfort levels of bus, with an odds ratio [Exp. (B)] of 3.497. However, the reported road conditions were associated with the strongest significance level (p=0.018). Thus, after controlling for all other factors in the model,

[14] Chi-squared (X^2) value for the duration of Anbessa bus waiting time in this model.
[15] * and ** refer to level of significance at 90%, and 95% confidence respectively

bus users who stated that Anbessa bus service is uncomfortable for commuting were more than three times more likely to say that the waiting time is too long (more than 30 minutes). Furthermore, the commitment of ACBSE to arrange additional number of buses during peak hours was significant in predicting the waiting time of the bus (

Table 5. *10*). The negative B value means that if extra buses were allocated during the peak hours, the waiting time would be reduced. The poor result of odds ratio indicates that the extra buses were allocated but not in an efficient sense because there is no automated service delivery system. Thus, the waiting times were inconsistently reduced along all routes.

5.5.3. Modelling of user's satisfaction in connecting the bus between different routes

User's satisfaction with the connectivity (switching) of buses between different bus routes was the third model used to explore the accessibility of Anbessa bus service. Table 5.11 illustrates the case in detail.

Table 5.11. Modelling Summary: Logistic Regression Analysis of Bus User's Satisfaction Regarding Connections between Different Bus Routes in Kolfe Keraniyo Sub-City

Predictors	Coefficient (B)	Std. Error	Significance[16]	Odds Ratio Exp. (B)
Constant	-4.015	2.216	0.07	0.018
Adequacy of traffic controllers along bus routes (Adequate, Inadequate)	0.074	0.529	0.889	1.077
Customer service of the bus (Good, Poor)	2.214	0.611	**0.000*** **	9.153
Finding travel information (Easy, Difficult)	0.415	0.66	0.53	1.514
Arrangement of extra bus during peak hours (Agree, Disagree)	-0.946	0.791	0.232	0.388
Condition of traffic planning (Good, Poor)	1.401	0.716	**0.050** **	4.06
Walking distance to bus stop (Short, Long)	-0.046	0.586	0.937	0.955
Condition of roads (Good, Poor)	-0.169	0.574	0.769	0.845
Effectiveness of traffic police in reducing peak hours congestion (Effective, Poor)	0.99	0.536	**0.065***	2.692
Ability to afford the bus fare (Agree, Disagree)	-1.937	0.704	**0.006*** **	0.144
Flexibility of the bus service (Flexible, Rigid)	1.145	0.579	**0.048** **	3.143

[16] *, **, and *** refer to level of significance at 90%, 95% and 99% confidence respectively.

The model contained ten independent variables, X^2 (10, N=196) = 41.681[17], P<0.1. Five of the predictors were statistically significant, which meant that the model was able to effectively distinguish between users who did and did not state that the bus connectivity was suitable, (see Table 5.11). The model explained between 24.4 % (Cox and Snell R square) and 38.9% (Nagelkerke R squared) of the variance in connectivity of the bus, and correctly classified 83.9% of cases (see Appendix H-3). The independent variables that made statistically significant contributions to the model were 'quality of customer service of the bus', 'condition of traffic planning', 'effectiveness of traffic police in reducing peak hour congestion', 'ability to afford the bus fare', and 'flexibility of the bus service'. Amongst these, quality of customer service was the strongest predictor of user's dissatisfaction with the bus connectivity, with an odds ratio [Exp. (B)] of 9.153. This odds ratio revealed that Anbessa bus users encountering poor quality of customer service were more than nine times more likely to be dissatisfied with the connectivity of the bus service, compared with those users who did not encounter poor quality services, controlling for all other factors in the model. The odds ratio of 0.144 for ability to afford the bus fare was less than one, meaning that for every unit increase in the affordability of the fare, users were 0.144 times (less) likely to be dissatisfied with the connectivity of the bus. Similar to the case of commitment by the operator to arrange additional number of buses in modelling the waiting time, fare affordability was the most significant predictor of commuter's satisfaction to connect between different routes. Nonetheless, it is less powerful to predict the dissatisfaction of the commuters in connecting the buses between two different routes, with odds ratio of 0.144. Given that the B value is negative, indicates a relationship between the two variables whereby increased fare affordability correlates with increased satisfaction (i.e. less dissatisfaction).

Overall, the three models confirmed that a number of variables are important in predicting reliability, wait time duration and satisfaction with connectivity, with some of these being common across more than one model. For example, traffic planning, effectiveness of traffic police and road condition appeared as statistically significant variables in two of the three models, and thus should be regarded as particularly important in influencing the accessibility of Anbessa bus service.

[17] Chi-squared (X^2) value of satisfaction of users in connectivity (switching) of the bus between different routes.

5.6. ANALYSES OF OPEN ENDED QUESTIONS TO THE BUS USERS

Following the quantitative section of the survey, Anbessa bus users were provided an opportunity to complete three open-ended questions. These items were designed to capture information about user's feelings in relation to accessibility, coordination and regulation of the Anbessa city bus service and other personal opinions. Thematic exploration of these data showed that respondents were concerned about the punctuality, community engagement, adequacy and condition of the buses, automation of the ACBSE operation, professionalism and ethics of the personnel, road condition, traffic facilities and the law-enforcement system.

The bus users reported that Anbessa city bus service currently does not have defined waiting, departure or arrival times. It is common for the commuters to be stuck at transit stations for an undefined waiting duration in hot summers, cold winters and the rainy season, noting that basic amenities and shelters are not available at all waiting locations. A further problem is that the operator owns limited number of buses, which is problematic given the increasing population of the city, who demand a more accessible public transport service. It was reported that even those actively operating buses are too old, worn-out and very often break down in the middle of the street. The inadequacy of buses versus the prevailing demand has resulted in overcrowding, and lack of ventilation for comfortable commuting. The users also noted that Anbessa city bus lacks contemporary operations: it is not supported by modern technology to effectively use time, material, and human resources; nor to disseminate essential travel or non-travel related information to users.

It is also believed that service coordination between ACBSE and other stakeholders is not arranged in such a way that all parties are accountable to the public in addressing the existing service accessibility problems. For example, the law enforcement system is so weak that bribery is common among the traffic controllers. One of the respondents commented: *"…public transport drivers and patrolling traffic police negotiate on traffic offences based on their mutual benefit – the driver to pay and the police to accept.*" It was also noted that the absence of skilled personnel, professional integrity and work ethics have weakened the traffic law enforcement system and quality of customer service.

Accessible city bus transport requires convenient roads and bus lanes, together with well-built bus transit shelters with basic amenities. The users described that the transit routes are narrow, worn-out and significantly congested. In addition to the behavioural patterns of the drivers, absence of appropriate traffic signals and marks cause accidents with pedestrians. Bus transit stations lack shelters, seats, neatness and toilets to comfort the commuters. In this regard, users explain that the accessibility of Anbessa city bus is constrained by lack of educated human resources, poor coordination and commitment of stakeholders, and unethical behaviour of the law enforcement bodies.

5.7. DISCUSSION

Analysis of the user's travel experiences and perceptions confirmed that different variables influence the accessibility and quality of Anbessa bus service. For example, the descriptive data summary revealed that the bus is overcrowded; and that users were dissatisfied with the connectivity of the bus between different routes as well as the road conditions. Similarly, Chi-squared results showed that Anbessa buses lack safety and comfort; the operations are highly congested and that genuine travel information is not provided to the users promptly. These problems are the combined effects of lack of resources or commitment to allocate them properly, weak transport governance, confusion or poor enforcement of the laws, and inability of the end users to influence practically the service delivery. Thus, the broader system is dysfunctional which then manifests on-ground problems such as an aging bus fleet, poor route planning, user dissatisfaction, lack of skilled labour and worn-out or inadequate transport facilities (Abreha, 2007; Tsegaye, 2015; Yilma, 2014).

5.7.1. Accessibility of Anbessa bus service – The Logit Models' Perspective

Different variables in the logistic regression models confirmed that the inaccessibility of Anbessa bus in KKSC city is mainly due to the unreliability, extended waiting time and dissatisfaction of users in connecting the bus between different routes. Studies indicate that the average waiting time for public transport in urban centres of developing countries ranges between 5-10 minutes and a maximum of 10-20 minutes (Abreha, 2007; Tsegaye, 2015), unlike

the scenario of Anbessa bus in Addis Ababa. The models attested that long waiting time and user's inability to easily connect between different routes was attributed to the scarcity of buses versus the growing public transport users population, poor road and traffic planning (mixed traffic flow), ineffectiveness of the law enforcement bodies to monitor the traffic system (Abreha, 2007; Fenta, 2014). Notwithstanding this, poor commitment of ACBSE to serve the customers and absence of safety and comfort within the bus were found to exacerbate the dissatisfaction of users to be able to connect between different routes and experience long waiting duration at transit stations (Kumar & Barrett, 2008; Simona, 2010).

The logit models also confirmed that unreliability of Anbessa bus is attributed to poor road condition, poor traffic planning, inability of the bus drivers to follow traffic signals, and ineffective performance of the traffic/transport controllers to reduce the peak hour congestion. Poor traffic planning (e.g. absence of traffic lights, parking slots, traffic marks, pedestrian walkways and crossing) has significantly contributed to the unreliability of the service. Abreha (2007) and Fenta (2014) stated that driver's bad treatment, worn-out and overcrowded buses, poor enforcement of regulations, and low efficiency in transport operation result in unreliability of public transport.

5.7.2. Road Condition

Road condition plays significant role in fostering an accessible Anbessa bus. Addis Ababa city authorities have been making a concerted effort in improving the urban transport situation largely through large investments in new road infrastructures. However, the total built paved road coverage is quiet at a minimum level compared to other cities of Sub-Saharan Africa (Kumar & Barrett, 2008; Ministry of Transport, 2011).

The younger age group respondents were less tolerant about the poor road condition with in KKSC compared with the adult age counterparts. The narrow and deteriorated road condition in Addis Ababa affects the young working class and students who mainly depend on Anbessa bus for their routine mobility to school and work places. Road condition significantly determines the accessibility of public transport through influencing the waiting time, headways

and rate of accident. Mekuriaw (2012) indicated that the low density of paved roads coupled with unplanned growth, poor road surfaces, and narrow streets, resulted in a constrained geographic reach of bus services to different corners and peripheries of the urban conurbation.

The reliability of service (logit) model confirmed that the poor road condition has crippled the accessibility of Anbessa bus in KKSC, making the ridership unreliable. Over all, reliable public transport with short(er) waiting times could be partly possible through attaining adequate road transport infrastructure, as this would act to increase the productivity and reliability of transit system (Yilma, 2014).

Community awareness is important element in the improvement of road networks. It helps to rectify community needs, promote the commitment of transport authorities in addressing grassroots concerns, helps to allot adequate budget in upgrading the roads. It is also linked with transparency of the authorities to disclose the financial management of the projects. A World Bank (2014) study indicated that the government's road infrastructure investment is based on anticipation, rather than actual land-uses. In the process of programming transport investments, it is apparent that no effort is made to prioritize new settlement areas, but rather, to schedule services based on where demand was normatively *intended* to occur. As a result, mobility in the Addis Ababa metropolitan area has become extremely challenging, and congestion is exacerbated from time to time. Another important thing is how road maintenance is managed. Addis Ababa roads authority carries out almost all road maintenance works in a centralized manner. Given the size of the network city, however, more efficient and effective ways of maintenance management need to be explored (World Bank, 2014a).

5.7.3. Poor Traffic Planning

The accessibility of Anbessa bus service in Addis Ababa is significantly affected by poor traffic planning in the city. The statistical results indicated that traffic planning in Addis Ababa is too poor to assist Anbessa bus service delivery. Without assignment of adequate and effective traffic law enforcement bodies, it could be difficult to reduce congestion and the likelihood of accidents because the traffic control system of the city is not optimized (Kumar & Barrett,

2008). The poor traffic planning of Addis Ababa city is characterised by limited road capacity, scarcity of parking space, dysfunctional road signals, and absence of speed limits and street cameras (Yilma, 2014). Poor traffic planning worsens the unreliability of the bus service through increasing the waiting time, congestion and accident (Tulu et al., 2013). Overall, dissatisfied bus users with the poor traffic planning had a high tendency to express that the service is also unreliable.

5.7.4. Quality of customer service

Reliable customer service is an essential part of fostering accessible public transport. Anbessa bus lacks a customer-oriented service delivery strategy. From the users' point of view, the poor quality of customer service is one aspect of inconvenience hindering the accessibility of Anbessa bus service in Addis Ababa. The findings indicated that it is very unlikely that the users expect good treatment from the drivers and cash collectors. The poor quality of customer service could be due to absence of responsiveness, courtesy, communication and credibility that an operator offers to its customers (Geetika, 2010). In conditions where public transport staff are less compassionate for the users, the law enforcement bodies play important role in intervening in case of any mistreatment of users occurring at transit stations or along the travel routes. Nevertheless, the law enforcement bodies failed to protect the safe treatment of users at transit stations and along the routes.

Another concern is that bus users who are familiar with complaining about the poor quality of service could eventually observe that the service provider does not make any efforts to improve the existing condition (Tsegaye, 2015). For example, the logit models confirmed that bus users encountering poor quality of service were very likely to be dissatisfied with the connectivity of the bus between different routes. A good customer service in public transport encompasses adequate transit stations with clean shelters, mitigation of overcrowding, sharing real time travel information and sustains the safety and security of users (Belwal & Belwal, 2010; Geetika, 2010). The study demonstrated that Anbessa city bus has not been able to consider these measures as its quality of customer satisfaction.

In this study, lower and higher income groups of bus users have manifested different tolerance levels on the comfort condition of the bus. For example, the higher income groups of the bus users tended to feel that the bus is uncomfortable to them. These people are, thus, very likely to say that the bus waiting time is long (exceeds 30 minutes). It is natural to see that 'higher' income users prefer to avoid discomfort in the bus due to overcrowding, absence of seats, neatness and suffocation problems. Wright, Emele, Fukumoto, Velaga, and Nelson (2014) and Currie, Delbosc, and Mahmoud (2013) indicate that daily users of public transport are more concerned about the travel time, safety and comfort in the bus. Anbessa bus is characterised by frequent stops, loading and unloading of commuters, unsecured and uncomfortable commuting in which pick pocketing and physical fatigue are common due to overcrowding and a state of operations that is below the expected standard (Kumar & Barrett, 2008). In such circumstances, it likely that the bus users may shift to a relatively comfortable mode of commuting (e.g. shared taxis) at the expense of marginal increase in fares (Noor et al., 2014).

It appears that another option available to commuters who find themselves in discomfort due to overcrowding (brought about by compromised waiting time) to connect to a relatively comfortable alternative. Although there is no literature supporting this argument, it happens that the bus users, especially the elders, expectant women and those with accompanying children, prefer to ignore series of overcrowded buses until they are sure to find another alternative that is more comfortable and less congested.

5.7.5. Coordination of the traffic law enforcement system

Traffic law enforcements systems are most effective where there is stakeholder coordination to achieve a common goal. The findings confirmed that the accessibility of Anbessa bus is affected by the effectiveness and adequacy of the traffic law enforcement.

The absence of traffic management system has made the city overly reliant on the adequacy and effectiveness of traffic police in controlling congestions, especially during the morning and afternoon peak hours. The effectiveness of the law enforcement system could be discussed in terms of the role of the traffic controllers in reducing (peak hours) congestion in understating

the accessibility of Anbessa bus. Particularly, the models demonstrated that traffic police play a vital role in facilitating traffic flows through reducing the congestion in the morning and afternoon peak hours in Addis Ababa city. Effective traffic management and law enforcement system could be possible through the commitment of stakeholders to allocate an adequate number of traffic controllers along the bus routes in the absence of modern technology to support the flow (Abreha, 2007; Kumar & Barrett, 2008; Yilma, 2014). Sohail, Maunder, and Miles (2004), Kumar and Barrett (2008) and Yilma (2014) noted that weak traffic management and law enforcement system occur due to the existence of corruption, scarcity of trained labour force, absence of political commitment, difficulty in communication and sharing of information between the stakeholders. Accountable governance and commitment of politicians is important in transforming the poor coordination and effectiveness of traffic management system in Addis Ababa (Teshome et al., 2012).

The law enforcement system could also be ineffective because the responsibility of controlling, coordinating and enforcement of the traffic rules are operated in a fragmented manner (Ministry of Transport, 2011). Nowadays, it is becoming not easy to have an effective traffic management system because of lack of required professionals in the implementing agencies, opportunity to get an adequate training, professional composition, ethics training, surveillance and control (Abreha, 2007; Yilma, 2014). For example, traffic police assigned to patrol a given (congested) travel route are paid bribe to avoid fines for offences that drivers commit (Kumar & Barrett, 2008; Yilma, 2014). Effective traffic management could be possible through strengthening the law enforcement system, eliminating corruption, improving transparency and accountability of the stakeholders in the public transport sector.

5.7.6. Bus Users' Awareness of Communication

Community awareness and the ability to communicate with other stakeholders is a dual benefit for any operator who wishes to improve the quality of service, whilst reviewers and confident to claim their right to service. For example, females and users waiting the bus more than 30 minutes were less aware about user's channels of complaints. The awareness of bus users, particularly females, to provide feedback about the discomfort of the service and expressing their expectations is very important for the operator to evaluate the existing performance. . The Ethiopian Demographic and Health Survey Central Statistical Agency (2011) suggested that

females have less access to public information, formal employment and political representation in Ethiopia. The low level of awareness of females and their lack of confidence to complain about access to public transport would be areas of attention of the government to craft useful strategy that address females empowerment in the country's socio-economic and political arena.

Poor performance of transport regulators to install real-time information display facilities, and the operator's weakness to carry out a real-time operation led the bus users to complain about the long or unpredictable waiting time. However, it appears that user's low level of awareness to complain about their routine experience related long waiting time is another challenge worsening the accessibility of the service. Similar to the case above, the low awareness level of users to complain about the waiting time could be related to low commitment of the operator in disseminating essential information to the users or less attention of the users to escalate their problem to the concerned body. The main manifestations of unreliable public transport are users excessive waiting times due to lack of adequate information, late arrival of buses, and excessive headway times (Paulley et al., 2006). A customer satisfaction research done by Tsegaye (2015) on quality of Anbessa bus service noted that the company claims customers have different channels of communication to rectify their concerns. In practical sense, however, the opinion of users confirmed that the operator is less committed to work on awareness of users in order to resolve their complaints. Awareness of the bus users is very important to be acquainted with existence of a responsible body to listen to their complaints and knowing how to address it properly. Moreover, the commitment of the operator or the city government play major role in giving due attention to the users concerns.

5.8. CHAPTER SUMMARY

The lower income classes of Addis Ababa and neighbouring towns prefer to use Anbessa as their primary means of commuting because it is relatively affordable; yet the number of buses is not increasing in parallel to the urban population. In such circumstances, commuting with the bus is so uncomfortable that it is overcrowded, unventilated, and commuters cannot find a seat easily.

Anbessa bus users expressed their concerns that the operator is poor in customer handling. Drivers and cash collectors play significant role in customer handling because they are closer to the users. This encompasses provision of essential information and fair treatment of users-willingness to give changes on time, picking or dropping a user at a preferred location, following speed limits and traffic rules, avoiding overcrowding for the comfort and safety of users.

The accessibility of Anbessa bus could be expressed in terms of the reliability, waiting time and satisfaction of the bus users in connecting between different routes in KKSC. The inadequacy of traffic controllers to monitor congestion, poor commitment of the service providers to assign additional number of buses, have affected the service to such an extent that it is regarded as unreliable. Similarly, the inconvenience of roads and traffic planning, and inability of the drivers to follow the traffic signals has hindered the reliability of the service.

Poor accessibility of Anbessa bus service could also be expressed in terms of long or unpredictable waiting time. It is likely that the bus users, who do not have awareness about complaint handling in Anbessa bus (especially females), and absence of genuine timetable for departure and destination of the bus to a desired location has resulted in long waiting time. Adding to this, it was found that the poor road conditions, absence of commitment of the operator to arrange additional number of buses during peak hours of a day, and the preference of users to avoid the comfort due to overcrowding and safety problems in the bus dictates them to wait for the late arrival for long time.

The study has also identified that satisfaction of commuters to connect (switch) bus between different routes easily determines the accessibility of Anbessa bus service. Without effective performance of the law enforcement bodies to control the traffic flow, bus users are not able to connect to the next bus easily. On the other hand, a good customer service, especially picking and dropping the commuters to the preferred location, condition of traffic planning, availability of flexible options of commuting determines the satisfaction of the commuters, and thereby the accessibility of the service.

Finally, this research has identified that the level of awareness of commuters also determines the accessibility of the service delivery from different angles. The low level of awareness of the bus users has affected their accessibility to the bus in such a way that they could not rectify their inconvenience to the concerned agencies. Compared with males, it appears that females in Ethiopia are less knowledgeable about the essence of communication with the stakeholders, emanating from socio-cultural influences. Even those Anbessa bus users who were accustomed to complain about their routine inconveniences could not find a positive feedback and improvement of service over a course of time. Addressing public transport accessibility problems in Addis Ababa necessitates further studies and effective engagement of stakeholder including, politicians, businesspersons and the community. The findings and discussions in this chapter are very important in analysing the current scenario and propose a suitable Anbessa bus service delivery model, considering the residual gaps, particular to Addis Ababa city in the next chapter.

CHAPTER SIX: PROPOSED MODEL FOR PUBLIC BUS SERVICE DELIVERY IN ADDIS ABABA

6.1. INTRODUCTION

Quality of life and accessibility of urban public transport are strongly interconnected, especially in developing countries. Accessibility to public transport services depends on the nature and characteristics or urban management, resource distribution and governance. Previous experiences of different sub-Saharan African cities, including Addis Ababa, have shown that urban mobility models involving limited public (owned) transport operators results in poor accessibility because the systems were not readily equipped for expansion (Abreha, 2007; Kumar & Barrett, 2008). Thus, the ability for quality services to bridge the demand and supply gap were compromised, as population growth and other pressures came to bear on the transport system. This chapter analyses the interactions between Anbessa bus service stakeholders, resources and the current transport management model that is impacting on the current accessibility of the bus services. A redeveloped model is then proposed, through drawing lessons from the interaction of the stakeholders, resources management and strengthening the law enforcement in Kolfe-Keraniyo sub-city (as described in Chapters Four and Five), with the aim of improving the current accessibility of bus services in Addis Ababa.

6.2. PUBLIC TRANSPORT SERVICE ACCESSIBILITY MODEL

Accessibility and efficiency have been critical considerations in both policy and operational decisions relating to public transport service delivery. The efficiency of public transport service can be measured as the ratio of outputs to inputs in the system (Jarboui, Forget, & Boujelbene, 2014). Here, the system inputs includes the infrastructure (transport facilities), skilled human resources, the law enforcement system, regulatory and policy frameworks, technology, materials (vehicles), and availability of vehicles. Meanwhile, the output of public transport efficiency can be categorised into two features, being the service performance and overall productivity. The relevant measures for the appropriateness of the service may involve a user's level of satisfaction, accessibility, equity, proximity and quality of service (Abreha, 2007; Georgiadis, Politis, & Papaioannou, 2014). However, it is important to note that metrics such

as volume of passengers and distance travelled cannot be solely used to indicate high productivity of the operator, because the notion of quality service could be compromised in conditions where the service delivery does not meet a predefined standard. Consequently, it is essential to recognise that public transport management framework should be considered holistically, particularly when attempting to benchmark and/or measure the effectiveness of the current Anbessa bus service provision against other transport systems, and identify how any existing gaps or issues in service delivery could be addressed.

A properly integrated public transport service delivery model consists of both soft and hard inputs that can promote accessibility across a range of urban settings (Figure 6.1). The soft inputs are concerned with the extent of regulation and enforcement, adequacy of finance, and management and engagement of the stakeholders, including the local community. By contrast, the hard inputs refer to items such as vehicle adequacy (age, performance and reliability), transport automation technology, skilled human resources and the range of infrastructure supporting the efficiency of the service delivery such as transit shelters, bus stops and bus depots at distinct places across the service coverage (Abreha, 2007). The allocation and management of these resources is possible through an integrated effort between the stakeholders. Transport policy and planning play a pivotal role in determining the hard inputs, automation of the transport operation and management (Bodmer & Martins, 2003). For example, installation of additional number of bus stops or transit shelters could be viewed as a plan intended to keep users in close proximity with their departure or destination. However, a suitable transport plan for the urban setting and enacting this using all available resources necessitates the engagement of skilled human resources.

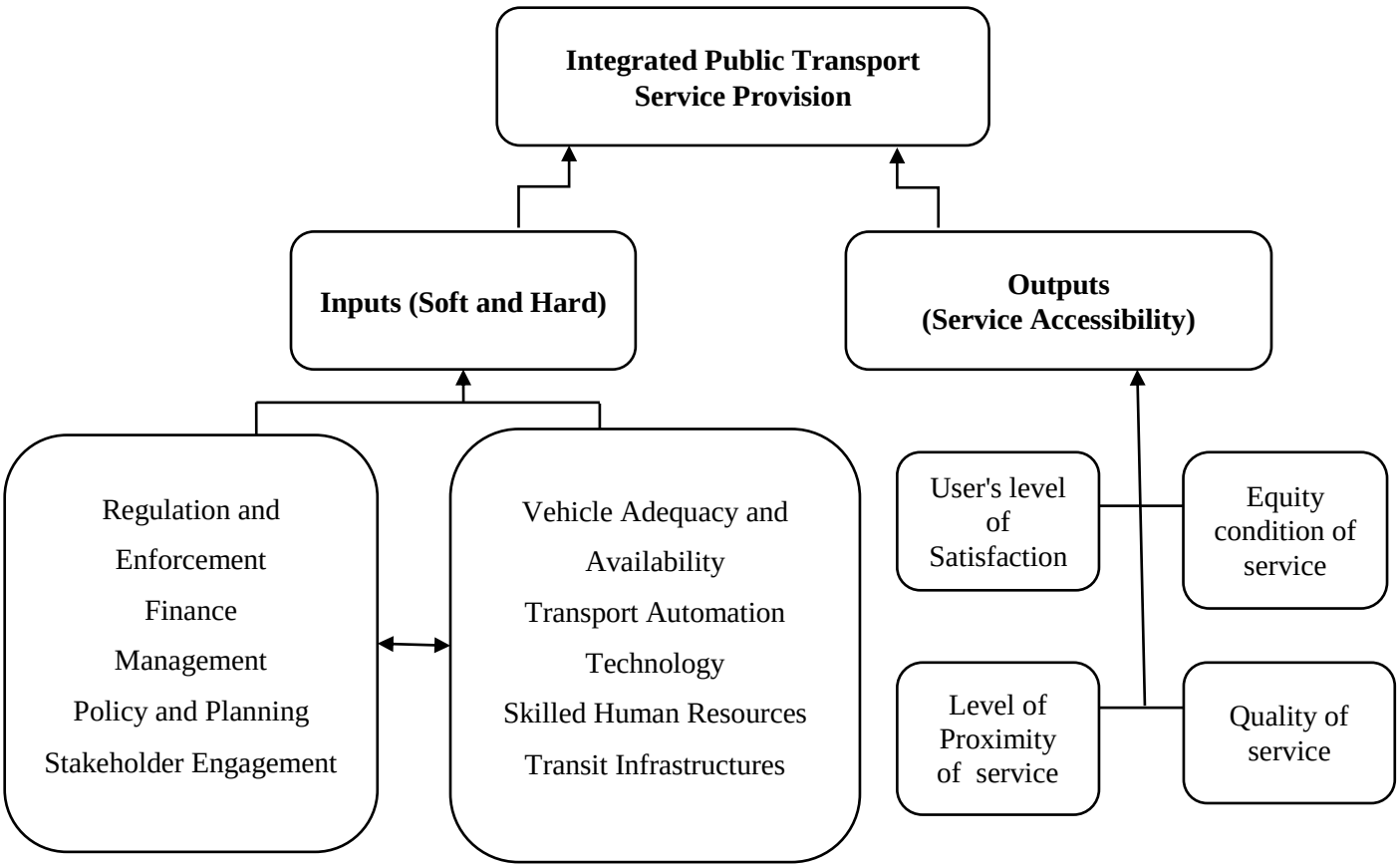

Figure 6. 1. Conceptual framework for integrated public transport service delivery

Source: Adapted from Abreha (2007, p. 48) and Bodmer and Martins (2003).

In an integrated public transport management model, the government may also facilitate the private operators to collaborate with the state-owned operators through public-private partnership (PPP) or relevant schemes that address market and government failures (Estache & Gomez-Lobo, 2005). Private firms are primarily interested maximising profit through provision of better quality of service in terms of safety, comfort and time management that potentially attracts more users. This helps in reducing waiting times, avoiding overcrowding of buses, and securing the safety of users through better transport technologies in the service delivery. In addition to other engagements, the government can set a standard of operation (e.g. vehicle age and relevant quality service indicators) and monitor whether the enforcement has

been done across the system in this model (Sohail et al., 2006). Thus, it could be deduced from Figure 6.1 that an integrated public transport service delivery model could be viewed as a service that can satisfy and retain the users, easily accessible at close proximity to departure or destination, and in a manner that is equitable to all users.

6.3. CURRENT ANBESSA BUS SERVICE DELIVERY IN ADDIS ABABA

Previous studies of Anbessa bus service (Abreha, 2007; Gebeyehu & Takano, 2007; Kumar & Barrett, 2008), and opinion of the respondents (in this study) revealed that currently, the bus service does not map to a distinct model, such as the one presented in Figure 6.1 above. Rather, the current 'Anbessa bus service delivery model' (or ABSDM), is run by an ad-hoc committee composed of the regulators, law enforcement bodies and ACBSE, at the sub-city level (see Figure 6.2). This figure shows an Anbessa bus service delivery 'model' where the city government, transport authority, traffic management agency, traffic police, ACBSE and the informal community are supposed to be the stakeholders.

The city's budget (allocation) for the bus mobility system is a basic input to acquire human, material and technology as resources (Abreha, 2007). The quality of the service delivery is thus the output of the interaction between the actors, resources and the existing transport governance. It is therefore necessary to understand the current model of Anbessa bus operations in detail, with the aim of detecting the problems and propose a possible service delivery model in resolving the gap.

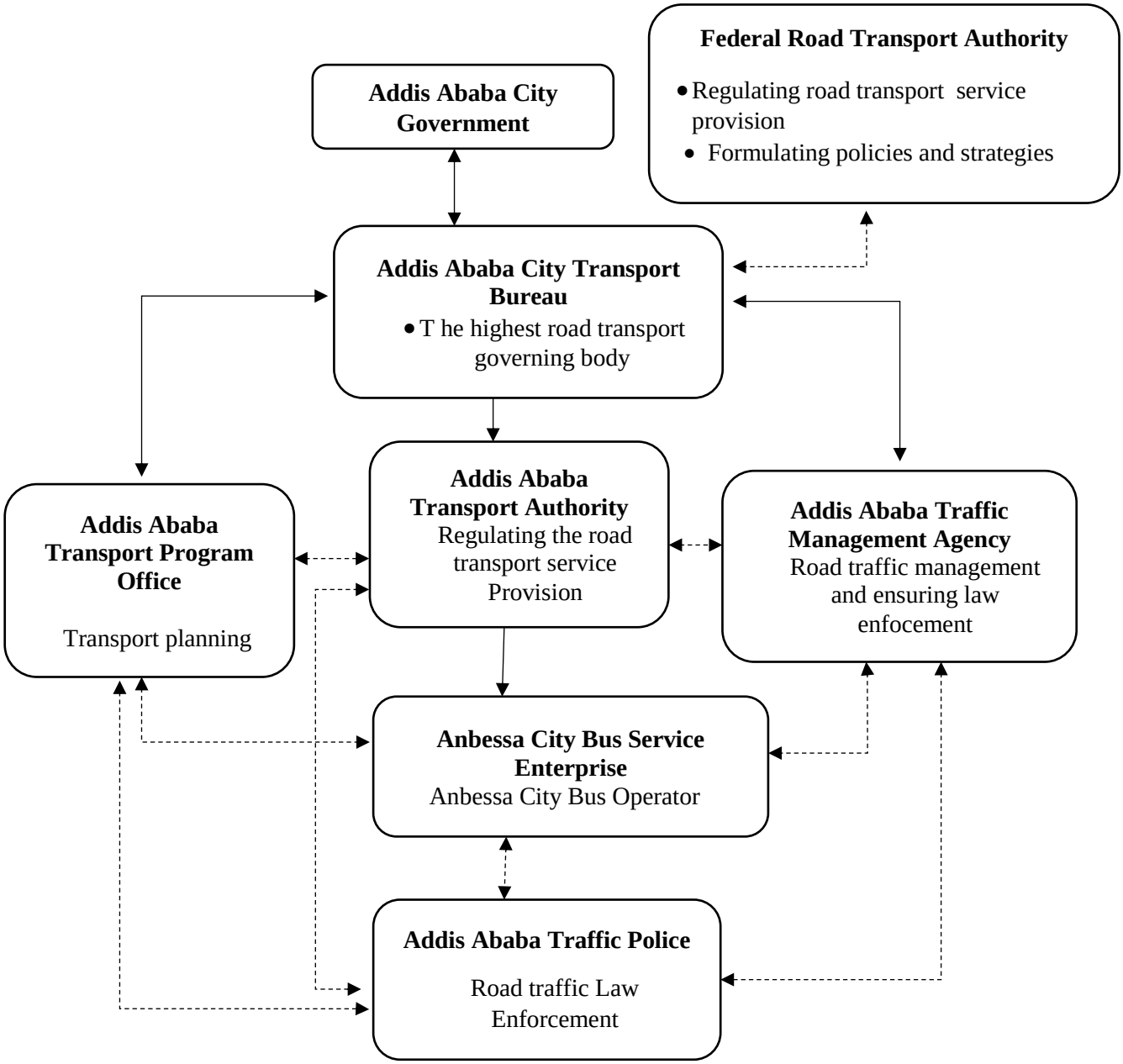

Figure 6. 2 Relationship between ACBSE and Other Stakeholders

Source: Authors Own. The solid lines indicate direct, hierarchical relationship whereas the broken lines indicate indirect/ functional relationship

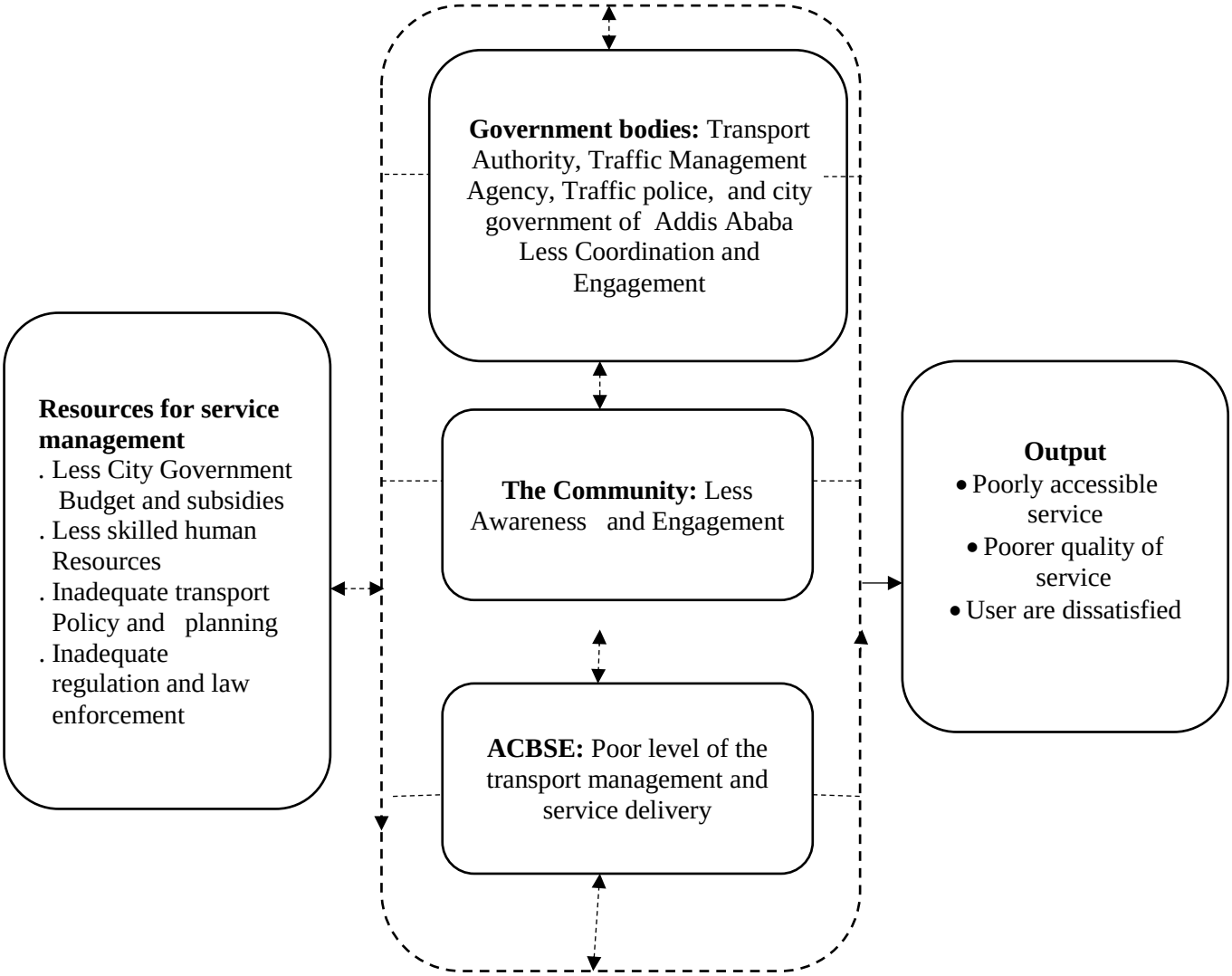

Figure 6. 3 Current Anbessa bus service Delivery Model

Source: Author's own

Note: The solid lines indicate the existence of distinct stakeholders, managerial instruments, resources and the final output. The broken lines and arrows indicate fragmented interaction of stakeholders, resources and managerial instruments, resulting in less accessibility and poor quality of Anbessa bus service.

6.3.1. The Community as stakeholders

In the ABSDM, the local community are perceived as informal stakeholders. Tsegaye (2015) confirmed that there are no systematized community engagement mechanisms through which users are able to address their personal feelings on the quality or inaccessibility of the service, or any relevant matters. Users are neither represented in the ABSDM 'model' along with other stakeholders; nor they are empowered to lobby the service provider nor the government to claim for accessible service (refer to Chapter 4, Section 4.5.2 and Table 5. 3). Instead, a few pro-government groups participated in the forum held once or twice a year with other actors and the operator. The users also confirmed this, perceiving themselves as recipients of tailor-made services under the patronage of the transport agencies (Tsegaye, 2015). The respondents noted that the users are able to address their routine complaints directly to the operator through dedicated telephone lines, visiting the central office or the assigned staff at the transit terminals. In reality, however, users could confirm that they were not represented in planning, implementation and review of the bus service accessibility; indicating that the transport governance of the city is non-inclusive. The community has inadequate awareness of the right to claim of for accessible public transport. They are seldom participants in any form, except when a 'public' forum is conducted at undefined time(s) during the year (see Table 5. 3). Generally, the local community is meant to reflect user interests and feelings on the accessibility and quality of service if they are invited to a round-table discussion or make an interaction through a dedicated channel. However, this feedback may be ineffectual if there is low awareness of, and/or engagement with, the roundtable opportunities.

6.3.2. The Law Enforcement and Regulatory bodies

ATMA and ATP are the law enforcement bodies responsible for road traffic monitoring in the city (Yilma, 2014). These two agencies are engaged in setting law enforcement policies, traffic rules such as speed limits, marking of traffic signals, and identification of public parking areas.

The law enforcement plays a pivotal role to make sure that an acceptable quality of service is maintained so that the safety and comfort of users are not compromised. This means that the public transport policy and law enforcement system are two wings of service quality that are essential in enabling Anbessa to meet their user's expectations (Ministry of Transport, 2011; Yilma, 2014). Of course, these could not be possible without the commitment of the

government to allocate adequate resources that allows the recruitment of material, skilled human resources and technology to foster the public transport system. Unfortunately, the results from the current study have indicated that the poor coordination and commitment of actors in the law enforcement system has impaired the accessibility of public transport in Addis Ababa.

ATA is the body responsible for regulating public transport providers in the city. For example, this includes setting transport planning and policies, adjusting travel fares, and construction of bus stops and transit shelters across the city (Ministry of Transport, 2011). Thus, ACBSE is directly accountable to this regulatory body. The Addis Ababa Roads Construction Authority is another department of the city's roads and transport bureau that carries out road construction across the city in accordance with an approved budget from the city or federal government (refer Chapter 4, Section 4.5).

Delivery of an accessible service is an output reflecting the joint effort of commitment between the stakeholders in framing public transport policy that is suitable, considering the urban dynamics in the operating context (Batcha, 2013). The stakeholders 'share' duties and responsibilities that are intended to enhance the mass mobility service within the city. In the case of Addis Ababa, stakeholders have formed an ad-hoc committee composed of the regulatory and law enforcement bodies, and this conducts assessments and holds review meetings (e.g. weekly) to analyse the prevailing service delivery conditions. Apart from routine management duties for the Anbessa bus service, the notion of this ad-hoc committee management came to exist because the operator and government agencies could not continue to adequately meet the interests of users by working in a fragmented manner (see Section 5.8 and Table 5.2). Nevertheless, there remains no progressive improvement of the bus service accessibility and binding rules or policy (regulatory) instruments holding the stakeholders accountable for poor commitment or wrong doings (see Chapter 4, Section 4.5.3). In this way, it seems that whilst collaboration does occur, it does not seem to be highly functional.

6.3.3. Policy and Regulatory Instruments

Anbessa bus stakeholders lack a policy instrument that defines the boundary of their jurisdiction, responsibilities and accountabilities. For example, ACBSE claims that the installation and management of the bus stops and transit shelters was under their jurisdiction until December 2015. However, the interview data revealed that, at the present time, stakeholders regard that this mandate currently sits with ATA. In contrast to this, ACBSE does not accept the notion of shifting the jurisdiction, because they claim this resulted in bureaucratic bottlenecks, misunderstandings and less concern from the Authority. Here, ACBSE understands that the right to install and manage distinct bus stops and transit shelters were compromised because there is no coordination between the two bodies. This confusion of roles deterred the connectivity of the bus and the problems remain unsolved (Kumar & Barrett, 2008).

The absence clear regulatory and policy instrument has resulted in diffused commitment of the law enforcement agencies, combined with their fragmented actions with other stakeholders has worsened the quality of the service. The conceptual model in Figure 6.3 can be helpful in identifying that customer service problems are also related to inadequate regulatory and policy frameworks driving to poor accessibility outcomes.

6.3.4. Resources Allocation and Management

The current model of operations being used by Anbessa Bus is intended to optimise the existing resources, and coordinate the actors in such a way that the bus service is accessible and that the service provision can respond to the ever-increasing demand. However, the city government is the responsible body for allocating financial and non-financial resources, because ACBSE itself operates under loss (see Chapter 4, Section 4.7.2) and Berhan et al. (2013). This includes procurement of buses and parts, provision of land for building depots, transit shelters, bus stops, provision of subsidies for users per trip, and financing the recurrent budget of the transport operation. Thus, ACBSE procures buses based on the adequacy of the government budget.

The notion of allocating adequate budget is based on the assumption that the transport agencies and the operator are able to convince the city government to arrange different financing schemes. Sometimes allocation of an adequate budget or arrangement of suitable financing mechanisms goes beyond the scope of the city government. In this regard, the federal

government plays a pivotal role in facilitating financial or non-financial resource acquisition but this seems to be rarely practised (Gebeyehu & Takano, 2008). Considering the inadequacy of the resources, this study confirmed that yet the level of the service provision has far remained unimproved.

Achieving good service quality could be possible once the resources and stakeholders are engaged in such way that the management system addresses the mobility needs of all users (including those on lower income). For example, the ability to connect (switch) Anbessa bus service is an important characteristic of a well-functioning system, especially in terms of serving customers requiring long-distance mobility (Bodmer & Martins, 2003). This could be influenced by the spatial expansion of the city versus the limited number of buses. Evidence shows that the number of vehicles in use by Anbessa is decreasing in number, due to physical fatigue over long years of service (18 and above). The city government is not able to allocate adequate funding for the procurement of adequate number of buses (Fenta, 2014; World Bank, 2014a). The reason why the government is not able to recruit adequate number of buses is derived for two possible reasons: limited attention of the government to enhance the mobility system, or budget shortages. Regardless of the reason, this has resulted in overcrowding of the available buses, which does not enable users to connect from different transit stations in real-time. In this regard, users encounter long waiting times and poor connectivity of the buses between different routes, resulting in a generally unreliable service (World Bank, 2014a).

6.3.5. Performance of ACBSE

As an operator, ACBSE works with other actors in the service provision. It delivers a mobility service along fixed routes on traditional basis. This means that the transport operations, customer service and information provision for users are being conducted on very outdated practices. The buses are physically deteriorated because they have been serving without replacement over a long duration. The number of buses assigned along a given route remains even throughout the day, despite the varying demand at different hours. This is problematic because the service is not demand responsive with respect to time and condition (Gebeyehu & Takano, 2008).

The study confirmed that the quality of Anbessa city bus service is poor. For example, the in-depth interview respondents, including the users, stated that the operator was unable to avoid

the risk of overcrowding in the bus and enabling the ventilators for comfortable commuting (see Chapter 5, Tables 5.1). A study conducted in 14 sub-Saharan countries confirmed that Anbessa city bus peak load factor is as high as 150% of the rated capacity (Kumar & Barrett, 2008). This could originate from different dimensions: diffusion of commitment of the regulators to define a standard of safety and comfort including sanitation of the bus and wellbeing of users; absence of limit to the carrying capacity of buses; and the speed and service duration of a given bus as parameters (Ministry of Transport, 2011; Tsegaye, 2015).

The inflexibility of Anbessa bus service could be seen as another aspect that challenges users in meeting their routine transport needs (see Chapter 5, Section 5.6.3). This depends on the level of competency of the service provider to understand the prevailing need and introduce a demand responsive transport service in terms of time, travel routes and fare (Gebeyehu & Takano, 2008). Demand responsive service, however, is possible with adequate number of buses that should be assigned during some given hours in day. In this regard, the operator assigns the buses along certain routes based on the prevailing demand, and adjusts the fare with a limited marginal increase to commute users towards a certain destination. Anbessa bus is, however, not in a position to deliver such demand responsive service through their own vehicles (Abreha, 2007). Rather, the ACBSE recruits non-Anbessa buses as a support to fill the residual gap during the morning and evening peak hours, as a short-term solution (see Chapter 4, Section 4.7.3). Unfortunately, this arrangement is unsustainable because the availability of non-Anbessa (long distance) bus services at the time depends on the availability of laid-off buses and willingness of the other operating companies at a particular time. The nature of resource mobilization in the current model, thus, is a large contributor to the unreliability of the service (Berhan *et al*., 2013).

Another of the findings of this study is that the respondents reported that drivers or cash collectors were the perpetrators of poor customer service (refer Chapter 4, Subsection 4.10.1–2). However, in considering the overall service delivery model, the scenario goes beyond this. For example, complaint handling, assignment of additional buses to high-demand routes, real-time information sharing and arrangement of the buses in a way that enhances connectivity are also important parts of the bus service provision (see Chapter 5, Subsections 5.8.1–3). It is also worth mentioning that the quality of customer service, in terms of safety and comfort, has

deteriorated due to ACBSE's weak policy to consider marginal income for the cash collectors and drivers per additional trip generated for a user. This has resulted in overcrowding of the bus until it is difficult to close the doors, suffocation and frequent stopping on the route (Abreha, 2007; Gebeyehu & Takano, 2008). Here, whilst the higher income users tended to shift to other means of commuting, e.g. shared taxis or the metro train, the lower income users remained with Anbessa bus, waiting for long times for a less crowded bus that may arrive at the later time.

Another concern is that ACBSE operations are not supported by automation. For example, users are not able to buy electronic cards or tickets and recharge at any time. Instead, users are required to buy readymade tickets of a uniform fare for a given route, irrespective of the preferred destination (distance); and users are also limited in their ability to access real-time travel information online at transit stations (see Chapter 4, Subsection 4.9.2). What occurs, then, is that a crowd of users manoeuvre to buy the tickets through the (bus) ticket-shopping window while a portion of the expectant users miss it, and thus have to wait for other opportunities or shift to another mode of commuting (Fenta, 2014). Overall, the poor accessibility of Anbessa bus service is an outcome of a complex arrangement of the transport governance, stakeholder coordination, and (inadequate) resource mobilization and management.

6.3.6. Quality of service provision

The quality of Anbessa bus service is a scenario that encompasses different stakeholders and resources. It is concerned with not only ACBSE's direct relationship with users, but also the coordination and engagement of relevant stakeholders, inclusiveness of the policy, adequacy of resources, and expertise of the employees (Kumar & Barrett, 2008; World Bank, 2014a). The above findings revealed that the historical difficulties (legacy issues) continue to impair the current mode of Anbessa bus service, especially in terms of bus connectivity, service reliability and dependability of the waiting time. These findings are also supported by some other studies (Abreha, 2007; Tsegaye, 2015). A World Bank (2014a) study showed that weaknesses of public transport provision in Addis Ababa is mainly concerned with poor transport governance attributed to weak regulation, law enforcement, transport planning and coordination that resulted in poor quality of service.

6.4. PROPOSED ANBESSA BUS SERVICE ACCESSIBILITY MODEL

The challenges facing Anbessa bus service provision are manageable, but require an inclusive and strategic approach. This necessitates (re)considering basic features (strengths and weaknesses) existing in the current model; and creating a novel and more applicable model, which can be sustainable in light of the city's mobility dynamics. This involves a mixture of strengthening institutional capacities, policy improvements, new ways of detecting and resolving mobility related problems, and setting priorities that can continue to govern resource management, productivity and meet the end user's expectations.

This new model is named '*Integrated Approach to Accessible Anbessa Bus Service Delivery*' (Figure 6.3). Here, the term 'integrated' is intended to encompass the essential components and processes of any well-functioning public transport system, including policy instruments and regulatory issues, resource mobilization and management, transport operation, infrastructure arrangement and proper coordination of stakeholders, including active engagement with the local community (Bodmer & Martins, 2003).

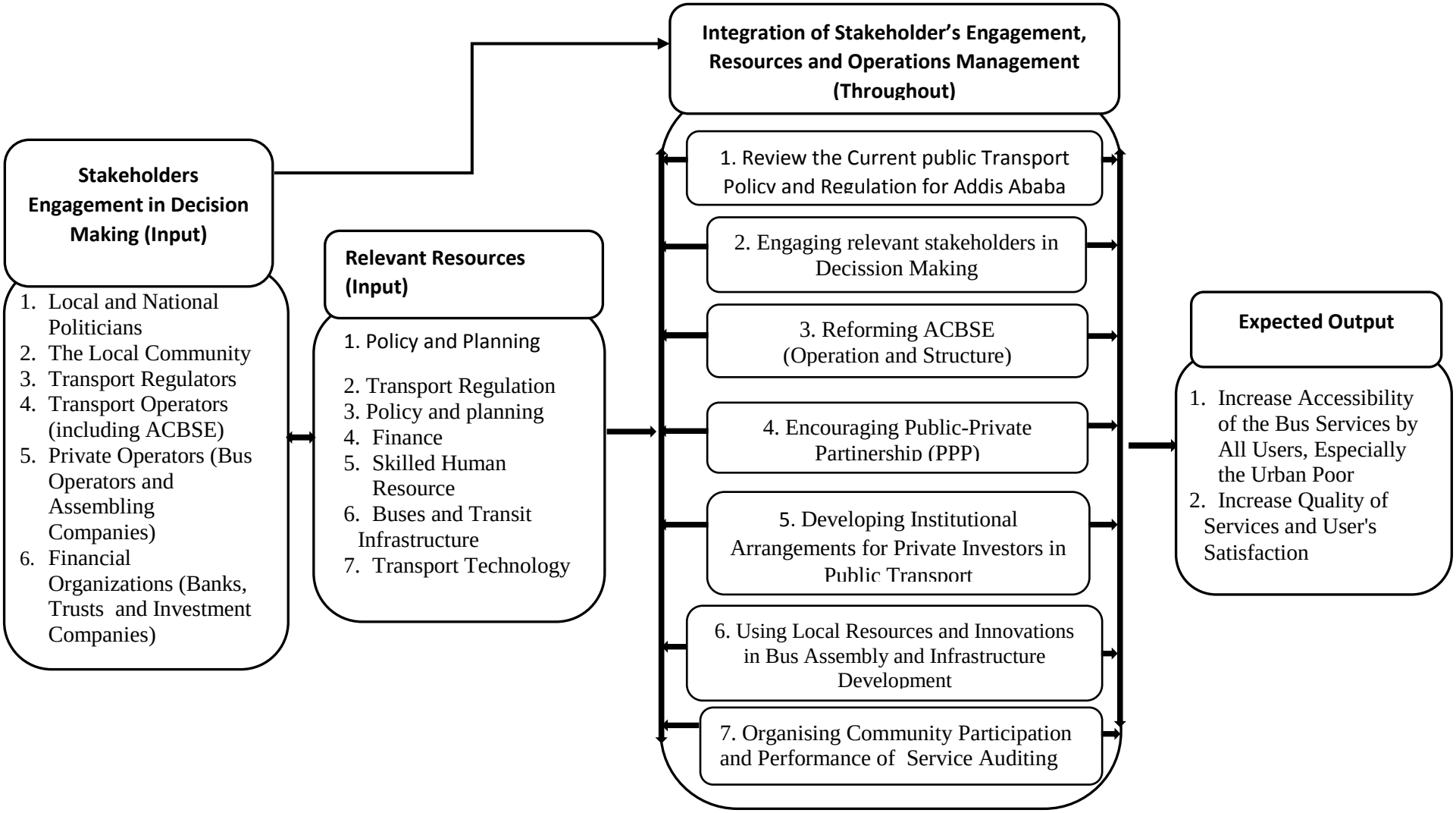

Figure 6. 4 Integrated Approach to Accessible Anbessa Bus Service Delivery.

Source: Author's Own

6.4.1. Reforming ACBSE Operation and Management

Organizational reform is important in achieving a better customer-oriented service delivery. The structural and operational reform in ACBSE should involve matching of (skilled) human resources to the demand that has been created application of transport technologies, standardising the quality of operation and setting platforms for users interface (Wright et al., 2014).

An acceptable standard of transport operation is a particular aspect of an accessible service provision in which safety and comfort of users, customer handling, time management, and inspection and maintenance of the buses are given considerable attention (World Bank, 2014b). Supporting this, a recent study by Ngoc, Hung, and Tuan (2017, p. 4567) identified that sixteen quality elements should be considered in reforming public transport services of developing countries. These are network coverage, span of service, frequency, punctuality, travel time, fare, bus comfort, safety, security, stop comfort, walking distance and walking environment, accessibility for disabled person, driver behaviour, seating condition, cleanliness, and passenger information. Some of the notions of this reform should be derived from national, state or local government regulations or adopted from operators in different countries; assuming that influences of externalities (e.g. infrastructure condition) remain inevitable. The enactment of such considerable reform is vital in accomplishing the demand responsiveness of the service (Wright *et al*., 2014).

6.4.2. Community Awareness and Engagement

The in-depth interview respondents and users provided inconsistent views in relation to the awareness and engagement of users in the service provision. Whilst the in-depth interview respondents stated the community is aware of claiming for accessible Anbessa bus service through different channels of communication, the statistical results confirmed that users were less aware, less communicated with, and very unlikely (if at all), to be engaged to communicate in this sphere. The user's poor engagement could be intentional, if it could be concluded that the stakeholders are less committed to follow participative transport governance. In this scenario the regulators or the operator become less interested in working with the public or civil society group given that they inherently know that the existing service delivery model doesn't address the mobility need of the users. Thus, participation of local community would be unhelpful, as they are already aware that they are unable to address their

emerging requests. Second, the majority of Anbessa bus users are low-income people with little or no literacy. This does not mean, however, that they are not able to bring forward ideas that may help address their mobility concerns. Where proper opportunities are made available, users are able to rectify their routine mobility problems to the concerned body irrespective of their literacy level or through their representatives such as advocacy groups and residential associations.

Genuine community engagement is a wide concept in which ordinary citizens, regardless of their social, political, economic or demographic background are welcomed to reflect their views and intentions regarding the accessibility and quality of the service. One of the valuable notions of social inclusion in the service delivery system is that it highlights the need for participation of people in societal governance processes and boosts empowerment of individuals, and thus reduces apathy, powerlessness and lack of interest (Hodgson & Turner, 2003). Such participation could be through interested individuals, community representatives, or public transport advocacy groups entitled to promote public transport services (Sagaris, 2010, 2014). For example, ACBSE may invite community representatives or advocacy groups to participate in policymaking, attend particular events where the accessibility and quality of service are on the agenda. The community groups can also form social networks (e.g. a consumers' association) in which they are capable of lobbying the stakeholders in the delivery system for further improvement (Sagaris, 2010, 2014). Users can also raise their routine mobility problems and prospects through dedicated channels, such as social or electronic media, company's web pages, email, or toll free telephone lines. Overall, community awareness and engagement is an essential element in improving the accessibility and quality of Anbessa bus service. Bus users' awareness, when combined with empowerment, is fruitful to influence the service provider or the regulator in a way that the mobility right of users is not compromised (Sohail et al., 2006; Sohail et al., 2004).

6.4.3. Strengthening Institutions Involved in Public Transport

A strong mix of regulatory, law enforcement and operating institutions are essential in setting a standard of operation and maintaining the quality of service. The World Bank (2014a, p. 9) believes that six main factors are attributed to the strengthening of public transport institutions in Addis Ababa (see Table 6.1. overleaf).

Table 6. 1. Recommendations for strengthening public transport institutions

No	Institutional Factors	Possible recommendations specific for the Addis Ababa context
1	Effective organization of the institutions	Functions of a strategic, tactical and operational nature should be incorporated into an institutional framework that makes sense in the local context.
2	Mobilizing and engaging the human capital	The challenge in Addis Ababa is not necessarily the fact that the skills toward more effective transport management are not available in the market, but rather ensuring that the right skills are in the right jobs, and utilised effectively.
3	Creating and exploiting the social capital	This means developing the expertise to sequence and execute studies in order to arrive at well-considered, evidence-based solutions at every step of the project development cycle.
4	ICT functions in institutional arrangements and transport management	Managing public expectations – helping the public to understand how and why to use new transport services or how and why fares or services are changing – is a critical and integral part of what transport institutions are meant to do, so those functions have to be built into the very core of the way those institutions are structured and organized.
5	Creating public values	Lead institutions should create 'public value' in a visible way, early in their institutional life.
6	Political support	High-level political support can ensure that the lead agency will be able to carry out its mandated functions, obtain the financial resources it needs to support high-calibre staff, and manage internal opposition to reform programs.

Source: World Bank (2014a, p.9)

6.4.4. Introducing public private partnership (PPP) to Anbessa bus service

The development and first operations of public transport facilities and service provision entities demands substantial financing capacity. The introduction of PPP is a new trend in middle-income developing countries as a means of evolving away from previously familiar trends of ownership and service operations (Gordon, 2012). For example, a comparative study made in Latin American cities (Bogota, Santiago, Sao Paulo) and several cities of China and India suggest that despite delays and mistakes that were made in development of most of the PPP projects, the overall results were very positive (Willoughby, 2013).

Familiarising PPP with ACBSE is also important because the private sector represents an important means to add innovations as well as technical and managerial skills to service delivery. This could be perceived as a different service delivery model, but in reality, it could be considered a complimentary to the '*Integrated Anbessa bus service Delivery Model'*. PPP is a 'win-win' approach where the private sector would customise the efficiency, finances the service provision system, and expects return on investment. The public sector, on the other hand, sets service quality standards and demands public value (Willoughby, 2013). The drawback of PPP could be the fact that lower income users may not be able to afford the fare, if these were significantly increased due to nature of the new model. To resolve this, the World Bank (2014b) study stated that the private sector can provide the services that are the responsibility of the public sector through government compensation and subsidy arrangements. This could be taken as a means of attracting the private sector to the competitive market in the provision of equitable service to all users.

The widest and most important advantage of the PPP arrangements, when compared with more conventional short-term contracting, is in relation to the innovations (both technical and managerial) that are developed; as well as the mutual capacity building of the countries' private and public sectors and their more effective interaction. The experience of six developing countries suggests that ACBSE could be best assisted to develop sound PPPs more rapidly if it were offered assistance on specific items. For example, these are likely to include civic consultation systems, land-use/transport strategic planning, land/property market management, management contracting, monitoring systems, progressive policies, economic regulation, and public institutional framework for PPPs (Baird, 2012; Willoughby, 2013). Implementation of this approach would assist the operator in delivering a better

public transport service for the users with an affordable fare, whilst also achieving a simultaneous return on investment for the private sector.

The service improvement would let PPP spread to different parts of the city, given that this approach is evaluated to be preferable over a given period.

6.4.5. Framing inclusive policy and regulatory instruments

Framing an inclusive public transport policy involves demarcation of stakeholder's jurisdictions, accountabilities and means of coordination. Effective public transport service is an outcome of clear and pertinent policy framework(s) that elucidate the accountability and jurisdiction of stakeholders (Kumar & Barrett, 2008). This involves close dialogue and coordination of the regulatory and law enforcement agencies; the operator (politicians); city government; the private sector and the community (Batcha, 2013). Moreover, Partnering between government authorities and the operator is vital in the improvement of Anbessa bus service. For example, Kranton (1991, p. 9) noted that: *"…the extent to which policies and official regulations determine the number and kind of modes available to the poor traveller depends on how effectively and diligently regulations are enforced." (Kranton, 1991, p. 9).*

Partnership of stakeholders also needs to consider different aspects of service delivery challenges and how these could be resolved (International Association of Public Transport, 2004). For example, diversification of Anbessa bus supply chain may involve partnering with domestic bus assembling companies as a means of resolving import policy barriers (see further comments in Section 6.5.2). Noticeably, some of the challenges in ACBSE goes beyond the scope of the policy dimensions that could be addressed by the stakeholders. For example, import of buses, parts and other infrastructure are affected by the country's trade policy and shortage of foreign exchanges. Evidence from one think-tank group (Schiller & Pillay, 2016) shows that the cost of imported vehicles in Ethiopia goes up to three times the retail price of the vehicles outside the Ethiopian market. These are mainly due to high volume and duplication of taxes. Resolving such difficulties require certain changes to policy and regulatory mechanisms through the involvement of senior politicians (Kranton, 1991). This approach greatly supports provides an aspiration to an improved the level of accessibility and quality of service.

6.4.6. Exploring semi-domestic innovations

Ethiopia is becoming a hub for small, medium, and large-scale manufacturing companies from different parts of the world (Schiller & Pillay, 2016). The situation is mainly related to the easy availability of cheap labour and attractive foreign direct investment incentive schemes from the government. Some automotive companies have already joined the car assembly market in Ethiopia. For example, IVECO (FIAT), Mesfin Industrial Engineering, Belayab Motors and Marathon Motors are some of the automobile and bus assembly companies that have just joined from the Ethiopian manufacturing sector (Desta, 2007; Schiller & Pillay, 2016). A visit through the webpages of these companies indicate that they assemble light automobiles, buses and trucks of international brands like Kia, Hyundai, Peugeot and many others of different sizes.

Supply-chain opportunities such as these, have different advantages for ACBSE as well as for the suppliers. Domestic bus assembly lines are the easiest way to procure adequate number of buses; as this reduces the lead time, scarcity of hard currency, and difficulty of custom clearance that is encountered when ordering vehicles from abroad. It fosters technology transfer to the manufacturing sector and enables the domestic car market to flourish. This in turn inspires the assemblers to deal with dominant urban transport service providers such as ACBSE in a way that they can obtain significant number of bus assembly orders and keep their parts supply intact. This depends, however, on the commitment of service providers, regulatory agencies, and the city government's coordination to arrange an adequate budget or credit facilities that maintains partnering with the local bus assemblers (Desta, 2007), (see detailed discussion in 6.5.3 below).

6.4.7. Strengthening Allocation and management of Resources

ACBSE is a non-for-profit public entity aimed at provision of mobility service, mainly to the low-income users in Addis Ababa. It is subsidised by the city government because the revenue generated does not cover the capital and recurring costs. Without adequate resources and management, the operator is unable to address the need for an equitable and accessible service with better quality. One of the main reasons for poor Anbessa bus service provision is its limited (financial) resources capability to recruit adequate number of buses, skilled human resources, and a technology that

maintains the transport management. ACBSE's financial resource gap demands thoughtful attention of the (city) government to form some arrangement with financial institutions or other creditors.

Financial resources are critically enabling for the effectiveness of public transport service. The city government and regulatory agencies play major role in understanding the performance level of Anbessa bus service, thereby financing the capital and operating costs would come to the agenda. This enables the operator to provide the expected service to the users, given that the resources and policy instruments are optimally utilised.

With regard to procurement of buses, the stakeholders should support the establishment of mass vehicles financing scheme in order to encourage ACBSE or private operators use the opportunity (Schiller & Pillay, 2016). In this regard, what really matters is the commitment of the higher government bodies (politicians) to understand the significance of increasing the number of buses; constructing more depots, transit shelters and traffic signals; and automation of ACBSE operation. Obviously, this requires significant budget allocation (Wright *et al*., 2014). The government can consider different means of financing such as allocation of budget from its account, or arrangement of credit facilities in collaboration with financial institutions. In the second scenario, the government can act as a collateral for a loan arrangement between creditors (local or international agencies), ACBSE, bus assembling companies or other (private) operators (World Bank, 2014b).

6.4.8. Expected Output of the Model

Application of the proposed model has some positive outputs. These include:

- Anbessa bus service will be accessible at all users, especially the urban poor;
- The overall improvement of service in terms of accessibility and quality will ultimately result in satisfied users.

6.5. SUMMARY

ACBSE has currently adopted an ad-hoc committee management in the current service delivery model. Apart from the operator's 'structured' transport operation, the service delivery is under direct supervision of an ad-hoc committee composed of the law enforcement, regulatory agencies and

ACBSE, yet the local community are not currently represented. This 'model' could thus be regarded as ineffective because the public bus service system suffers from the scarcity of resources, infrastructure and transport facilities, poor transport governance, and reliance on a traditional (but now outdated) operation of the bus service. There are no adequate managerial or regulatory instruments put in place for the effectiveness of the model, which resulted in poor commitment and fragmented actions of the stakeholders. Thus, Anbessa bus service is found to be unreliable, with users being dissatisfied with connecting the bus between different routes, and the waiting time being much higher than is the expected standard in developing countries.

The current service delivery 'model' mainly focuses on addressing the short-term problems, rather than dealing with a sustainable solution that tackles the root causes of the issues. This includes arrangement of non-Anbessa buses to serve as supplementary vehicles to address the residual gap between the demand and supply, monitoring the evaluation of the service, the law enforcement on weekly basis.

Experiences from the current 'model' suggests for further analyses to be done in evolving the performance of Anbessa bus service delivery. The new model is named as "*Integrated approach to Accessible Anbessa bus service delivery*". An integrated approach is to mean inclusive public transport policy, allocation of adequate resources and management, modernising the transport operation, coordinating the stakeholder and representing the local community as active participants. Overall, the newly proposed model indicated that accessible Anbessa bus service delivery encompasses collective commitment of all the stakeholders. Based on the notions in the proposed model, key recommendations are given in the next chapter.

CHAPTER SEVEN: CONCLUSIONS AND RECOMMENDATIONS

7.1. INTRODUCTION

This research has examined the factors affecting accessibility of the public bus service in Addis Ababa through a case study of Kolfe-Keraniyo sub-city, and has proposed a model to analyse and address the accessibility difficulties being experienced in the public bus service delivery. This final chapter summarises the key findings and reflects on each of the research questions; and it acknowledges the delimitations and limitations encountered during the study. Finally, recommendations in relation to policy and operational improvements were made, and areas of future research opportunities were identified.

7.2. KEY FINDINGS OF THE STUDY

Public transport is the most common means of commuting in Addis Ababa. However, due to high population growth, strong rural-urban migration, and industrialization of the city, the gap between demand and supply is ever increasing. This has made the public transport service become highly in demand, especially by the people in the lower-income cohort. Consequently, informal shared taxis and buses, as well as the formal Anbessa buses are the dominant means of commuting. This study particularly chose to examine the Anbessa bus service, given that is has a majority share in servicing the public transport needs of residents in the peri-urban areas. Notwithstanding this, ACBSE is mainly subsidised by the city government because the revenue generated does not cover the operating cost.

This study clearly demonstrated that the Anbessa bus service is not easily accessible to the users in KKSC, which in turn has negative impacts on the service quality, compared with the expectations of the users. From both the stakeholder's interviews and the user's survey, it was noted that the poor performance of the operator arises from a range of interrelated factors. Amongst these, the most strongly influential features were those such as the outdated mode of transport operation; the limited number of buses compared with the ever-growing population of the city; poor public transport governance (e.g., ineffective coordination of stakeholders); a weak law enforcement system;

inadequate or worn-out road and traffic control facilities; and limited community participation in the service-delivery system.

The research data also illustrated that the poor transport operations currently results in long waiting times, poor connectivity between different bus routes and an unreliable commuting environment within the bus system. It is unlikely that the fare is affordable to the lower income dwellers; the connectivity of this 'cheapest' mode of commuting (public buses) is compromised because of the levels of passenger overcrowding, and overall, the mobility service is not demand responsive. Thus, in order to avoid engaging with an unreliable service, the lower-income dwellers prefer to walk, especially when their preferred destination is at a close proximity to their residential district. This may be contributing to further disadvantage to an already vulnerable community sector, and unless it is addressed, it seems that future socio-economic growth of Addis Ababa will continue to be uneven and/or unrealised in terms of its full potential.

The inaccessibility of Anbessa bus service is a combined outcome of many interrelated factors. The poor transport operation could be interpreted as being primarily the problem of the operator. It is true that ACBSE is losing active buses due to fleet aging and the difficulty of obtaining spare parts promptly. However, in this regard, neither the operator nor the city government have shown a commitment to engage additional buses, nor optimise the existing resources in order to cope with the growing demand. Hence, the issue does not rest solely with Anbessa itself. Furthermore, in relation to this, the study revealed that there is no regulatory instrument or a policy dictating the operator to limit the year of service, disposal, and safety standard of the buses. ACBSE continues to engage the aged vehicles for an indefinite time in service, given that the spare parts are available on the market and maintenance is possible; but it does so because the regulatory environment permits such practices. Similarly, the traffic law enforcement is inadequate in Addis Ababa in general, and in KKSC in particular, and this creates an ongoing accessibility issues for Anbessa. Poor traffic enforcement has resulted in road congestion, poor driver behaviour, and overcrowding of the buses.

Anbessa bus operation is not currently automated by an ITS to support the transport operation in disseminating real-time travel information and safety precaution. Users hardly access the service at

an intended time because the operator does not provide real-time travel information. Here, the users were required to wait the bus for its random arrival (for at least 30 minutes) in condition where transit shelters and public seating are poorly maintained. Thus, users are unable to connect between different routes easily, particularly during peak hours of a day and severe weather conditions. Compounding this problem is the issue that the bus transit routes in KKSC are narrow, worn-out, and public buses have no priority lanes. The mixed traffic system and series of roadside parking, street vending, and absence of adequate pedestrian walkways have resulted in congestion and thus delays of Anbessa buses to arrive at a given destination.

The study also revealed that the bus service is poorly accessible to users at peripheral districts, such as in KKSC, who are located away from the depots. Despite being the biggest and only state-owned transport operator, Anbessa bus also lacks adequate transit stations or bus stops in the sub-city, resulting in users needing to walk for at least 20 minutes from the bus stop to their destination. There are only three depots for refuelling, maintenance and parking of Anbessa buses. Similarly, ACBSE possesses four transit terminals that enable users to connect between buses along different routes across the city. Compared with spatial expansion and growing demand, the facilities are inadequate to accommodate users in the ten sub-cities, notwithstanding the poor management of these facilities. Such difficulties could be curbed given that the facilities are available in each sub-city. The bus and other road-based transport systems in KKSC is not supported by adequate traffic marks and facilities along the transit routes, resulting in poor safety of public transport users. It is clear, then, that Anbessa bus service unreliability is heavily influenced by a lack of infrastructure and automation – at standards that would be otherwise be considered reasonable for a contemporary service. This is especially problematic for the lower-income classes of Ethiopia's capital, who rely principally on the bus service for their commuting needs.

Experiences of other countries attest that community engagement is an important element of good transport governance, as it is critical in maintaining a sustainable 'checks and balances' of the system. Anbessa bus service delivery has already involved various stakeholders engaged in different roles, which is a positive feature of their operations. Nevertheless, this study found that one of the main challenges contributing to the poor accessibility of the service delivery is that the stakeholders are not working together within an accountable framework. Instead, they act in a fragmented manner because

there is no regulatory instrument dictating them to work collaboratively, and they are not accountable for their poor commitments or any wrongdoing. Similarly, the local community appear to have been poorly engaged as stakeholders because they are poorly privileged and hardly empowered to express their expectation or complain about the service. Thus, the current Anbessa bus service delivery model is non-inclusive.

7.3. ADDRESSING THE RESEARCH QUESTIONS

The study has engaged with an extensive literature review, and conducted a bus user's survey and stakeholder interviews in order to address the four research questions presented in chapter one. These were as follows:

Research Question 1: How does the nature of involvement of stakeholders influence the accessibility of Anbessa bus service?

This research question was answered in chapter four and five. ACBSE works with ATMA, ATP, ATA, and TPO because they are the main regulatory and law enforcement bodies involved in the public transport service provision. The Kolfe-Keraniyo case study revealed that poor coordination and commitment of the stakeholders, absence of jurisdictional boundaries, confusion of roles, and poor accountability for wrongdoing were responsible for impaired accessibility of the Anbessa bus service. Similarly, the regulatory, law enforcement and policy instruments are insufficient and thus the poor transport governance is found to exacerbate the inaccessibility of the service.

Research Question 2: What is the experience (and perception) of users regarding Anbessa bus service accessibility in KKSC, Addis Ababa?

The analysis of stakeholder's opinions (Chapter Four) and the quantitative case study of user perceptions and experiences of Anbessa bus service (Chapter five) directly addressed this question. The key finding here was that bus users encounter a number of challenges in the bus service delivery. This includes overcrowding, low safety outcomes, long waiting hours, and an inability to connect the bus between different routes at a given time. The unreliability of the service is especially problematic, depending on (peak) hours during the day.

Research Question 3: How do the current features of service delivery affect the accessibility of Anbessa bus in KKSC?

Both the in-depth interview respondents and bus users clearly indicated that accessibility of Anbessa bus service is poor. One of the key findings of chapter five was that the expectation of users is impaired because accessibility of Anbessa bus service is compromised. The three logistic regression models that were built (in Chapter five) to detect reliability of the service; the user's waiting time and their satisfaction to be able to connect the bus between different routes also attested that Anbessa bus service is poorly accessible. In addition to this, the thematic content analysis (Chapter four), specifically on the accessibility of Anbessa bus service and the broader transport planning and operations arrangements in the city indicated that the service is ineffective. Overall, the findings in both chapters of the substantive primary data confirmed that Anbessa bus service is inaccessible to the users; and thus service delivery is ineffective.

Research Question 4: How might the current service delivery model be adjusted to ultimately realize a more accessible and effective Anbessa bus service in Addis Ababa?

In order to answer this research question properly, a new Anbessa bus service delivery model has been proposed. This model illustrates how the stakeholders, the relevant inputs and resources, and the overall system can be integrated in order to increase the accessibility and quality of bus services and therefore to increase use's satisfaction.

7.4. LIMITATIONS OF THE STUDY

It is important to acknowledge those facets of the study that may limit the rigour, applicability or 'generalisability' of the results in Addis Ababa, as well as in the context of transport systems in other developing nations. After the data collection was finalised, one of the limitations observed was that the survey questionnaire did not contain a specific question asking the users if the Anbessa bus service was 'accessible' for them. In order to fill this gap, three survey questions that were considered to describe the accessibility of Anbessa bus service, i.e., reliability of the service, waiting time, and satisfaction of users in connecting the bus between different routes, were considered as approximations in lieu of having one survey item that was specific to 'accessibility'. Thus, logistic regression models were built for each of these three dependent variables. The results showed that

accessibility of the bus service is a combined outcome of the three variables in the models. The three models have depicted that Anbessa bus is least accessible in the sub-city mainly because the service was unreliable, the waiting time is longer and users were dissatisfied with the connectivity of the bus service between different routes.

The second limitation is again related to the scales in the survey design and iterative questions. In order to minimise the inherent statistical error, any Likert-type response scales were converted by merging the items into two categories: the 'agreement' category incorporated the strongly agree or agree items; whereas the 'disagreement' category incorporated the neutral, disagree and strongly disagree items before applying any statistical analyses. This adjustment was applied based on the assumption that users remain neutral when they are not satisfied with the existing service delivery. Of note, some items also had missed cases, which represented examples where bus users selected answers such as 'rather not say', 'I don't know', 'not sure', or 'cannot be determined'. Thus, the final usable sample sizes differed amongst the items in the overall survey. In particular, sample sizes for two particular questions[18] were considerably lower because these were iterative questions, with answers only sought from participants who had selected 'yes' in the preceding item.

Currently, Addis Ababa has three state owned bus service providers, including ACBSE, plus a single private-owned bus service provider. In addition to this, the non-institutionalised buses and shared taxies commonly deliver mobility service across the city. One of the delimitations of this study is that it mainly focused on the factors that were considered to affect the accessibility of Anbessa bus service, particularly in KKSC, Addis Ababa, because peripheral sub-cities are less privileged for urban mobility service. This is because ACBSE is the largest public bus provider in Addis Ababa and the main service provider in KKSC. It included factors related to the operator's transport planning, operations and management, engagement of the stakeholders, resources mobilization and management, road and traffic facilities, transport planning and regulatory instruments that affect the quality of Anbessa bus service in the sub-city. However, the study was not able to explore the interaction of Anbessa services with other formal and informal mobility modes, as this was outside of the scope of the project.

[18] These were the awareness of users about public consultation events, and the experience of users to obtain satisfactory feedback for their complaints, survey items 20 (b) and 22 (b) respectively.

Another delimitation is that this study engaged with representatives of all stakeholders, namely the service provider, the regulatory and law enforcement agencies and the community, in collecting the primary data. For example, users aging 18 and above in KKSC were invited to share their feelings about the accessibility of Anbessa bus service. The survey sample size was initially proposed to be 165. However, 31 additional surveys were collected to ensure 100% completion of responding the questions. However, it was found later that 196 respondents had answered all the questions. Thus, the sample size was adjusted to 196. The increase in number of respondents has helped in finding reliable response from the bus users. The sample size (n=165 + 31) was statistically determined to represent KKSC. It was determined that the demographics across the cohort was also reflective of the population in the sub-city.

On the issue of project scope, it should be noted that efficiency measures in relation to engineering aspects of road facilities and planning, the built environment, and spatial analyses were not considered in exploring the accessibility of Anbessa bus service and in proposing a new model. This could be taken as another delimitation in the study, although it should also be acknowledged that the study was designed to focus on stakeholders and their relationships, and not engineering relationships. It did, however, have some emphasis on business aspects, to understand how Anbessa bus service has become inaccessible particularly to the lower income users. The new model was also proposed from this viewpoint.

The final delimitation is that the in-depth interview was not conducted with ATP because ATMA is, by law, the maker of traffic rules; although the ATP is partially delegated to oversee enforcement of these. Similarly, the non-institutionalised and recently formed transport operators were not considered in this study. It was considered that broadening the project to include these in the scope would be difficult to accomplish given that study time and other resources were limited.

7.5. KEY RECOMMENDATIONS

Based on the newly proposed model the following key recommendations have been drawn:

Recommendation 1: All the stakeholders, including the local community need to be active participants in Anbessa bus service provision. This could be through involvement in policy design and implementation, monitoring and evaluation of the quality and effectiveness of the service, enforcement of the traffic laws, and provision of road and transit facilities. Here it should be understood that the policy and regulatory instruments need to be inclusive – but equally, they should demarcate the jurisdiction of each stakeholder and nature of their accountability.

Recommendation 2: The model named '*Integrated approach to Accessible Anbessa bus service delivery*' cannot be realised without adequate allocation of resources (as indicated in Figure 6.3). All these resources are equally important for the operator to achieve the intended goal. Politicians and regulatory bodies should be willing and committed in allocating these resources to enable an accessible and effective service delivery in Addis Ababa. On the other hand, ACBSE has to be structurally and operationally reformed (dynamic) in such a way that it properly addresses the public transport demand and effective management of the resources.

Recommendation 3: An accessible Anbessa bus service delivery should involve different schemes that relevant stakeholders should give due attention to. In this regard:

- ACBSE should be able to introduce a public-private partnership to the service delivery model. This is expected to enable the operator to improve the quality and accessibility of service whereas the (entrant) private companies maximise their return on investment.
- The public transport institutions should be strengthened in terms of resource allocation, management and structural setting that ultimately supports the accessibility of Anbessa bus service.
- The government should encourage the procurement of adequate semi-domestic innovations (buses) that are manufactured with a standard quality to match the demand and supply. Here, the government should play a liaison role in the knowledge transfer, credit facilities and order management between ACBSE and the bus assembling companies.

- ACBSE transport planning and operation should be reformed in such a way that automation and intelligent transport management support it. The enterprise and regulators should play a pivotal role in transforming the transport planning and operations into a dynamic system that considers spatial expansion of the city, shortens the waiting time to match with the predefined standard, and disseminates reliable travel and safety information to the stakeholders.
- The (city) government should give due attention for developing or upgrading the road and traffic facilities, particularly in the peripheral sub-cities. This would minimise the road congestion; improve the mobility network between the sub-cities and districts, and foster the safety and comfort of users.

7.6. FUTURE RESEARCH AREAS

Adequate research has not yet been done on the improvement of public transport service delivery in Addis Ababa. This study revealed that more research gaps exist and it is necessary to conduct further studies on the city's public transport accessibility. For example, future studies can be done on the following areas:

- *A study on how traffic law enforcement affects public transport accessibility:* This study would help to answer some research questions such as 'what are the impediments in traffic law enforcement of the city? What are the socio-economic consequences of the existing law enforcement system? How does the law enforcement affect the accessibility of public transport in Addis Ababa?'
- *Resource management in city bus transport service provision:* Different research questions could be answered in this case, too. These include 'how does (mis)management of resources affect the accessibility of public transport in Addis Ababa? How should the scarce resources be optimised?'
- *Quality of service in informal transport service provision:* Many research questions could be raised here. To mention a few, 'is the fare affordable to majority of the dwellers? How does the informal service delivery impact the quality of service? How does the government regulate?'
- *Improving the engagement of the private operators in public transport:* A researcher can seek answers for research questions 'what is the share of private operators in Addis Ababa city public transport market? How do the city's public transport policy and regulations engage the

private operators? What are the main business risks that the private operators encounter to join the public transport market in Addis Ababa?'

- *Mobility related social inclusion/exclusion at peripheral sub-cities of Addis Ababa*: This research area is important to answer research questions as: 'How do residential proximities affect the accessibility of public transport? How does the spatial planning of residential districts deter the availability of mobility related infrastructures? What are the impediments that the government faces in the provision of transport facilities/service? What is the level of empowerment of the local community in influencing the government to provide the intended service? How might disadvantage for particular population sub-groups be better addressed or even overcome, by the introduction of a more accessible public transport system?

Further research could also be done on the feasibility of using modern tools for revenue collection (e.g. user pays systems); how to improve the current transport governance system; developing new theory and/or postulation on the relationship between accessibility to public services, productivity and quality of life. Active engagement of academicians, practitioners and relevant stakeholders in this area should play a significant role in exploring the policy imperatives and service improvements, and the role of good research in being able to inform evidence-based practice.

REFERENCES

Abegaz, T., Berhane, Y., Worku, A., & Assrat, A. (2014). Effectiveness of an improved road safety policy in Ethiopia: an interrupted time series study. *BMC Public Health, 14*, 539. doi:10.1186/1471-2458-14-539

Abreha, D. A. (2007). *Analysing Public Transport Performance Using Efficiency Measures and Spatial Analysis: The case of Addis Ababa, Ethiopia.* (Masters of Arts), International Institute for Geo-information Science and Earth Observation, (Unpublished), Enschede, The Netherlands.

Admassie, F. M. (2015). *Road Traffic Accidents: Causes and Control Mechanisms in Addis Ababa City.* (Master of Art), Addis Ababa University, (Unpublished), Addis Ababa, Ethiopia.

Anbalagan, C., & Kanagaraj, K. (2014). A Study on Problems and Prospects of Transport in Ethiopia: Special Reference with Auto Rickshaw's (Bajaj) in Hawassa City, SNNPRS, East Africa. *African International Journal of Research in Management, 02*(03), Pages 2308-3034, .

Arefi, M. (2013). Towards A Conceptual Framework for Urban Management: The Iranian Experience. *City, Culture and Society, 4*(1), 37-48.

Baird, G. M. (2012). Public–Private Partnerships for Municipal Utilities, Part 2: Governance Models Facing a Revolution. *American Water Works Association Journal*.

Barter, P. A. (2008). Public Planning with Business Delivery of Excellent Urban Public Transport. *Policy and Society, 27*(2), 103-114.

Batcha, S. F. B. K. (2013). *Understanding the Governance of Reforms to Urban Transport in Developing Cities.* (Doctor of Philosophy), University of Leeds.

Belwal, R., & Belwal, S. (2010). Public Transportation Services in Oman: A Study of Public Perceptions. *Journal of Public Transportation, 13*(4), 1-20.

Berhan, E., Beshah, B., & Kitaw, D. (2013). Performance Analysis on Public Bus Transport of the City of Addis Ababa. *International Journal of Computer Information Systems and Industrial Management Applications, Vol. 5*, 722-728.

Beuran, M., Gachassin, M., & Raballand, G. (2015). Are There Myths on Road Impact and Transport in Sub-Saharan Africa? *Development Policy Review, 33* (5), 673 -700.

Bliemer, M. C. J., Mulley, C., & Moutou, C. J. (2016). *Introduction to transport and urban planning in the developed world*. University of Amsterdam: Edward Elgar.

Bodmer, M., & Martins, J. A. (2003). *Transport service quality and social responsibility through the relationship marketing*. Paper presented at the International Conference Series on Competition and Ownership in Land Passenger Transport – 2003 – Rio De Janeiro, Brazil– Thredbo 8, Federal University of Rio de Jeneiro, Brazil.

Bordens, K. S., & Abbott, B. S. (2014). *Research Design and Methods : A Process Approach - Ninth Edition*. New York, USA: McGraw-Hill Education.

Bovaird, T., & Löffler, E. (2002). International Review of Administrative Sciences. *International Review of Administrative Sciences, 68*(1), 9-24.

Brinckerhoff, P., & Douglas, Q. (1998). *Land Use Impacts of Transportation:* . Washingotn National Academy Press.

Brusati, L., Fedele, P., & Ianniello, M. (2013). Public Governance from a Theoretical Model to Managerial Practice: Pilot Case Study in Italian Regional Governments. *Social Research, 3*(32), 51-57.

Cameron, R. (2009). A sequential mixed model research design: design, analytical and display issues. *International Journal of Multiple Research Approaches, 3*(2), 140-152.

Canonico, P., De Nito, E., Mangia, G., Mercurio, L., & Pezzillo Iacono, M. (2011). Regulation Issues in the Italian Local Transport System: Aligning Transactions and Governance Structures. *Journal of Management and Governance, 17*(4), 939-961. doi:10.1007/s10997-011-9205-2

Cavill, S., & Sohail, M. (2005). Improving Public Urban Services through Increased Accountability. *Journal of Professional Issues in Engineering Education and Practice, 131*(4), 263-273. doi:10.1061//ASCE/1052-3928/2005/131:4/263

Central Statistical Agency. (2011). *Ethiopia Demographic and Health Survey*. United States Agency for International Development (USAID). Calverton, Maryland, USA.

Central Statistical Agency. (2013). *Summary Report on the Employment Survey of Addis Ababa City*. Ethiopian Central Statitical Agency & Bureau of Labor and Social Affairs Addis Ababa, Ethiopia (Unpublished).

Cervero, R., & Day, J. (2008). Suburbanization and transit-oriented development in China. *Transport Policy, 15*(5), 315-323. doi:10.1016/j.tranpol.2008.12.011

Chakrabarty, B. K. (2001). Urban Management Concepts, Principles, Techniques and Education. *Cities, 18*(5), 331-345.

Chan, F., Dridi, M., Mesghouni, K., & Borne, P. (2005). Traffic Control in Transportation Systems. *Journal of Manufacturing Technology Management, 16*(1), 53-74. doi:10.1108/17410380510574086

Chisenga, J., & Chande-Mallya, R. (2012). *Social Media and Professional Networking : A case of Information Professionals in the SCECSAL Region.* Paper presented at the Paper presented at the Twentieth Standing Conference of Eastern, Central and Southern Africa Library and Information Associations ,4-8 June, Nairobi, Kenya.

Crespo, S. T. (2012). *The Role of Public Transport in Reshaping Cities.* . Paper presented at the Conference on the Development and Improvement of Urban Transport IV, 22-25 October, Addis Ababa, Ethiopia.

Creswell, J. W. (2014). *Research Design : Qualitative, Quantitative and Mixed Methods Approaches. Fourth Edition*. Thousand Oaks, California, USA: Sage

Creswell, J. W., & Clark, P. V. L. (in press). *Designing and conducting mixed methods research*. Thousand Oakes, CA: Sage.

Cuadrado-Ballesteros, B., García-Sánchez, I.-M., & Prado-Lorenzo, J.-M. (2012). Effects of Different Modes of Local Public Services Delivery on Quality of Life in Spain. *Journal of Cleaner Production, Vol. 37,* 68-81. doi:10.1016/j.jclepro.2012.06.008

Currie, G., Delbosc, A., & Mahmoud, S. (2013). Factors Influencing Young Peoples' Perceptions of Personal Safety on Public Transport. *Journal of Public Transportation, 16*(1), 1-19.

Dagnachew, A. G. (2007). *Integrating Transport and Land Use Policies for Sustainable Development; Theory and Practice. A study of suburbs of Addis Ababa, Ethiopia.* (Master of Arts in Urban Management and Development), Erasmus University Rotterdam, Rotterdam.

Daniel, A., Germà, B., & Joan, C. (2012). Governance and regulation of urban bus transportation: Using partial privatization to achieve the better of two worlds. *Regulation & Governance, 6*(1), 83-100. doi:10.1111/j.1748-5991.2011.01120.x

De Graaf, L., Van Hulst, M., & Michels, A. (2014). Enhancing Participation in Disadvantaged Urban Neighbourhoods. *Local Government Studies, 41*(1), 44-62. doi:10.1080/03003930.2014.908771

DeCorla-Souza, P., & Barker, W. G. (2005). Innovative Public-Private Partnership Models for Road Pricing/BRT Initiatives. *Journal of Public Transportation, 8*(1), 57-78.

Desouza, K. C., & Bhagwatwar, A. (2012). Citizen Apps to Solve Complex Urban Problems. *Journal of Urban Technology, 19*(3), 107-136. doi:10.1080/10630732.2012.673056

Desta, E. (2007). *The automotive industry and trend analysis in Ethiopia.* (Master of Business Administration, Partial fulfilment), Addis Ababa University, Addis Ababa.

Desthuis-Francis, M. (2002). *Urban Mobility in Three Cities: Addis Ababa, Dar es Salaam, Nairobi*. Sub-Saharan Africa Transport Policy Program. World Bank and Economic Commission for Africa. Addis Ababa, Ethiopia.

Díaz-Cayeros, A., Magaloni, B., & Ruiz-Euler, A. (2014). Traditional Governance, Citizen Engagement and Local Public Goods: Evidence from Mexico. *World Development, Vol. 53*, 80-93. doi:10.1016/j.worlddev.2013.01.008

Díaz, G., & Charles, V. (2015). *Regulatory Design and Technical Efficiency : Public Transport in France,*. (No. 2015-11-0020). Lima, Peru.

Eboli, L., & Mazzulla, G. (2007). Service quality attributes affecting customer satisfaction for bus transit. *Journal of Public Transportation, 10*(3), 2-15.

Eshete, M. (2015). *Public Transportation System : The Case of Addis Ababa.* (Master of Arts), Addis Ababa University, Addis Ababa (Unpublished).

Estache, A., & Gomez-Lobo, A. (2005). Limits to Competition in Urban Bus Services in Developing Countries. *Transport Reviews, 25*(2), 139-158.

Eversole, R., & Martin, J. (2005). Participation and Governance in Regional Economic Development. Hampshire, England: Ashgate Publishing Limited,.

Fenta, T. M. (2014). Demands for Urban Public Transportation in Addis Ababa. *Journal of Intelligent Transportation and Urban Planning, 2*(3), 81-88. doi:10.18005/itup0203002

Fowler, F. J. (2008). *Survey Research Methods - Fourth Edition*. Thousand Oaks, California, USA: Sage.

Fox, H. (2000). *Review of Urban Public Transport Competition*. Department for International Development. London, UK.

Freitas, H., Oliveira, M., Jenkins, M., & Popjoy, O. (1998). *The Focus Group, A Qualitative Research Method*. Reviewing The Theory, and Providing Guidelines to Its Planning. University of Baltimore, . Merrick School of Business, USA.

Fund, I. M. (2015). *The Federal Democratic Republic of Ethiopia: Selected Issues*. Country Report No. 15/326. International Monetary Fund, Washington D.C.

García, C. R., Quesada-Arencibia, A., Cristóbal, T., Padrón, G., Pérez, R., & Alayón, F. (2015). An Intelligent System Proposal for Improving the Safety and Accessibility of Public Transit by Highway. *Sensors, 15*, 20279-20304. doi:10.3390/s150820279

Gebeyehu, M., & Takano, S. (2007). Diagnostic Evaluation of Public Transportation Mode Choice in Addis Ababa. *Journal of Public Transportation, Vol. 10* (No. 4), 27-50.

Gebeyehu, M., & Takano, S. (2008). Demand Responsive Route Design: GIS Application to Link Downtowns with Expansion Areas. *Journal of Public Transportation, 11*(1), 43-62.

Geetika, S. N. (2010). Determinants of Customer Satisfaction on Service Quality: A Study of Railway Platforms in India. *Journal of Public Transportation, 13*(1), 97-113.

Georgiadis, G., Politis, I., & Papaioannou, P. (2014). Measuring and improving the efficiency and effectiveness of bus public transport systems. *Research in Transportation Economics, 48*, 84-91. doi:10.1016/j.retrec.2014.09.035

Gordon, C. (2012). The challenges of transport PPP's in low-income developing countries: A case study of Bangladesh. *Transport Policy, 24*, 296-301. doi:10.1016/j.tranpol.2012.06.014

Greene, J. C., Caracelli, V. J., & Graham, W. F. (1989). Twards a conceptual framework for mixed-method evaluation designs. *Educational Evaluation and Policy Analysis, 11*, 255-274.

Halden, D. (2011). The use and abuse of accessibility measures in UK passenger transport planning. *Research in Transportation Business & Management, 2*, 12-19. doi:10.1016/j.rtbm.2011.05.001

Hankla, C., & Downs, W. (2010). Decentralisation, Governance and the Structure of Local Political Institutions: Lessons for Reform? *Local Government Studies, 36*(6), 759-783. doi:10.1080/03003930.2010.522079

Hansson, L. (2013). Hybrid Steering Cultures in the Governance of Public Transport: A Successful Way to Meet Demands? *Research in Transportation Economics, 39*(1), 175-184. doi:10.1016/j.retrec.2012.06.011

Hao, H., Geng, Y., Wang, H., & Ouyang, M. (2014). Regional disparity of urban passenger transport associated GHG (greenhouse gas) emissions in China: A review. *Energy, 68*, 783-793. doi:10.1016/j.energy.2014.01.008

Hodgson, F. C., & Turner, J. (2003). Participation not consumption: the need for new participatory practices to address transport and social exclusion. *Transport Policy, 10*(4), 265-272. doi:10.1016/j.tranpol.2003.08.001

Hofmann, K., Kaatz-Dubberke, T., & Kos, M. (2012). *Making Good Governance Tangible : The Cobblestone Sector of Ethiopia*. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, Addis Ababa, Ethiopia.

Horn, A. (2014). Urban Growth Management Best Practices: Towards Implications for the Developing World. *International Planning Studies, 20*(1-2), 131-145. doi:10.1080/13563475.2014.942513

Hox, J. J., & Boeije, H. R. (2005). Data Collection: Primary Vs Secondary. *Encyclopedia of Social Measurement*, (Vol. 1, pp. 593-599). Utrecht University, Utrecht, The Netherlands: Elsevier Inc.

Hrelja, R., Pettersson, F., & Westerdahl, S. (2016). The Qualities Needed for a Successful Collaboration: A Contribution to the Conceptual Understanding of Collaboration for Efficient Public Transport. *Sustainability, 8*(542). doi:10.3390/su8060542

Hughes, S. (2012). Authority Structures and Service Reform in Multilevel Urban Governance: The Case of Wastewater Recycling in California and Australia. *Urban Affairs Review, 49*(3), 381-407. doi:10.1177/1078087412458762

International Association of Public Transport. (2004). *Improving Access to Public Transport : European Conference of Ministers of Transport*. OECD Publications. Paris,France.

International Crisis Group. (2009). *Ethiopia: Ethnic Federalism and Its Discontents.* Africa Report No. 153. Iternational Crisis Group. Nairobi/Brussels.

Iseki, H., & Taylor, B. D. (2010). Style versus Service: An Analysis of User Perceptions of Transit Stops and Stations. *Journal of Public Transportation, 13*(3), 23-48.

Israel, G. D. (1992). *Determining sample size*. University of Florida Cooperative Extension Service: Institute of Food and Agricultural Sciences.

Jaramillo, C., Lizárraga, C., & Grindlay, A. L. (2012). Spatial disparity in transport social needs and public transport provision in Santiago de Cali (Colombia). *Journal of Transport Geography, 24*, 340-357. doi:10.1016/j.jtrangeo.2012.04.014

Jarboui, S., Forget, P., & Boujelbene, Y. (2014). Inefficiency of public road transport and internal corporate governance mechanisms. *Case Studies on Transport Policy, 2*(3), 153-167. doi:10.1016/j.cstp.2014.05.004

Johns, R. (2010). *Likert Items and Scales*. Survey Questions Bank : Methods for Fact Sheet 1. Rob Johns (University of Strathclyde). Glasgow, UK.

Johnson, R. B., Onwuegbuzie, A. J., & Turner, L. A. (2007). Toward a Definition of Mixed Methods Research. *Journal of Mixed Methods Research, 1*(2), 112-133.

Jones, P. (2011). Developing and applying interactive visual tools to enhance stakeholder engagement in accessibility planning for mobility disadvantaged groups. *Research in Transportation Business & Management, 2*, 29-41. doi:10.1016/j.rtbm.2011.08.001

Karekla, X., Fujiyama, T., & Tyler, N. (2011). Evaluating accessibility enhancements to public transport including indirect as well as direct benefits. *Research in Transportation Business & Management, 2*, 92-100. doi:10.1016/j.rtbm.2011.06.010

Kasahun, M. (2007). *Public Transportation System and Its Impact on Urban Mobility: The Case of Addis Ababa.* (Master of Science), Addis Ababa University, Addis Ababa.

Kauneckis, D., & Andersson, K. (2008). Making Decentralization Work: A Cross-national Examination of Local Governments and Natural Resource Governance in Latin America. *Studies in Comparative International Development, 44*(1), 23-46. doi:10.1007/s12116-008-9036-6

Kombe, W. J. (2005). Land use dynamics in peri-urban areas and their implications on the urban growth and form: the case of Dar es Salaam, Tanzania. *Habitat International, 29*(1), 113-135. doi:10.1016/s0197-3975(03)00076-6

Kranton, R. E. (1991). *Transport and the Mobility Needs of the Urban Poor*. World Bank Policy Research and External Affairs, (INU 86). Washingotn D.C.

Kumar, A., & Barrett, F. (2008). *Stuck in Traffic: Urban Transport in Africa.* Africa Infrastructure Country Diagnostic Research Notes. The World Bank. Washington D.C.

Lau, J. C., & Chiu, C. C. (2003). Accessibility of low-income workers in Hong Kong. Cities. *Cities, 20*(3).

Leavy, P. (Ed.) (2014). *The Oxford Handbook of Qualitative Research*. New York, USA: Oxford University.

Lekakou, M. B., & Vitsounis, T. K. (2011). Market concentration in coastal shipping and limitations to island's accessibility. *Research in Transportation Business & Management, 2*, 74-82. doi:10.1016/j.rtbm.2011.10.001

Lindseth, G., & Reitan, M. (2007). The Urban Governance of Transport and the Environment in the City of Kristiansand. *Journal of Environmental Planning and Management, 50*(1), 135-151. doi:10.1080/09640560601048564

Litman, T. (2015). *Evaluating Accessibility for Transportation Planning Measuring People's Ability to Reach Desired Goods and Activities*. Melbourne, Victoria.

Maiello, A., Christovão, A. C., Nogueira de Paiva Britto, A. L., & Frey, M. (2013). Public Participation for Urban Sustainability: Investigating Relations among Citizens, the Environment and Institutions – an Ethnographic Study. *Local Environment, 18*(2), 167-183. doi:10.1080/13549839.2012.729566

Mbiba, B., & Huchzermeyer, M. (2002). Contentious development: peri-urban studies in sub-Saharan Africa. *Progress in Development Studies, 2*(2), 113-131.

Mekuriaw, W. (2012). *Performance and Challenges of Zonal Taxi Transport System in Addis Ababa.* (Masters of Art in Public Management and Policy), Addis Ababa University, Addis Ababa.

Mengistu, H. (2014). *The Impact of Urban Development on Gelan Town.* (Masters of Art), Addis Ababa University, Addis Ababa, Ethiopia.

Ministry of Transport. (2011). *Federal Democratic Republic of Ethiopia-Transport Policy of Addis Ababa (Unpublished).* Addis Ababa, Ethiopia.

Minnery, J. R. (2004). *Modeling the Elements of Urban Governance*. University of Queensland, School of Geography Planning and Architecture,, St Lucia, Queendsland, Australia.

Minnery, J. R. (2007). Stars and their Supporting Cast: State, Market and Community as Actors in Urban Governance. *Urban Policy and Research, 25*(3), 325-345.

Misganaw, B., & Gebre-Yohannes, E. (2011). Determinants of Traffic Fatalities and Injuries in Addis Ababa. *Journal of the Ethiopian Statistical Association, 20*, 41-52.

Nallathiga, R. (2008). Improving the State of Urban Governance: The Emergence of Partnership Models in Indian Cities. *Journal of Governance and Public Policy, 3*(4), 20 - 33

Narain, V., & Nischal, S. (2007). The peri-urban interface in Shahpur Khurd and Karnera, India. *Environment and Urbanization, 19*(1), 261-273. doi:10.1177/0956247807076905

Newnam, S., Mamo, W. G., & Tulu, G. S. (2014). Exploring differences in driving behaviour across age and years of education of taxi drivers in Addis Ababa, Ethiopia. *Safety Science, 68*, 1-5.

Ngoc, A. M., Hung, K. V., & Tuan, V. A. (2017). Towards the development of quality Standards for public transport Service in developing countries: analysis of public transport users' behavior

Transportation Research Procedia 2, 25C, 4564–4583.

Noor, H. M., Nasrudin, N. a., & Foo, J. (2014). Determinants of Customer Satisfaction of Service Quality: City Bus Service in Kota Kinabalu, Malaysia. *Procedia - Social and Behavioral Sciences, 153*, 595-605. doi:10.1016/j.sbspro.2014.10.092

Nurlaela, S., & Curtis, C. (2012). Modeling Household Residential Location choice with public transport accessibility. *Procedia - Social and Behavioral Sciences, 54*, 56 – 64. doi:10.1016/j.sbspro.2012.09.725

Onwuegbuzie, A. J., & Combs, J. P. (2011). Data Analysis in Mixed Research: A Primer. *International Journal of Education, 3*(1: E13), P.1-25. doi:10.5296/ije.v3i1.618

Pathak, R. D., Singh, G., Belwal, R., & Smith, R. F. I. (2007). E-Governance and Corruption: Developments and Issues in Ethiopia. *Public Organization Review, 7*(3), 195-208. doi:10.1007/s11115-007-0031-6

Paulley, N., Balcombe, R., Mackett, R., Titheridge, H., Preston, J., Wardman, M., & White, P. (2006). The demand for public transport: The effects of fares, quality of service, income and car ownership. *Transport Policy, 13*(4), 295-306. doi:10.1016/j.tranpol.2005.12.004

Persson, A. (2008). Road Traffic Accidents in Ethiopia: Magnitude, Causes and Possible Interventions. *Advances in Transportation Studies an international Journal, Section A*(15), 5-16.

Preston, J., & Rajé, F. (2007). Accessibility, mobility and transport-related social exclusion. *Journal of Transport Geography, 15*(3), 151-160. doi:10.1016/j.jtrangeo.2006.05.002

Ridgwell, A., & Flintan, F. (2007). *Gender and Pastoralism :Livelihood and income generation in Ethiopia, Volume 2.* Care Ethiopia. Addis Ababa, Ethiopia.

Robert, C. (2000). *Informal transport in the developing world*. United Nations Centre for Human Settlement (HABITAT). Nairobi, Kenya.

Rosenbaum, A. (2013). Decentralization and Local Governance: Comparing US and Global Perspectives. *Administrative Culture, 14*(1), 11-17.

Rossman, G. B., & Wilson, B. L. (1985). Numbers and Words : Combining quantitative and qualitative methods in a single large-scale evaluation study. *Eavulation Reveiw, 9*, 627-643.

Sagaris, L. (2010). From Sustainable Transport Development to Active Citizenship and Participatory Democracy: The Experience of Living City in Chile. *Natural Resources Forum 34*, 275-288.

Sagaris, L. (2014). Citizen participation for sustainable transport: the case of "Living City" in Santiago, Chile (1997–2012). *Journal of Transport Geography, 41*, 74-83. doi:10.1016/j.jtrangeo.2014.08.011

Sale, J. E. M., & Brazil, K. (2004). A Strategy to Identify Critical Appraisal Criteria for Primary Mixed-Method Studies. *Quality & Quantity, 38*, 351-365.

Schiller, T., & Pillay, K. (2016). *Navigating the African Automotive Sector: Ethiopia, Kenya and Nigeria*. Africa Automotive Insights. Deloitte

Schmidt, E., & Kedir, M. (2009). *Urbanization and Spatial Connectivity in Ethiopia: Urban Growth Analysis Using GIS*. Development Strategy and Governance Division, International Food Policy Research Institute. Addis Ababa, Ethiopia.

Simona, S. (2010). Quality of Public Transport Services in Urban Area of Oradea. *Annals of the University of Oradea, Economic Science Series, 19*(2), 469-474.

Singh, S. K. (2005). Review of Urban Transportation in India. *Journal of Public Transportation, 8*(1), 79 - 97.

Sohail, M., Maunder, D. A. C., & Cavill, S. (2006). Effective Regulation for Sustainable Public Transport in Developing Countries. *Transport Policy, 13*(3), 177-190. doi:10.1016/j.tranpol.2005.11.004

Sohail, M., Maunder, D. A. C., & Miles, D. W. J. (2004). Managing public transport in developing countries: Stakeholder perspectives in Dar es Salaam and Faisalabad. *International Journal of Transport Management, 2*(3-4), 149-160. doi:10.1016/j.ijtm.2005.06.001

Stanley, J., & Smith, A. (2013). Workshop 3A: Governance, Contracting, Ownership and Competition Issues in Public Transport: Looking Up Not Down. *Research in Transportation Economics, 39*(1), 167-174. doi:10.1016/j.retrec.2012.06.010

Suen, S. L., & Mitchell, C. G. B. (2012). *Accessible Transportation and Mobility (Unpublished)*. Transportation in the New Millenium. Committee on Accessible Transportation and Mobility.

Tadesse, F., & Headey, D. (2012). Urbanization and Fertility Rates in Ethiopia- Development Strategy and Governance Division, International Food Policy Research Institute – Ethiopia Strategy Support Program II, Ethiopia.

Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education, 2*, 53-55. doi:10.5116/ijme.4dfb.8dfd

Teshome, W., Tolossa, D., Mandefro, F., & Alamirew, B. (2012). *Governance and Public Service Delivery: The Case of Water Supply and Roads Services Delivery in Addis Ababa and Hawassa Cities, Ethiopia*. Global Development Network (Unpublished), Addis Ababa University, Regional and Local Development Studies.

.

Tiwari, A. (2012). Urban Development in Ethiopia: Challenges and Policy Responses. *The IUP Journal of Governance and Public Policy, 7*(1), 60 - 75.

Tran, T., & Kleiner, B. H. (2005). Managing for Excellence in Public Transportation. *Management Research News, 28*(11/12), 154-163. doi:10.1108/01409170510785345

Trans-Africa. (2008). *Overview of Public transport in Sub-Saharan Africa*. Retrieved from Rue Sainte-Marie 6, 1080 Brussels, Belgium:

Tsamboulas, D., Verma, A., & Moraiti, P. (2013). Transport Infrastructure Provision and Operations: Why Should Governments Choose Private–Public Partnership? *Research in Transportation Economics, 38*(1), 122-127. doi:10.1016/j.retrec.2012.05.004

Tsegaye, A. (2015). *The Evaluation of Customer Satisfaction of Anbessa City Bus Service Enterprise* (Masters of Public Policy), Addis Ababa University, Addis Ababa.

Tulu, G. S., Washington, S., & King, M. J. (2013). *Characteristics of Police-reported Road Traffic Crashes in Ethiopia over a Six Year Period*. Proceedings of the 2013 Australasian Road Safety Research, Policing & Education Conference, 28th – 30th August, Brisbane, Queensland. Australia.

UN-HABITAT. (2008). *Participatory Slum Upgrading Programme in the African, Caribbean and Pacific Countries. Regional and Technical Cooperation Division. Ethiopia: Addis Ababa Urban Profile*. Nairobi, Kenya.

Uzun, N. (2010). Urban governance in Istanbul. *Análise Social, XLV* (197), 757-770.

Van Oort, N. (2014). Incorporating Service Reliability in Public Transport Design and Performance Requirements: International Survey Results and Recommendations. *Research in Transportation Economics, 48*, 92-100. doi:10.1016/j.retrec.2014.09.036

Veliou, E., Kepaptsoglou, K., & Karlaftis, M. G. (2010). Night-Time Operations in Transit Systems: Evaluating the Athens Metro Owl Services. *Journal of Public Transportation, 13*(3).

Verma, M., & Priyadarshee, A. (2015). Improving Service Delivery through State-Citizen Partnership: The Case of the Ahmedabad Urban Transport System. *Growth and Change, 46*(2), 321-336. doi:10.1111/grow.12074

Warner, M. E. (2011). Cooperation or Competition in Urban Service Delivery. *Annals of Public and Cooperative Economics, 82*(4), PP 421- 435.

Warner, M. E., & Hefetz, A. (2008). Managing Markets for Public Service: The Role of Mixed Public – Private Delivery of City Services. *Public Administration Review, 68*(1), 155-166.

Willoughby, C. (2013). How much can public private partnership really do for urban transport in developing countries? *Research in Transportation Economics, 40*(1), 34-55. doi:10.1016/j.retrec.2012.06.038

Witter, R. (2010, 11-15, July). *Public Urban Transport, Travel Behavior and Social Exclusion - The Case of Santiago de Chile*. XII World Conference on Transportation Research. Lisbon, Portual

Wondifiraw, Z., Kibret, H., & Wakaiga, J. (2015). Ethiopia 2015 : *African Economic Outlook.* Addis Ababa, Ethiopia: African Development Bank.

World Bank. (2002). *Cities on the Move: A World bank Urban Transport Strategy Review*. Retrieved from Washington D.C, United States of America:

World Bank. (2005). *Affordability of Public Transport in Developing Countries*. Retrieved from Washington D.C.:

World Bank. (2014a). *Federal Democratic Republic of Ethiopia: Addis Ababa Urban and Metropolitan Transport and Land Use Linkages Strategy Review. Note of Proposed World Bank Engagement on Urban and Metropolitan Transport and Land-use for Inclusive Green Growth in Addis Ababa*. (ACS12347). Washington DC.

World Bank. (2014b). *Formulating Urban Transport Policy: Choosing Between Options*. Retrieved from Washington D.C.:

World Bank. (2015). Addis Ababa, Ethiopia: Enhancing Urban Resilience. *City Strength: Resilient Cities Program*. Washington D.C.: World Bank.

Wright, S., Emele, C. D., Fukumoto, M., Velaga, N. R., & Nelson, J. D. (2014). The design, management and operation of flexible transport systems: Comparison of experience between UK, Japan and India. *Research in Transportation Economics, 48*, 330-338. doi:10.1016/j.retrec.2014.09.060

Xu, M., Ceder, A., Gao, Z., & Guan, W. (2010). Mass transit systems of Beijing: governance evolution and analysis. *Transportation, 37*(5), 709-729. doi:10.1007/s11116-010-9289-6

Yilak, A., Yoshitsugu, H., & Hirokazu, K. (2011). The effect of used cars on African road traffic accidents: a case study of Addis Ababa, Ethiopia. *International Journal of Urban Sciences, 15*(1), 61-69. doi:10.1080/12265934.2011.580153

Yilma, H. (2014). *Challenges and Prospects of Traffic Management Practices of Addis Ababa City Administration.* (Master of Arts thesis), Addis Ababa University School of Graduate Studies, Addis Ababa.

Zhang, Y. (2014). From State to Market: Private Participation in China's Urban Infrastructure Sectors, 1992–2008. *World Development, 64*, 473-486. doi:10.1016/j.worlddev.2014.06.023

APPENDICES

APPENDIX A-1: CLEARANCE LETTER FROM HUMAN RESEARCH ETHICS COMMIITTEE

Secretary, Human Research Ethics Committee
Ph: 07 4923 2603
Fax: 07 4923 2600
Email: ethics@cqu.edu.au

A/Prof Susan Kinnear and Mr Kelbesa Kenea
School of Business and Law
11 May 2016
Dear A/Prof Kinnear and Mr Kenea

HUMAN RESEARCH ETHICS COMMITTEE ETHICAL APPROVAL PROJECT: H16/04-091 *FACTORS AFFECTING THE ACCESSIBILITY OF ANBESSA CITY BUS SERVICE IN ADDIS ABABA: A CASE STUDY OF KOLFE-KERANIYO SUB-CITY*

The Human Research Ethics Committee is an approved institutional ethics committee constituted in accord with guidelines formulated by the National Health and Medical Research Council (NHMRC) and governed by policies and procedures consistent with principles as contained in publications such as the joint Universities Australia and NHMRC *Australian Code for the Responsible Conduct of Research.* This is available at http://www.nhmrc.gov.au/publications/synopses/_files/r39.pdf.

On 11 May 2016, the Chair of the Human Research Ethics Committee considered your application under the Low Risk Review Process, and granted conditional approval for this project, pending ratification by the full committee at its May 2016 meeting.

The period of ethics approval will be from 11 May 2016 to 30 September 2016. The approval number is H16/04-091; please quote this number in all dealings with the Committee. HREC wishes you well with the undertaking of the project and looks forward to receiving the final report.

The standard conditions of approval for this research project are that:

(a) you conduct the research project strictly in accordance with the proposal submitted and granted ethics approval, including any amendments required to be made to the proposal by the Human Research Ethics Committee;

(b) you advise the Human Research Ethics Committee (email ethics@cqu.edu.au) immediately if any complaints are made, or expressions of concern are raised, or any other issue in relation to the project which may warrant review of ethics approval of the project. *(A written report detailing the adverse occurrence or unforeseen event must be submitted to the Committee Chair within one working day after the event.)*

(c) you make submission to the Human Research Ethics Committee for approval of any proposed variations or modifications to the approved project before making any such changes;

(d) you provide the Human Research Ethics Committee with a written "Annual Report" on each anniversary date of approval (for projects of greater than 12 months) and "Final Report" by no later than one (1) month after the approval expiry date; *(Forms may be downloaded from the Office of Research Moodle site - http://moodle.cqu.edu.au/mod/book/view.php?id=334905&chapterid=17791.)*

(e) you accept that the Human Research Ethics Committee reserves the right to conduct scheduled or random inspections to confirm that the project is being conducted in accordance to its approval. Inspections may

include asking questions of the research team, inspecting all consent documents and records and being guided through any physical experiments associated with the project

(f) if the research project is discontinued, you advise the Committee in writing within five (5) working days of the discontinuation;

(g) A copy of the Statement of Findings is provided to the Human Research Ethics Committee when it is forwarded to participants.

Please note that failure to comply with the conditions of approval and the *National Statement on Ethical Conduct in Human Research* may result in withdrawal of approval for the project.

You are required to advise the Secretary in writing within five (5) working days if this project does not proceed for any reason. In the event that you require an extension of ethics approval for this project, please make written application in advance of the end-date of this approval. The research cannot continue beyond the end date of approval unless the Committee has granted an extension of ethics approval. Extensions of approval cannot be granted retrospectively. Should you need an extension but not apply for this before the end-date of the approval then a full new application for approval must be submitted to the Secretary for the Committee to consider.

The Human Research Ethics Committee wishes to support researchers in achieving positive research outcomes. If you have issues where the Human Research Ethics Committee may be of assistance or have any queries in relation to this approval please do not hesitate to contact the Secretary, Sue Evans or myself.

Yours sincerely,

A/Prof Tania Signal
Chair, Human Research Ethics Committee
Cc: Dr Delwar Akbar (Co-supervisor) Project file

Approved

APPENDIX A-2: CLEARANCE LETTER FROM HUMAN RESEARCH ETHICS COMMITTEE (PROJECT MODIFICATION CLEARANCE)

Secretary, Human Research Ethics Committee

Ph: 07 4923 2603

Fax: 07 4923 2600

Email: ethics@cqu.edu.au

A/Prof Susan Kinnear and

Mr Kelbesa Kenea

School of Business and Law

23 May 2016

Dear A/Prof Kinnear and Mr Kenea

HUMAN RESEARCH ETHICS COMMITTEE ETHICAL APPROVAL MODIFICATION TO PROJECT: H16/04-091 ***FACTORS AFFECTING THE ACCESSIBILITY OF ANBESSA CITY BUS SERVICE IN ADDIS ABABA: A CASE STUDY OF KOLFE-KERANIYO SUB-CITY***

The Human Research Ethics Committee is an approved institutional ethics committee constituted in accord with guidelines formulated by the National Health and Medical Research Council (NHMRC) and governed by policies and procedures consistent with principles as contained in publications such as the joint Universities Australia and NHMRC *Australian Code for the Responsible Conduct of Research.* This is available at http://www.nhmrc.gov.au/publications/synopses/_files/r39.pdf.

On 11 May 2016, the Chair of the Human Research Ethics Committee considered your application under the Low Risk Review Process, and granted conditional approval for this project, pending ratification by the full committee at its May 2016 meeting. On 23 May 2016, the Chair approved your request to revert to taking hand written notes from interviews, due to the fact that many participants were not comfortable with audio recording.

The period of ethics approval will be from 11 May 2016 to 30 September 2016. The approval number is H16/04-091; please quote this number in all dealings with the Committee. HREC wishes you well with the undertaking of the project and looks forward to receiving the final report.

The standard conditions of approval for this research project are that:

(a) you conduct the research project strictly in accordance with the proposal submitted and granted ethics approval, including any amendments required to be made to the proposal by the Human Research Ethics Committee;

(b) you advise the Human Research Ethics Committee (email ethics@cqu.edu.au) immediately if any complaints are made, or expressions of concern are raised, or any other issue in relation to the project which may warrant review of ethics approval of the project. *(A written report detailing the adverse occurrence or unforeseen event must be submitted to the Committee Chair within one working day after the event.)*
(c) you make submission to the Human Research Ethics Committee for approval of any proposed variations or modifications to the approved project before making any such changes;

(d) you provide the Human Research Ethics Committee with a written "Annual Report" on each anniversary date of approval (for projects of greater than 12 months) and "Final Report" by no later than one (1) month after the approval expiry date; *(Forms may be downloaded from the Office of Research Moodle site - http://moodle.cqu.edu.au/mod/book/view.php?id=334905&chapterid=17791.)*

(e) you accept that the Human Research Ethics Committee reserves the right to conduct scheduled or random inspections to confirm that the project is being conducted in accordance to its approval. Inspections may include asking questions of the research team, inspecting all consent documents and records and being guided through any physical experiments associated with the project

(f) if the research project is discontinued, you advise the Committee in writing within five (5) working days of the discontinuation;

(g) A copy of the Statement of Findings is provided to the Human Research Ethics Committee when it is forwarded to participants.

Please note that failure to comply with the conditions of approval and the *National Statement on Ethical Conduct in Human Research* may result in withdrawal of approval for the project.

You are required to advise the Secretary in writing within five (5) working days if this project does not proceed for any reason. In the event that you require an extension of ethics approval for this project, please make written application in advance of the end-date of this approval. The research cannot continue beyond the end date of approval unless the Committee has granted an extension of ethics approval. Extensions of approval cannot be granted retrospectively. Should you need an extension but not apply for this before the end-date of the approval then a full new application for approval must be submitted to the Secretary for the Committee to consider.

The Human Research Ethics Committee wishes to support researchers in achieving positive research outcomes. If you have issues where the Human Research Ethics Committee may be of assistance or have any queries in relation to this approval please do not hesitate to contact the Secretary, Sue Evans or myself.

Yours sincerely,

A/Prof Tania Signal

Chair, Human Research Ethics Committee

Cc: Dr Delwar Akbar (Co-supervisor) Project file

Approved

APPENDIX B -1: COPY OF INTERVIEW QUESTIONS (ENGLISH) – FOR PUBLIC TRANSPORT REGULATORY BODIES

Name of the Researcher: Kelbesa Wakuma Kenea

Interview Participants: Addis Ababa City Public Transport Regulatory Agencies - Higher and Middle Level Managers

This in-depth interview will be conducted as per the consent form signed with the respondents.

i. Qualifying Questions

Can you confirm that you are an adult?

Can you mention how long you have been working for this agency?

ii. Introduction to the agency's organization structure

1. How would you describe your agency's organizational structure in addressing the city's public transport need and accessibility?

iii. Perceptions about accessibility of the bus service

2. From your knowledge of the local transport sector, what are the main challenges of accessibility of the city bus?
3. In your opinion, what are the key factors that residents would consider in choosing Anbessa city bus as their mode of transport?

iv. Perceptions about the agency's interaction with other bodies

4. What do you feel are the strengths in terms of how your Agency works with the other regulators and Anbessa City Bus Service Enterprise to provide/improve public bus services? (example, collaboration, partnership, support, incentives)
5. In your role as a manager, has this agency experienced difficulties in working with other agencies or the operator to address questions about city bus transport accessibility? (For example, role confusion and/or duplication of duties among the regulators, clarity of policy frameworks).
6. How do you access the community (of bus users) and evaluate their feedback?

v. Perceptions on service coordination /regulatory system

7. What is your impression of the communication and collaboration between the regulators/operator, and how this influences the service performance overall? Could you elaborate more in a few sentences?
8. Current reports show that other companies are required to help service peak demand periods. However, there is evidence to suggest that this is only a short-term solution and is not sustainable. How would you respond to this statement?
9. In improving the accessibility of the public transport service in the city, how does your agency work with others (agencies) in decision making and /or influencing decisions about infrastructure investment?
10. Addis Ababa City Transport Service Provision has a multiplicity of regulatory bodies. How does this framework impact on consistency of service provision? Is this situation creating accessible or inaccessible transport network? Could you provide an examples from your Agency?
11. In your experience working with this agency, can you identify any examples of structural change amongst the operator/ regulatory bodies, that resulted in better accessibility of the current service provision?
12. What is the role of operators and users in improving the accessibility of the city bus transport service delivery? To what extent do you believe these roles are being effectively performed? And why do you think so?
13. Can you confirm that the information described above is relevant to Kolfe-Keraniyo Sub-City case only or it is experienced across Addis Ababa City, or the peripheral areas?
14. Thank you for your participation. Is there anything that we did not cover that you would like to comment on?

Reminder about complaints, withdrawing their information, and how to access research results.

APPENDIX B-2: COPY OF INTERVIEW QUESTIONS ENGLISH VERSION – FOR ADDIS ABABA CITY BUS SERVICE ENTERPRISE

Name of the Researcher: Kelbesa Wakuma Kenea

Interview Participants: Addis Ababa City Bus Enterprise - Higher and Middle Level Managers

This in-depth interview will be conducted as per the consent form signed with the respondents.

Qualifying Questions

Can you confirm that you are an adult?

Can you mention how long you have been working for this company?

i. Introduction: Background information about the organizational structure and performance of the enterprise

14.1. What do you believe are the organisational strengths and/or weaknesses of Anbessa City Bus Enterprise?

14.2. How would you describe the effectiveness the enterprise's organization structure?

14.3. What plans for future growth/ structural change in the organisation are there, if any?

ii. Anbessa City Bus Interaction with Other Bodies

14.4. How does your enterprise interact with Addis Ababa city/Federal transport regulators in improving the city bus transport accessibility? (example, collaboration, partnership, support, incentives)

14.5. From your experience how do you evaluate the frequency and effectiveness of the company's interaction with the regulators?

14.6. In your role as an official of the enterprise, how do you feel the company (Anbessa city bus) interact with other stakeholders in improving the city bus transport accessibility? Can you name and say in few sentences about these stakeholders?

14.7. What are the enterprise's perceived challenges around this interaction with the stakeholders?

14.8. How does Anbessa access the community (of bus users) and evaluate their feedback?

14.9. Is this feedback able to be acted up on? What do you believe are the most important things that Anbessa could concentrate on, to improve the accessibility of the service? Why do you believe these are so important?

At this point in the interview, the participant may be offered a refreshment break and asked if they wish to continue.

iii. Perceptions about regulatory/Coordination System

14.10. Addis Ababa City Transport Service Provision has a multiplicity of regulatory bodies. How does this framework impact on consistency of your enterprise's service provision? Is this situation creating accessible or inaccessible transport network? Could you provide an examples from your Agency?

14.11. What is the role of Anbessa in improving the accessibility of the city bus transport service delivery? To what extent do you believe these roles are being effectively performed? And why do you think so?

14.12. In your experience working with this enterprise, can you identify any example of structural change that may results in better accessibility of the current service provision?

14.13. Is there anything that we did not cover that you would like to comment on?

Thank you for your participation

Reminder about complaints, withdrawing their information, and how to access research results.

APPENDIX C-1: COPY OF INTERVIEW QUESTIONS AMHARIC VERSION – FOR THE PUBLIC TRANSPORT REGULATORY AND LAW ENFORCEMENT BODIES

የተማሪዉ ሥም ፡ ቀልቤሳ ዋቄማ ቀነዓ

የቃለ-መጠይቁ ተሳታፊዎች፡ አንበሳ የከተማ አውቶቢስ ድርጅት ከፍተኛ እና መካከለኛ የስራ ኃላፊዎች

ቃለ መጠይቁ በመግባቢያ ሰነድ ላይ በሰፈረው መሠረተ ሀሳብ ይሆናል፡፡

1. የማጣሪያ ጥያቄዎች

1.1. ጎልማሳ መሆንዎን ቢያረጋግጡልኝ? (ቃለ - መጠይቁ 18 ዓመት ያልሞሉትን እንደማይመለከት ለመለየት ብቻ ነው)፡፡

1.2. በዚህ መሥሪያ ቤት ለምን ያህል እንደሠሩ ቢያረጋግጡልኝ?

2. መግቢያ፡- የድርጅቱን መዋቅር እና የሥራ ብቃት በተመለከተ ነባራዊ ጉዳዮች

2.1. አንበሳ የከተማ አዉቶቢስ አገልግሎት ድርጅት ጥንካሬዉና እና ድክመቶቹ ምንድን ናቸዉ ብለዉ ያምናሉ?

2.2. የድርጅቱን መዋቅር ዉጤታማነት እንዴት ይገልጹታል?

2.3. ከድርጅታዊ እድገት ጋር በተያያዘ መዋቅራዊ ለዉጥ/ማስተካከያ ለማድረግ እቅድ ካለ ቢያብራሩልኝ?

3. አንበሳ የከተማ አዉቶቢስ ድርጅት ከሌሎች ባለድርሻዎች ጋር ያለው የሥራ ግንኙነት/ትብብር

3.1. ድርጅቱ የአገልግሎት ተደራሽነቱን ለማሻሻል ከአዲስ አበባ ከተማ እና ፌዴራል ትራንስፖርት ተቆጣጣሪ አካላት ጋር በምን መልክ አብሮ ይሰራል? (ለምሳሌ፣ ትብብር፣ ሽርክና፣ እገዛ ወይም ድጎማ)

3.2. ከልምድዎ አንጻር ድርጅቱ ከሌሎች ተቆጣጣሪ አካላት ጋር ያለውን አዘወትሮ አብሮ መሥራት እና ዉጤታማነት እንዴት ይመዝኑታል?

3.3. እንደ ደርጅቱ የሥራ ኃላፊነትዎ/ባለ-ሙያነትዎ አንበሳ የከተማ አውቶቢስ ድርጅት የአገልግሎት አሰጣጡን እና ተደራሽነቱን ለማሻሻል ከሌሎች ተቆጣጣሪ አካላት ጋር እንዴት አብሮ እየሠራ እንዳለ ቢገልጹልኝ? የተቆጣጣሪ ድርጅቶቹን ማንነት እና የአብሮ አሠራራቸውን ሁኔታ በጥቂት ዓረፍተ ነገሮች ቢገልጹልኝ?

3.4. አንበሳ ከትራንስፖርት ተቆጣጣሪ ደርጅቶች ጋር ሲሠራ የሚስተዋሉትን ተግዳሮቶች ቢገልጹልኝ?

3.5. አንበሳ የከተማ አውቶቢስ ድርጅት ህብረተሰቡን /የከተማ አውቶቢስ ተጠቃሚዎች/ እንዴት ይገናኛል? ግብረ-መልሳቸውንስ (አስተያየታቸዉን) እንዴት ይመዝናል?

3.6. ከህብረተሰቡ (የከተማ አውቶቢስ ተጠቃሚዎች) የሚሰጠዉ ግብረ-መልስ ተግባራዊ ይሆናል?
ድርጅቱ የአገልግሎት ተደራሽነቱን ለማሻሻል ማተኮር አለበት ብለዉ የሚያስቡት በጣም ጠቃሚ ጉዳዮች ምንድን ናቸው? እነዚህ ጉዳዮች በጣም ጠቃሚ የሆኑት ለምን ይመስሎታል?

በዚህ ቦታ ላይ ዕረፍት ያስፈልጋል (ከ5-10 ደቂቃ እረፍት)

4. ስለ አገልግሎት ቅንጅት (ስርቪስ ኮኦርድነሽን) በተመለከተ

4.1. የአዲስ አበባ ትራንስፖርት አገልግሎት አሰጣጥ የተለያዩ ተቆጣጣሪ ኤጀንሲ/ባለስልጣን እንዳለው ይታወቃል፡፡ ይህ አደረጃጀት (ፍሬምዎርክ) የድርጅትዎን አገልግሎት አሰጣጥ ወጥነትን ላይ ምን ዓይነት ተጽዕኖ ይፈጥራል ብለው

ያስባሉ? በግል አስተያየትዎ ይህ ሁኔታ የትራንስፖርት መረብ (ነትዎርክ) እና የአገልግሎት አሰጣጡን ተደራሽ/ኢ-ተደራሽ ያደርጋል ብለዉ ያስባሉ? ከዚህ ጋር በተገናኘ ሊሰጡት የሚችሉት ምሳሌ ይኖራል?

4.2. የከተማውን አውቶቢስ ትራንስፖርትን በተሻለ ተደራሽ ለማድረግ አንበሳ (ድርጅቱ) ምን ዓይነት ሚና መጫወት አለበት ብለው ያምናሉ? እነዚህ ሚናዎችስ ምን ያህል በተሳካ ሁኔታ ሥራ ላይ ውለዋል ብለው ያምናሉ? ይህስ ለምን ይመስልዎታል?

4.3. ከዚህ ድርጅት ጋር ሲሰሩ በነበሩበት ወቅት ባሁኑ ሰዓት የሚሰጠውን አገልግሎት ተደራሽነት ለማሻሻል ሲባል የተደረጉ መዋቅራዊ ለውጦች/ማስተካከያዎች ካለ እንደምሳሌ ሊያነሱልኝ ይችላሉ?

4.4. በዚህ ቃለ-መጠይቅ ውስጥ ያልተካተቱ እና ሀሳብ ሊሰጡበት የሚፈልጉት ጉዳዮች ካሉ መቀጠል ይችላሉ፡፡

ስለተሳትፎዎ ከልብ አመሰግናለሁ፡፡

ጥናቱን በተመለከተ ቅሬታ ካለዎት ወይም ቃለ-መጠይቅዎ በጥናቱ ውስጥ እንዳይካተት ከፈለጉ በማንኛውም ሰዓት ማሳወቅ ይቻላል፡፡ በመጨረሻም በመግቢያ ወረቀት ላይ የተቀመጠውን ሊንክ በመንካት የጥናቱን ውጤት ከ2017 አጋማሽ በኋላ መመልከት ይችላሉ፡፡

APPENDIX C-2: COPY OF INTERVIEW QUESTIONS AMHARIC VERSION – FOR ANBESSA CITY BUS SERVICE ENTERPRISE

የተማሪዉ ሥም ፡ ቀልቤሳ ዋቄማ ቀነዓ

የቃለ-መጠይቁ ተሳታፊዎች፡ የአዲስ አበባ ከተማ ትራንስፖርት ተቆጣጣሪ ድርጅቶች መካከለኛ እና ከፍተኛ የሥራ ኃላፊዎች ወይም ባለ-ሙያዎች ናቸው፡፤

ቃለ መጠይቆቹ በተደረገዉ የመግባቢያ ሥምምነት መሠረት ይሆናል፡፡

1. የማጣሪያ ጥያቄዎች

1.1. ጎልማሳ መሆንዎን ቢያረጋግጡልኝ? (ይህም ጥያቄዎች የተዘጋጁት ከ18 ዓመት በላይ ለሆኑ ብቻ መሆኑን ለመለየት ነው)

1.2. በዚህ መሥሪያ ቤት ለምን ያህል እንደሠሩ ቢያረጋግጡልኝ?

2. የድርጅቱን መዋቅር በተመለከተ መተዋወቅ

2.1. የህዝብ ትራንሰፖርት ተደራሽነት ከማስፋፋት ጋር በተገናኘ የድርጅትዎን መዋቅር እንዴት ይገልጹታል?

3. የከተማ አዉቶቢስ አገልግሎት ተደራሽነትን በተመለከተ

3.1. የከተማዉ ትራንስፖርትን ጋር በተያያዘ ከርስዎ እዉቀት አንጻር የተደራሽነት ችግሮች ምንድን ናቸዉ ብለዉ ያምናሉ?

3.2. እንደ አስተያየትዎ ተጠቃሚዎች አንበሳ የከተማ አዉቶቢስ አገልግሎትን ለመጠቀም በግምት ዉስጥ የሚያስገቧቸው ወሳኝ ጉዳዮች ምንድን ናቸዉ?

4. የተቆጣጣሪ ደርጅቱ ከሌሎች ባለድርሻ አካላት ጋር የሚያደርገዉ ግንኙነት

4.1. ድርጅትዎ የአገልግሎት አሰጣጥ ጥራት እና ተደራሽነትን ለማሻሻል ከሌሎች ተቆጣጣሪ አካላት እና አንበሳ ከተማ አዉቶቢስ ድርጅተት ጋር የሚያደርገዉ የሥራ ግንኙነት ጠንካራ ጎኖች እንዴት ይገልጹታል? (ለምሳሌ፤ ትብብር፣ ሽርክና፣ ድጋፍ፣ ወይም ድጎማ)

4.2. እንደ ሥራ ኃላፊነትዎ ድርጅትዎ የከተማውን ትራንስፖርት ተደራሽነት ለማሻሻል ከሌሎች ትራንስፖርት ተቆጣጣሪ ድርጅቶች ወይም አንበሳ ከተማ አውቶቢስ ጋር በመሥራት ያጋጠመዎት ችግር ይኖራል? (ለምሳል፣ በትራንስፖርት ተቆጣጣሪ ደርጅቶች መካከል የሥራ ድርሻ ግልጽ አለመሆን/ሮል ኮንፍውሽን/ ወይም የሥራ ድርሻ መደራረብ፣ የፖሊሲ ፍሬምዎርክ ግልጽ አለመሆን)?

4.3. ከህብረተሰቡ/የከተማ አውቶቢስ ተጠቃሚዎች ጋር በምን መልኩ ተገናኝተዉ ግብረ-መልስ/አስተያየት ይሰበስባሉ? አስተያየታቸውንስ እንዴት ይገመግሙታል?

5. የአገልግሎት ቅንጅት እና ቁጥጥር ሥርዓት

5.1. አንበሳ አውቶቢስ አገልግሎት ድርጅት እና ተቆጣጣሪ ድርጅተት(ቶች) በሚያደርጉት የሥራ ግንኙነት እና ትብብር የሚያስተውሉትና የሚያሳስብዎት ነገር ምንድን ነዉ? ይህስ ጠቅላላ የአገልግሎት አሰጣጥ ብቃቱን እንዴት ይወስነዋል ብለዉ ያስባሉ? በተወሰኑ ዓረፍተ ነገሮች ቢገልጹኝ?

5.2. አሁን ያሉት ሁኔታዎች እንደሚያመላክቱት ከቀኑ በሥራ መግቢያ እና መዉጫ ጊዜ ድጋፍ ሰጪ አዉቶቢሶች ተሰማርተዉ የትራንስፖርት አቅርቦት ችግሩን በመቅረፍ ላይ እንደሚገኙ ይታወቃል፡፡ ሆኖም ግን ይህ የአጭር ጊዜ መፍትሔ ስለሆነ ዘላቂ ሊሆን አይችልም፡፡ ይህንን ሁኔታ እንዴት ያዩታል?

5.3. በከተማዉ የአውቶቢስ አገልግሎት ተደራሽነትን ለማሻሻል ተቆጣጣሪ ደርጅት(ቶች) በምን መልኩ ከሌሎች ተዛማች ድርጅቶች ጋር በመሥራት መሠረተ ልማቶች እንድሻሻሉ የኢንቨስትመንት ዉሳኔዎች ዉስጥ ይሳተፋል (ሉ)/ ዉሳኔ እንድሰጥ ግፊት ያደርጋል(ሉ)?

5.4. አዲስ አበባ ትራንስፖርት አገልግሎት አሰጣጥ የተለያዩ ተቆጣጣሪ ደርጅቶችን ያሳተፈ እንደሆነ ይታወቃል፡፡ ይህ ሁኔታ የአገልግሎት አሰጠጥ ወጥነቱ ላይ በምን መልኩ ተጽዕኖ ያደርጋል ብለዉ ያስባሉ? ይህ ሁኔታ የተጣመረ/የተቀናጀ ተደራሽነት ላይ ተጽእኖ ያደርጋል ብለዉ ያምናሉ?

5.5. ከዚህ ድርጅት ጋር በነበሩበት ወቅት በአገልግሎት ሰጪው /ተቆጣጣሪ ድርጅቶች የመዋቅር ማስተካከያ ተደርጎ የተሻለ ተደራሽነት/የአገልግሎት አሰጣጥ የተፈጠረበት ሁኔታ ካለ ቢያስረዱኝ;

5.6. አገልግሎት ሰጪ ድርጅቶች የአውቶቢስ ትራንስፖርት አገልግሎቱ ተደራሽነት እንድሻሻል ምን ዓይነት ኃላፊነት/ድርሻ መወጣት አለባቸዉ ብለዉ ያስባሉ? ይህን ድርሻ ምን ያህል እየተተገበረ ነው ብለው ያምናሉ? ይህስ ለምን ይመስሎታል?

5.7. እላይ የተነጋገርናቸው ጉዳዮች ኮልፌ-ቀራኒዮ ክፍለ ከተማን ብቻ የሚመለከት ወይም አጠቃላይ የከተማው እና አከባቢው ነባራዊ ሁኔታ መሆኑን ሊያረጋግጡልኝ ይችላሉ?

6. ስለተሳትፎዎ ከልብ እያመሰገንኩ፣ በዚህ ውይይታችን ውስጥ ያልተካተቱና ሀሳብ ሊሰጡበት የሚፈልጉት ጉዳይ ካለ ቢቀጥሉ፤

ጥናቱን በተመለከተ ቅሬታ ካለዎት ወይም ቃለ-መጠይቅዎ በጥናቱ ውስጥ እንዳይካተት ከፈለጉ በማንኛውም ሰዓት ማሳወቅ ይቻላል፡፡ በመጨረሻም በመግቢያ ወረቀት ላይ የተቀመጠውን ሊንክ በመንካት የጥናቱን ውጤት ከ2017 አጋማሽ በኋላ መመልከት ይችላሉ፡፡

APPENDIX D -1: COPY OF SURVEY QUESTIONS (ENGLISH VERSION)

Factors Affecting the Accessibility of Anbessa City Bus Service in Addis Ababa: A Case Study of Kolfe-Keraniyo Sub-City

Student Name: Kelbesa Wakuma Kenea

Survey Questions Paper

I am currently pursuing Masters of Business by Research at Central Queensland University, Australia. This research aims to examine the factors affecting the accessibility of Anbessa city bus transport service provision in Addis Ababa, Ethiopia with a case study of Kolfe-Keraniyo Sub-City.

Your attitudes and opinions are very important to the success of the study. I recognize the value of your time, and sincerely appreciate your efforts to give genuine feedback. Individual responses are anonymous and the data will be held in confidence. This survey is expected to take about 20 minutes to complete. If you feel uncomfortable to respond to the questions at any time, you are welcome to exit the survey.

The CQUniversity Human Research Ethics Committee) has approved this research with an Approval Number H16/04-091[19].

The data that are provided in this survey will be used to prepare a Masters by Research thesis, as well as one or more research publications. If you are interested, these documents will be released at the following link https://www.cqu.edu.au/research/organisations , once they are available (around mid-2017)

Thank you!

Qualifying Questions

1. Are you eighteen years of age, or above?

1. Yes	2. No

[19] The details of contact person who was assigned to pass the stakeholder's or user's concerns regarding the data collected to CQUniversity's Ethics Committee was deleted from this attachment because the thesis will be available to the public on the University's repository.

2. Do you use the Anbessa city public bus?

1. Yes	2. No

Part I: Sociodemographic Characteristics

3. Please indicate your gender.

1. Male	2. Female	3. Rather not say

4. What is your occupation?

1.Full time	2. Part- time (Casual)	3. Student	4. Unemployed	5. Retired	6. Rather not say

5. Could you please tell me which age category you are in?

1. 18-25	2. 25-34	3. 35-44	4. 45-54	5. 55-64	6. 65 years or above

6. What is your average monthly income in Ethiopian Birr?

1. 500 – 2500	2. 2501 – 3500	3.3501 – 4500	4.4501– 5500	5. above 5500	6. rather not say

7. What is your ideal walking distance to a bus stop or station?

1. Less than five minutes	2. 5 – 10 minutes	3. 10 – 15 minutes	4. 15 – 20 minutes	5. 20 – 25 minutes	6. more than 25 minutes

Part II: Accessibility

The following series of questions ask about different factors that might affect the accessibility of bus transport service. When you answer them, please do so thinking specifically about Anbessa city buses and your experiences from Kolfe-Keraniyo sub-city and to the rest of the city.

8. To what extent are you satisfied with the connectivity of buses across the transport network? (For example, this relates to how easy or hard it is to catch connecting services at a convenient time).

1. Very satisfied	2. Satisfied	3. Neutral	4. Unsatisfied	5. Very Unsatisfied	6. Not sure/rather not say

9. Do you regard the buses as being safe?

1. Strongly disagree	2. Disagree	3. Neutral	4. Agree	5. Strongly Agree	6. I don't know

10. Do you regard the buses as being comfortable?

1. Strongly disagree	2. Disagree	3. Neutral	4. Agree	5. Strongly Agree	6. I don't know

11. To what extent have you found that the city buses are overcrowded (congested) with commuters?

1. Very congested	2. Somewhat congested	3. Neutral	4. Rarely congested	5. Never congested	6. I don't know

12. Do you find that that buses fare are affordable?

1. Strongly Disagree	2. Disagree	3. Neutral	4. Agree	5. Strongly Agree	6. I don't know

13. How would you rate the customer service provided by the city buses?

1. Very poor	2. Poor	3. Neutral	4. Good	5. Very Good	6. I don't know

14. Do you find it easy to view the bus timetable and information about the routes (for example, by signage on the bus stop or on the bus counter)?

1. No, it's always difficult	2. No, it's sometimes difficult	3. Neutral	4. Yes, this is usually easy	5. Yes, this is always easy	7. I don't know

15. How do you rate the condition of the roads used along the bus route?

1. Very Poor	2. Poor	3. Neutral	4. Good	5. Very Good	6. I don't kno

16. Do you believe that the city bus routes have adequate traffic planning (for example, the traffic signals work well, use of priority bus lanes, speed limits, etc.)?

1. Strongly disagree	2. Disagree	3. Neutral	4. Agree	5. Strongly Agree	6. I don't know

Section III. Reliability and Communication

17. In your experience, what is the average waiting time at your regular bus stop?

1. Less than 20 minutes	2. 20-30 minutes	3. 30-40 minutes	4. 40- 50 minutes	5. about an hour	6. cannot be determined

18. To what extent do you feel the city buses are reliable, as a means of commuting within and around the city?

1. Extremely unreliable	2.Unreliable	3. Neutral	4. Reliable	5. Very reliable	6. I don't know

19. To what extent do you believe that the city bus service is flexible?

1. Very Rigid	2. Rigid	3. Neutral	4. Flexible	5. Very Flexible	6. I don't know

20. (1) Have you ever attended any public discussion, or contributed to consultation organized by Anbessa City Bus Enterprise, about its service? (If No, go to Question 20.2)

1. Yes	2. No

(2) Have you ever been aware of these events or consultation you may have noticed (e.g. an advertisement on Television or Newspaper)?

1. Yes	2. No

21. Are you aware of any department /body in Anbessa City Bus/the city government that deals with complaints from bus users?

1. Yes	2. No	3. I don't know

22. (1) As Anbessa city bus user, have you ever made a complaint/comment to the city government in regard to its service accessibility and reliability? (If yes, then go to Question 22. 2)

1. Yes	2. No

(2) Have you obtained a satisfactory feedback for your complaints/comments regarding the city bus service?

1. Yes	2. No

Part IV Service Coordination

23. To what extent do you agree that**:** the city's traffic polices are effective in reducing peak-hour congestion?

1. Very poor	2. Poor	3. Neutral	4. Effective	5. Very effective	6. I don't know

24. To what extent do you agree that the bus drivers are careful in following the traffic signals?

1. Strongly disagree	2. Disagree	3. Neutral	4. Agree	5. Strongly Agree	6. I don't know

25. To what extent do you agree that extra buses are allocated during peak hours to provide good service accessibility?

1. Strongly disagree	2. Disagree	3. Neutral	4. Agree	5. Strongly Agree	6. I don't know

26. When you ride the bus, how often have you noticed more traffic police and/or public transport supervisors, working to lessen the route and bus stop congestion during peak activity periods?

1. Never	2. Rarely	3. Sometimes	4. Frequently	5. Always	6. I cannot answer

Part V. General questions

27. In your experience as a bus user, what is the most important issue concerning accessibility of the bus services? (Please tell me in a few words only)

_____

_____

28. In your experience as a bus user, what is the most important issue concerning coordination and regulation of the bus services? (Please tell me in a few words only)

_____

_____

29. Are there any other comments that you would like to make?

_____

_____

_____

Thank you for your time and cooperation!

APPENDIX D -2: COPY OF SURVEY QUESTIONS AMHARIC VERSION

የጥናቱ አርዕስት፡

በአዲስ አበባ ከተማ የአንበሳ አዉቶቢስ አገልግሎት ተደራሽነት እና ዉስንነቶች - በኮልፌ ቀራኒዮ ክፍለ-ከተማ ላይ ያተኮረ ጥናት

የተማሪዉ ሥም፡ ቀልቤሳ ዋቁማ ቀነዓ

ለተጠቃሚዎች የቀረበ መጠይቅ

ውድ መልስ ሰጪዎች፤

በአሁኑ ወቅት በሴንትራል ኩዊንስላንድ ዩኒቨርሲቲ የማስተርስ ኦፍ ቢዝነስ ጥናት በማድረግ ላይ እገኛለሁ፡፡ ጥናቱ የሚያተኩረዉ በአዲስ አበባ ከተማ የአንበሳ ከተማ አዉቶቢስ አገልግሎት ተደራሽነት እና ዉስንነቶች ላይ ሲሆን ይህም በኮልፌ ቀራኒዮ ክፍለ-ከተማ ላይ ያተኮረ ጥናት ነዉ፡፡

የርስዎ አስተያየት እና አመለካከት ለጥናቱ ስኬት ወሳኝነት አለዉ፡፡ ጊዜዎ በጣም ወድ መሆኑን እረዳለሁ፤ እንዲሁም ለሚከተሉት ጥያቄዎች ተገቢ ምላሽ ስለሚሰጡኝ የላቀ ምስጋናዬን አቀርባለሁ፡፡ የማንኛዉም ግለሰብ መልስ ሥም አይገለጽም፣ የመልስ ወረቀቶቹም በጥንቃቄ የሚቀመጡ ይሆናሉ፡፡ ጥያቄዎቹን ለመመለስ አስከ ሃያ ደቂቃ ሊፈጅ ይችላል፡፡ በመሃል ጥያቄዎቹን ለመመለስ ፍላጎተ ካጡ ማቋረጥ ይችላሉ፡፡

ጥናቱ በሴንትራል ኩዊስላንድ ዩኒቨርሲቲ የሰዉ ጥናት ሥነ-ምግባር ኮሚቴ (ሂዉማ ሪሰርች ኮሚቴ) ቁጥር H16/04-091 የጸደቀ ነዉ፡፡

በዚህ መጠይቅ የሚሰበሰቡት መረጃዎች (ዳታ) የማስተርስ ጥናት ወረቀት ለማዘገጀት እንዲሁም አንድ ወይም ሁለት ጆርናሎችን ለማሳተም የሚረዱ ይሆናል፡፡ ለወደ ፊት ከፈለጉ የጥናቱ ዉጤት በ https://www.cqu.edu.au/research/organisations, once they are available (around mid-2017) መመልከት ይችላሉ፡፡

አመሰግናለሁ፡፡

የመመዘኛ ጥያቄዎች

1. እድሜዎት አስራ ስምንት ወይም ከዚያ በላይ ነዉ ?

1. አዎ 2. አይደለም

2. አንበሳ ከተማ አዉቶብስን ይጠቀማሉ?

1. አዎ 2. አይደለም

ክፍል አንድ ፡- ስነ-ህዝብ፣ ማህበራዊ እና ኢኮኖሚያዊ ሁኔታዎች

3. ፆታዎን ቢገልጹ፤

1. ወንድ 2. ሴት 3. መግለጽ አልፈልግም

4. ሥራዎት ምንድን ነዉ?

1. ቋሚ ሠራተኛ 2. ጊዜያዊ ሠራተኛ 3. ተማሪ 4. ሥራ አጥ 5. ጡረተኛ 6. መግለጽ አልፈልግም

5. ያሉበትን የዕድሜ ክልል ቢገልጹልኝ?

1. 18-25 2. 25-34 3. 35-44 4. 45-54 5. 55-64 6. 65 እና ከዚያ በላይ

6. አማካይ የወር ገቢዎን ቢገልጹልኝ?

1. 500 - 2500 2.2501- 3500 3. 3501- 4500 4. 4501- 5500 5. ከ5500 በላይ 6. መግለጽ አልፈልግም

7. ወደ ተለያየ ቦታ ለመሄድ ከቤትዎ/መኖሪያ ቤትዎ አንበሳ አዉቶቢስ መሳፈሪያጋር ለመድረስ በእግር ምን ያህል ይጓዛሉ?

1. ከአምስት ደቂቃ በታች 2. 5 – 10 ደቂቃ 3. 10 -15 ደቂቃ 4.15 - 20 ደቂቃ 5. 20 - 25 ደቂቃ 6. ከ 25 ደቂቃ በላይ

ክፍል ሁለት ፡- ተደራሽነት

የሚከተሉት ተከታታይ ጥያቄዎች የአንበሳ አውቶቢስ አገልግሎትን የሚወስኑ ምክንያቶችን ይመለከታሉ፡፡ ምላሽዎን ሲሰጡ የኮልፌ ቀራኒዮ ክፍለ ከተማን እና የከተማዉን ተሞክሮዎ በሙሉ ግምት ዉስጥ በማስገባት ቢሆን ተገቢ ነዉ፡፡

8. በአዉቶቢሶቹ የትራንስፖርት አገልግሎት ቅንጅት /ኔትዎርክ/ ምን ያክል ረክተዋል? (ለምሳሌ አዉቶቢሶቹን በቀላሉ ወይም ቀላል ባልሆነ ሁኔታ በተፈለገዉ ሰዓት ማግኘት)

1. በጣም ረክቻለሁ2. ረክቻለሁ 3. ገለልተኛነኝ 4.አልረካሁም 5. በፍጹም አልረካሁም 6. መግለጽ አልፈልግም

9. የከተማ አዉቶቢሶቹ ጠንቃቃ (ለአደጋ ያልተጋለጠ) ነዉ ብለው ያምናሉ?

1. በፍጹም አላምንም 2. አላምንም 3. ገለልተኛ ነኝ 4. አምናለሁ 5. በሚገባ አምናለሁ 6. መግለጽ አልፈልግም

10. የከተማ አውቶቢሶቹ ምቹ ናቸው ብለው ያምናሉ?

1. በፍጹም አላምንም 2. አላምንም 3. ገለልተኛ ነኝ 4. አምናለሁ 5. በሚገባ አምናለሁ 6. መግለጽ አልፈልግም

11. የከተማ አውቶቢሶቹ የጭነት ሁኔታ ምን ያህል የተጨናነቀ ነዉ ይላሉ?

1. በጣም የተጨናነቁ 2. የተጨናነቁ 3. ገለልተኛ ነኝ 4. አልተጨናነቁም 5. በፍጹም አልተጨናነቁም 6. አላውቀዉም

12. የአንበሳ አውቶቢስ ዋጋ /ታሪፍ የሁሉንም ተጠቃሚዎች አቅም ያገናዘበ ነዉ፡፡

1. በፍጹም አልስማማም 2. አልስማማም 3. ገለልተኛ ነኝ 4. እስማማለሁ 5. በሚገባ እስማማለሁ 6. መግለጽ አልፈልግም

13. በከተማ አዉቶቢሱ የሚሰጠዉን የደንበኞች አገልግሎት እንዴት ይመዝኑታል?

1.በጣም ደካማ 2. ደካማ 3. ገለልተኛ ነኝ 4. ጥሩ 5. በጣም ጥሩ 6. አላውቀዉም

14.የአዉቶቢሶቹን የጊዜ ሰሌዳ እና የጉዞ መሰምመሮች መረጃ በቀላሉ ማየት እና መከታተል ይችላሉ? (ለምሳሌ በአውቶቢስ ማቆሚያ ያሉትን ምልክቶች ወይም በአውቶቢሶች ላይ የሚታዩ ቁጥሮች)

1. በፍጹም አልችልም 2. አልችልም 3. ገለልተኛ ነኝ 4. እችላለሁ 5. በሚገባ እችላለሁ 6. መግለጽ አልፈልግም

15. አውቶቢሶቹ የሚሄዱበትን የመንገድ ሁኔታ እንዴት ይመዝናሉ?

1. በጣም ደካማ 2. ደካማ 3. ገለልተኛ 4. ጥሩ 5. በጣም ጥሩ 6. አላውቀውም

16. የከተማ አውቶቢሶቹ የሚጓዙበት መስመሮች በቂ የትራፊክ እቅድ (በአግባቡ የሚሰሩ የትራፊክ ምልክቶች፣ ለአዉቶቢሶች ብቻ የተፈቀደ የጉዞ መስመር (መንገድ)፣ የፍጥነት መቆጣጠሪያ፣ ወዘተ) አሏቸዉ ብለው ያምናሉ?

1. በፍጹም አላምንም 2. አላምንም 3. ገለልተኛ ነኝ 4. አምናለሁ 5. በሚገባ አምናለሁ 6. መግለጽ አልፈልግም

ክፍል ሶስት፡- አስተማማኝነት እና ግንኙነት

17. ከግል ተሞክሮዎ አንጻር ሲያዩት፣ በተለመደዉ የአዉቶቢስ መቆሚያ ፊርማታ የሚጠብቁት ለምን ያህል ነዉ?

1. ከሃያ ደቂቃ በታች 2. ከ20-30 ደቂቃ 3. 30-40 ደቂቃ 4. 40- 50 ደቂቃ 5. ለአንድ ሰዓት ያህል 6. አይታወቅም

18. አንበሳ የከተማ አውቶቢስ ምን ያክል በአዲስ አበባ እና አከባቢው ለጉዞ አስተማማኝ ነዉ ብለዉ ያምናሉ?

1. በፍጹም አስተማማኝ አይደለም 2. አስተማማኝ አይደለም 3. ገለልተኛ ነኝ 4. አስተማማኝ ነው 5. በሚገባ

አስተማማኝ ነው 6. አላውቀውም

19. የአንበሳ ከተማ አውቶቢስ አገልግሎት አሰጣጥ ምን ያህል ከሁኔታዎች ጋር የሚስተካከል ነው ብለው ያምናሉ;

1. ምንም የማይስተካከል 2. የማይስተካከል 3.ገለልተኛ 4. የሚስተካከል 5. በጣም የሚስተካከል 6. አላውቀውም

20. (1) በአንበሳ የከተማ አውቶቢስ አገልግሎት ድርጅት አገልግሎቱን ለማሻሻል ባዘጋጀው የህዝብ የምክክር መድረክ ላይ ተሳትፈው ወይም ሀሳብ አቅርበው ያውቃሉ; (መልስዎ አይደለም ከሆነ ወደ ጥያቄ 20.2. ይሂዱ)

1. አዎ 2. አይደለም

(2) እነዚህ የህዝብ የምክክር መድረኮች ሲደረጉ አስተወለው ያውቃሉ? (ለምሳሌ በቴሌቪዥን ወይም በጋዜጣ ማስታወቂያ)

1. አዎ 2. አይደለም

21. ከከተማው መስተዳድር ወይም ከአንበሳ የከተማ አውቶቢስ አገልግሎት ድርጅት የከተማ አውቶቢስ ተጠቃሚዎችን ቅሬታ የሚሰማ አካል መኖሩን አስተውለው ያውቃሉ?

1. አዎ 2. አይደለም3. በቂ መረጃ የለኝም

22. (1) እንደ አንበሳ የከተማ አውቶቢስ ተጠቃሚነትዎ የአገልግሎት አሰጣጡን አስተማማኝነት ወይም ተደራሽነት በተመለከተ ለከተማው መስተዳድር ሀሳብ/ቅሬታ አቅርበው ያውቃሉ;(መልስዎ አዎ ከሆነ ወደ ጥያቄ 22.2. ይመልሱ)፡፡

1. አዎ 2. አይደለም

(2) የከተማውን አገልግሎት አሰጣጥ በተመለከተ ላቀረቡት ቅሬታ ወይም አስተያየት አጥጋቢ ምላሽ አግኝተዋልን;

1. አዎ 2. አይደለም

ክፍል አራት፡- የአገልግሎት ቅንጅት

23. የከተማው ትራፊክ ፖሊሶች ጧት እና ማታ (የሥራ መግቢያ እና መውጫ ሰዓት) የሚስተዋሉትን መጨናነቅ ለመቀነስ ምን ያህል ዉጤታማ ናቸው ብለው ያምናሉ;

1. በጣም ደካማ 2. ደካማ 3.ገለልተኛ ነኝ 4. ውጤታማ 5. በጣም ውጤታማ 6. አላውቀውም

24. የአንበሳ ከተማ አውቶቢስ ሾፌሮች ምን ያህል የትራፊክ ምልክቶችን ተከትለው በጥንቃቄ ይነዳሉ ብለው ይስማማሉ;

1. በፍጹም አልስማማም 2. አልስማማም 3.ገለልተኛ ነኝ 4. እስማማለሁ 5. በጣም እስማማለሁ 6. አላውቀውም

25. በሥራ መግቢያ እና መውጫ ሰዓት ተደራሽነትን ለማሻሻል ተጨማሪ አውቶቢሶች ተሰማርተዋል ብለው ምን ያህል ይስማማሉ

1. በፍጹም አልስማማም 2. አልስማማም 3.ገለልተኛ ነኝ 4. እስማማለሁ 5. በጣም

እስማማለሁ 6. አላውቀውም

26. በከተማው አውቶቢስ ሲሄዱ በሥራ መግቢያ እና መውጫ ሰዓት ተጨማሪ የትራፊክ ፖሊሶች ወይም የትራንስፖርት ሱፐርቫይዘሮች የትራፊክ ጭንቅንቁን እንድያቃልሉ ተመድበው ምን ያህል አዘውትረው መንገድ ላይ ያዩዋቸዋል

1. በፍጹም ይታዩም 2. በብዛት አይታዩም 3.ገለልተኛ ነኝ 4. አንዳንድ ጊዜ ይታያሉ 5. ብዙውን ጊዜ ይታያሉ 6. ሁልጊዜ ይታያሉ

ክፍል አምስት ፡- ጠቅላላ ጥያቄዎች

27. እንደ ከተማ አውቶቢስ ተጠቃሚነትዎ፣ የአገልግሎቱን ተደራሽነት በዋናነት የሚወስነዉ ምንድን ነዉ ብለዉ ያምናሉ?

_____

28. እንደ ከተማ አውቶቢስ ተጠቃሚነትዎ፣ የአገልግሎቱን አሰጣጥ ቅንጅት እና ቁጥጥር በዋናነት የሚወስነዉ ጉዳይ ምንድን ነዉ ብለዉ ያምናሉ (በጥቅት ዓረፍተ ነገር ቢገልጹልኝ)

_____

29. ሌላ መጨመር የሚፈልጉት ነገር አለ?

_____

APPENDIX E: DESCRIPTIVE TABLES (SOCIODEMOGRAPHICS)

Gender (Q3)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	121	61.7	62.4	62.4
	Female	73	37.2	37.6	100.0
	Total	194	99.0	100.0	
Missing	System	2	1.0		
Total		196	100.0		

Occupation Category (Q4)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Employed	171	87.2	87.2	87.2
	Unemployed	25	12.8	12.8	100.0
	Total	196	100.0	100.0	

Age Category (Q5)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Young	168	85.7	85.7	85.7
	Adult or Old	28	14.3	14.3	100.0
	Total	196	100.0	100.0	

Income Category (Q6)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Low and Middle Income	113	57.7	70.6	70.6
	Rich and Upper Middle Income	47	24.0	29.4	100.0
	Total	160	81.6	100.0	
Missing	System	36	18.4		
Total		196	100.0		

APPENDIX F: DISCRIPTIVE TABLES (VARIABLES)

Bus Stop Walking Distance (Q7)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Short Walk	50	25.5	25.5	25.5
	Medium or Long Walk	146	74.5	74.5	100.0
	Total	196	100.0	100.0	

Satisfaction of Users in Connecting between Different Bus Routes (8)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Satisfied	34	17.3	18.0	18.0
	Unsatisfied	155	79.1	82.0	100.0
	Total	189	96.4	100.0	
Missing	System	7	3.6		
Total		196	100.0		

Safety Level of the Bus (Q9)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	70	35.7	36.6	36.6
	Disagree	121	61.7	63.4	100.0
	Total	191	97.4	100.0	
Missing	System	5	2.6		
Total		196	100.0		

Comfort Level of Anbessa Bus (Q10)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	28	14.3	14.4	14.4
	Disagree	167	85.2	85.6	100.0
	Total	195	99.5	100.0	
Missing	System	1	.5		
Total		196	100.0		

Overcrowding (Q11)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	more crowded	193	98.5	100.0	100.0
Missing	System	3	1.5		
Total		196	100.0		

Affordability Anbessa bus fare (Q12)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	135	68.9	70.7	70.7
	Disagree	56	28.6	29.3	100.0
	Total	191	97.4	100.0	
Missing	System	5	2.6		
Total		196	100.0		

Customer Service of Anbessa City Bus (Q13)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Good	73	37.2	38.6	38.6
	Poor	116	59.2	61.4	100.0
	Total	189	96.4	100.0	
Missing	System	7	3.6		
Total		196	100.0		

Condition to Find Travel information (Q14)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Easy	105	53.6	54.1	54.1
	Difficult	89	45.4	45.9	100.0
	Total	194	99.0	100.0	
Missing	System	2	1.0		
Total		196	100.0		

Road condition of the bus routes (Q15)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Good	100	51.0	52.1	52.1
	Poor	92	46.9	47.9	100.0
	Total	192	98.0	100.0	
Missing	System	4	2.0		
Total		196	100.0		

Adequacy of Traffic Planning (Q16)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Good	22	11.2	11.3	11.3
	Poor	172	87.8	88.7	100.0
	Total	194	99.0	100.0	
Missing	System	2	1.0		
Total		196	100.0		

Average Bus Waiting Time (Q17)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Short Duration	61	31.1	39.4	39.4
	Long Duration	94	48.0	60.6	100.0
	Total	155	79.1	100.0	
Missing	System	41	20.9		
Total		196	100.0		

Reliability of Anbessa bus service for commuting (18)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Reliable	56	28.6	32.0	32.0
	Unreliable	119	60.7	68.0	100.0
	Total	175	89.3	100.0	
Missing	System	21	10.7		
Total		196	100.0		

Flexibility of Anbessa bus service (Q19)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Flexible	53	27.0	30.8	30.8
	Rigid	119	60.7	69.2	100.0
	Total	172	87.8	100.0	
Missing	System	24	12.2		
Total		196	100.0		

Users Awareness of Attending public discussion/Consultation (Q20a)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	12	6.1	6.1	6.1
	No	184	93.9	93.9	100.0
	Total	196	100.0	100.0	

Awareness of consultation/discussion about Anbessa on media (Q20b)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	33	16.8	17.8	17.8
	No	152	77.6	82.2	100.0
	Total	185	94.4	100.0	
Missing	System	11	5.6		
Total		196	100.0		

User's Complaints about Anbessa bus service (22a)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	16	8.2	8.2	8.2
	No	180	91.8	91.8	100.0
	Total	196	100.0	100.0	

Awareness about complaint handling in Anbessa (21)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	38	19.4	37.6	37.6
	No	63	32.1	62.4	100.0
	Total	101	51.5	100.0	
Missing	System	95	48.5		
Total		196	100.0		

Feedback on Anbessa bus service complaints (22b)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	4	2.0	23.5	23.5
	No	13	6.6	76.5	100.0
	Total	17	8.7	100.0	
Missing	System	179	91.3		
Total		196	100.0		

Effectiveness of Traffic Polices in peak hour congestion reduction (Q23)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Effective	46	23.5	25.0	25.0
	Poor	138	70.4	75.0	100.0
	Total	184	93.9	100.0	
Missing	System	12	6.1		
Total		196	100.0		

Bus Driver's Care to follow the traffic signals (Q24)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	108	55.1	61.0	61.0
	Disagree	69	35.2	39.0	100.0
	Total	177	90.3	100.0	
Missing	System	19	9.7		
Total		196	100.0		

Extra bus arrangement during peak hours (Q25)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	27	13.8	14.6	14.6
	Disagree	158	80.6	85.4	100.0
	Total	185	94.4	100.0	
Missing	System	11	5.6		
Total		196	100.0		

Adequacy of Traffic Controllers (Q26)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Adequate	77	39.3	39.9	39.9
	Inadequate	116	59.2	60.1	100.0
	Total	193	98.5	100.0	
Missing	System	3	1.5		
Total		196	100.0		

APPENDIX G: DESCRIPTIVE TABLES- CROSS-TABULATION AND CHI-SQUATE TESTS

Attachment Table 1.1: Age Categorised versus Safety Level Cross-tabulation

			Safety Level		Total
			Agree	Disagree	
Age Categorised	Young	Count	54	112	166
		% within Age Categorised	32.5%	67.5%	100.0%
		Adjusted Residual	-2.9	2.9	
	Adult or Old	Count	16	10	26
		% within Age Categorised	61.5%	38.5%	100.0%
		Adjusted Residual	2.9	-2.9	
Total		Count	70	122	192
		% within Age Categorised	36.5%	63.5%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	8.165[a]	1	.004		
Continuity Correction[b]	6.961	1	.008		
Likelihood Ratio	7.835	1	.005		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 9.48.
b. Computed only for a 2x2 table

Occupation (Q1) versus Safety Level of the Bus (Q9) Cross-tabulation

			Safety Level of the Bus (Q9)		Total
			Agree	Disagree	
Occupation Category (Q1)	Employed	Count	57	111	168
		% within Occupation Category (Q1)	33.9%	66.1%	100.0%
		Adjusted Residual	-2.1	2.1	
	Unemployed	Count	13	10	23
		% within Occupation Category (Q1)	56.5%	43.5%	100.0%
		Adjusted Residual	2.1	-2.1	
Total		Count	70	121	191
		% within Occupation Category (Q1)	36.6%	63.4%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	4.448[a]	1	.035		
Continuity Correction[b]	3.528	1	.060		
Likelihood Ratio	4.277	1	.039		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 8.43.
b. Computed only for a 2x2 table

Income (Q4) versus Bus Comfort Level (Q10) Cross-tabulation

			Comfort Level of Anbessa Bus (Q10)		
			Agree	Disagree	Total
Income Category (Q4)	Low and Middle Income	Count	20	93	113
		% within Income Category (Q4)	17.7%	82.3%	100.0%
		Adjusted Residual	2.2	-2.2	
	Rich and Upper Middle Income	Count	2	45	47
		% within Income Category (Q4)	4.3%	95.7%	100.0%
		Adjusted Residual	-2.2	2.2	
Total		Count	22	138	160
		% within Income Category (Q4)	13.8%	86.3%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	5.059[a]	1	.025		
Continuity Correction[b]	3.989	1	.046		
Likelihood Ratio	6.089	1	.014		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 6.46.
b. Computed only for a 2x2 table

Age (Q3) versus Overcrowding (Q11) Cross-tabulation

			Overcrowding (Q11) more crowded	Total
Age Category (Q3)	Young	Count	165	165
		% within Age Category (Q3)	100.0%	100.0%
		Adjusted Residual	.	
	Adult or Old	Count	28	28
		% within Age Category (Q3)	100.0%	100.0%
		Adjusted Residual	.	
Total		Count	193	193
		% within Age Category (Q3)	100.0%	100.0%

Chi-Square Tests

	Value
Pearson Chi-Square	.[a]
N of Valid Cases	193

a. No statistics are computed because Overcrowding (Q11) is a constant.

Adequacy of Traffic Controllers (Q26) versus Customer Service in Anbessa Bus (Q13) Cross-tabulation

			Customer Service of Anbessa City Bus (Q13)		Total
			Good	Poor	
Adequacy of Traffic Controllers (Q26)	Adequate	Count	37	37	74
		% within Adequacy of Traffic Controllers (Q26)	50.0%	50.0%	100.0%
		Adjusted Residual	2.7	-2.7	
	Inadequate	Count	34	78	112
		% within Adequacy of Traffic Controllers (Q26)	30.4%	69.6%	100.0%
		Adjusted Residual	-2.7	2.7	
Total		Count	71	115	186
		% within Adequacy of Traffic Controllers (Q26)	38.2%	61.8%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	7.285[a]	1	.007		
Continuity Correction[b]	6.476	1	.011		
Likelihood Ratio	7.252	1	.007		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 28.25.
b. Computed only for a 2x2 table

User's Complaints about bus service (22a) versus Customer Service (Q13) Cross-tabulation

			Customer Service of Anbessa City Bus (Q13)		Total
			Good	Poor	
Complaints about Anbessa bus service (22a)	Yes	Count	2	13	15
		% within Complaints about Anbessa bus service (22a)	13.3%	86.7%	100.0%
		Adjusted Residual	-2.1	2.1	
	No	Count	71	103	174
		% within Complaints about Anbessa bus service (22a)	40.8%	59.2%	100.0%
		Adjusted Residual	2.1	-2.1	
Total		Count	73	116	189
		% within Complaints about Anbessa bus service (22a)	38.6%	61.4%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	4.396[a]	1	.036		
Continuity Correction[b]	3.314	1	.069		
Likelihood Ratio	5.064	1	.024		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.79.
b. Computed only for a 2x2 table

Effectiveness of Traffic Police in peak hour (Q23) versus satisfaction of users in connectivity of the buses (Q8) Cross-tabulation

			Connect_Satisf (Q8)		Total
			Satisfied	Unsatisfied	
Effectiveness of Traffic Polices in peak hour congestion reduction (Q23)	Effective	Count	13	31	44
		% within Effectiveness of Traffic Polices in peak hour congestion reduction (Q23)	29.5%	70.5%	100.0 %
		Adjusted Residual	2.3	-2.3	
	Poor	Count	19	115	134
		% within Effectiveness of Traffic Polices in peak hour congestion reduction (Q23)	14.2%	85.8%	100.0 %
		Adjusted Residual	-2.3	2.3	
Total		Count	32	146	178
		% within Effectiveness of Traffic Polices in peak hour congestion reduction (Q23)	18.0%	82.0%	100.0 %

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	5.304[a]	1	.021		
Continuity Correction[b]	4.313	1	.038		
N of Valid Cases	178				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 7.91.
b. Computed only for a 2x2 table

Adequacy of Traffic Controllers (Q26) versus Adequacy of Travel information (Q14) Cross-tabulation

			Travel_infor (Q14)		
			Easy	Difficult	Total
Adequacy of Traffic Controllers (Q26)	Adequate	Count	49	26	75
		% within Adequacy of Traffic Controllers (Q26)	65.3%	34.7%	100.0%
		Adjusted Residual	2.5	-2.5	
	Inadequate	Count	54	62	116
		% within Adequacy of Traffic Controllers (Q26)	46.6%	53.4%	100.0%
		Adjusted Residual	-2.5	2.5	
Total		Count	103	88	191
		% within Adequacy of Traffic Controllers (Q26)	53.9%	46.1%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	6.467[a]	1	.011		
Continuity Correction[b]	5.733	1	.017		
N of Valid Cases	191				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 34.55.
b. Computed only for a 2x2 table

Age Categorised versus Road Condition Cross-tabulation

			Road Condition		Total
			Good	Poor	
Age Categorised	Young	Count	81	84	165
		% within Age Categorised	49.1%	50.9%	100.0%
		Adjusted Residual	-2.1	2.1	
	Adult or Old	Count	19	8	27
		% within Age Categorised	70.4%	29.6%	100.0%
		Adjusted Residual	2.1	-2.1	
Total		Count	100	92	192
		% within Age Categorised	52.1%	47.9%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	4.210[a]	1	.040		
Continuity Correction[b]	3.401	1	.065		
N of Valid Cases	192				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 12.94.
b. Computed only for a 2x2 table

Adequacy of Traffic Planning (Q16) versus Condition of Roads (Q15) Cross-tabulation

			Road condition of the bus routes (Q15)		Total
			Good	Poor	
Adequacy of Traffic Planning (Q16)	Good	Count	17	5	22
		% within Adequacy of Traffic Planning (Q16)	77.3%	22.7%	100.0%
		Adjusted Residual	2.5	-2.5	
	Poor	Count	82	87	169
		% within Adequacy of Traffic Planning (Q16)	48.5%	51.5%	100.0%
		Adjusted Residual	-2.5	2.5	
Total		Count	99	92	191
		% within Adequacy of Traffic Planning (Q16)	51.8%	48.2%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	6.445[a]	1	.011		
Continuity Correction[b]	5.345	1	.021		
N of Valid Cases	191				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 10.60.
b. Computed only for a 2x2 table

Adequacy of Traffic Controllers (Q26) versus Adequacy of Traffic Planning (Q16) Cross-tabulation

			Adequacy of Traffic Planning (Q16)		
			Good	Poor	Total
Adequacy of Traffic Controllers (Q26)	Adequate	Count	14	63	77
		% within Adequacy of Traffic Controllers (Q26)	18.2%	81.8%	100.0%
		Adjusted Residual	2.9	-2.9	
	Inadequate	Count	6	108	114
		% within Adequacy of Traffic Controllers (Q26)	5.3%	94.7%	100.0%
		Adjusted Residual	-2.9	2.9	
Total		Count	20	171	191
		% within Adequacy of Traffic Controllers (Q26)	10.5%	89.5%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	8.182[a]	1	.004		
Continuity Correction[b]	6.862	1	.009		
N of Valid Cases	191				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 8.06.
b. Computed only for a 2x2 table

Adequacy of Traffic Controllers (Q26) versus Flexibility of the Service (Q19) Cross-tabulation

			Flexibility of Anbessa bus service (Q19)		
			Flexible	Rigid	Total
Adequacy of Traffic Controllers (Q26)	Adequate	Count	31	36	67
		% within Adequacy of Traffic Controllers (Q26)	46.3%	53.7%	100.0%
		Adjusted Residual	3.4	-3.4	
	Inadequate	Count	22	81	103
		% within Adequacy of Traffic Controllers (Q26)	21.4%	78.6%	100.0%
		Adjusted Residual	-3.4	3.4	
Total		Count	53	117	170
		% within Adequacy of Traffic Controllers (Q26)	31.2%	68.8%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	11.739[a]	1	.001		
Continuity Correction[b]	10.607	1	.001		
N of Valid Cases	170				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 20.89.
b. Computed only for a 2x2 table

Extra bus arrangement (Q25) versus Reliability of Anbessa the service (18) Cross-tabulation

			Reliability of Anbessa for commuting (18)		
			Reliable	Unreliable	Total
Extra bus arrangement during peak hours (Q25)	Agree	Count	13	11	24
		% within Extra bus arrangement during peak hours (Q25)	54.2%	45.8%	100.0%
		Adjusted Residual	2.7	-2.7	
	Disagree	Count	38	106	144
		% within Extra bus arrangement during peak hours (Q25)	26.4%	73.6%	100.0%
		Adjusted Residual	-2.7	2.7	
Total		Count	51	117	168
		% within Extra bus arrangement during peak hours (Q25)	30.4%	69.6%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	7.508[a]	1	.006		
Continuity Correction[b]	6.252	1	.012		
N of Valid Cases	168				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 7.29.
b. Computed only for a 2x2 table

Adequacy of Traffic Controllers (Q26) versus Reliability of the service (18) Cross-tabulation

			Reliability of Anbessa for commuting (18)		
			Reliable	Unreliable	Total
Adequacy of Traffic Controllers (Q26)	Adequate	Count	35	33	68
		% within Adequacy of Traffic Controllers (Q26)	51.5%	48.5%	100.0%
		Adjusted Residual	4.4	-4.4	
	Inadequate	Count	20	84	104
		% within Adequacy of Traffic Controllers (Q26)	19.2%	80.8%	100.0%
		Adjusted Residual	-4.4	4.4	
Total		Count	55	117	172
		% within Adequacy of Traffic Controllers (Q26)	32.0%	68.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	19.648[a]	1	.000		
Continuity Correction[b]	18.193	1	.000		
N of Valid Cases	172				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 21.74.
b. Computed only for a 2x2 table

Bus Waiting Time (Q17) versus Awareness about complaint handling (21) Cross-tabulation

			Awarness about complaint handling in Anbessa (21) Yes	No	Total
Average Bus Waiting Time (Q17)	Short Duration	Count	17	18	35
		% within Average Bus Waiting Time (Q17)	48.6%	51.4%	100.0%
		Adjusted Residual	2.2	-2.2	
	Long Duration	Count	11	33	44
		% within Average Bus Waiting Time (Q17)	25.0%	75.0%	100.0%
		Adjusted Residual	-2.2	2.2	
Total		Count	28	51	79
		% within Average Bus Waiting Time (Q17)	35.4%	64.6%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	4.734[a]	1	.030		
Continuity Correction[b]	3.759	1	.053		
N of Valid Cases	79				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 12.41.
b. Computed only for a 2x2 table

Gender (Q3) versus Awareness about complaint handling in Anbessa (21) Cross-tabulation

			Awareness about complaint handling in Anbessa (21) Yes	No	Total
Gender (Q3)	Male	Count	31	36	67
		% within Gender (Q3)	46.3%	53.7%	100.0%
		Adjusted Residual	2.3	-2.3	
	Female	Count	7	25	32
		% within Gender (Q3)	21.9%	78.1%	100.0%
		Adjusted Residual	-2.3	2.3	
Total		Count	38	61	99
		% within Gender (Q3)	38.4%	61.6%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	5.449[a]	1	.020		
Continuity Correction[b]	4.466	1	.035		
N of Valid Cases	99				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 12.28.
b. Computed only for a 2x2 table

Age Category (Q3) versus Awareness of consultation/discussion about Anbessa on media (Q20b) Cross-tabulation

				Awareness of consultation/discussion about Anbessa on media (Q20b) Yes	No	Total
Age Category (Q3)		Young	Count	25	135	160
			% within Age Category (Q3)	15.6%	84.4%	100.0%
			Adjusted Residual	-2.0	2.0	
		Adult or Old	Count	8	17	25
			% within Age Category (Q3)	32.0%	68.0%	100.0%
			Adjusted Residual	2.0	-2.0	
Total			Count	33	152	185
			% within Age Category (Q3)	17.8%	82.2%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	3.956[a]	1	.047		
Continuity Correction[b]	2.917	1	.088		
N of Valid Cases	185				

a. 1 cells (25.0%) have expected count less than 5. The minimum expected count is 4.46.
b. Computed only for a 2x2 table

Complaints about the service (22a) versus Users Awareness (Q20b) Cross-tabulation

			Awareness of consultation/discussion about Anbessa on media (Q20b) Yes	No	Total
Complaints about Anbessa bus service (22a)	Yes	Count	8	4	12
		% within Complaints about Anbessa bus service (22a)	66.7%	33.3%	100.0%
		Adjusted Residual	4.6	-4.6	
	No	Count	25	148	173
		% within Complaints about Anbessa bus service (22a)	14.5%	85.5%	100.0%
		Adjusted Residual	-4.6	4.6	
Total		Count	33	152	185
		% within Complaints about Anbessa bus service (22a)	17.8%	82.2%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	20.876[a]	1	.000		
Continuity Correction[b]	17.465	1	.000		
N of Valid Cases	185				

a. 1 cells (25.0%) have expected count less than 5. The minimum expected count is 2.14.
b. Computed only for a 2x2 table

Attending public discussion (Q20a) versus Complaints about Anbessa bus service (22a) Crosst-abulation

			Complaints about Anbessa bus service (22a) Yes	No	Total
Attending public discussion (Q20a)	Yes	Count	4	8	12
		% within Attending public discussion (Q20a)	33.3%	66.7%	100.0%
		Adjusted Residual	3.3	-3.3	
	No	Count	12	172	184
		% within Attending public discussion (Q20a)	6.5%	93.5%	100.0%
		Adjusted Residual	-3.3	3.3	
Total		Count	16	180	196
		% within Attending public discussion (Q20a)	8.2%	91.8%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	10.802[a]	1	.001		
Continuity Correction[b]	7.522	1	.006		
N of Valid Cases	196				

a. 1 cells (25.0%) have expected count less than 5. The minimum expected count is .98.
b. Computed only for a 2x2 table

Awareness about complaint handling in Anbessa (21) versus Bus Waiting Time (Q17) Cross-tabulation

			Average Bus Waiting Time (Q17) Short Duration	Long Duration	Total
Awareness about complaint handling in Anbessa (21)	Yes	Count	17	11	28
		% within Awarness about complaint handling in Anbessa (21)	60.7%	39.3%	100.0%
		Adjusted Residual	2.2	-2.2	
	No	Count	18	33	51
		% within Awarness about complaint handling in Anbessa (21)	35.3%	64.7%	100.0%
		Adjusted Residual	-2.2	2.2	
Total		Count	35	44	79
		% within Awarness about complaint handling in Anbessa (21)	44.3%	55.7%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	4.734[a]	1	.030		
Continuity Correction[b]	3.759	1	.053		
N of Valid Cases	79				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 12.41.
b. Computed only for a 2x2 table

Adequacy of Traffic Controllers (Q26) versus Bus Drivers Care to follow traffic signals (Q24) Cross-tabulation

			Bus Drivers Care to folloe the traffic signals (Q24)		
			Agree	Disagree	Total
Adequacy of Traffic Controllers (Q26)	Adequate	Count	53	18	71
		% within Adequacy of Traffic Controllers (Q26)	74.6%	25.4%	100.0%
		Adjusted Residual	3.2	-3.2	
	Inadequate	Count	52	51	103
		% within Adequacy of Traffic Controllers (Q26)	50.5%	49.5%	100.0%
		Adjusted Residual	-3.2	3.2	
Total		Count	105	69	174
		% within Adequacy of Traffic Controllers (Q26)	60.3%	39.7%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	10.254[a]	1	.001		
Continuity Correction[b]	9.269	1	.002		
N of Valid Cases	174				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 28.16.
b. Computed only for a 2x2 table

Adequacy of Traffic Controllers (Q26) versus Effectiveness of Traffic Polices in peak hours (Q23) Cross-tabulation

			Effectiveness of Traffic Polices in peak hours (Q23)		
			Effective	Poor	Total
Adequacy of Traffic Controllers (Q26)	Adequate	Count	27	44	71
		% within Adequacy of Traffic Controllers (Q26)	38.0%	62.0%	100.0%
		Adjusted Residual	3.3	-3.3	
	Inadequate	Count	18	92	110
		% within Adequacy of Traffic Controllers (Q26)	16.4%	83.6%	100.0%
		Adjusted Residual	-3.3	3.3	
Total		Count	45	136	181
		% within Adequacy of Traffic Controllers (Q26)	24.9%	75.1%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	10.841[a]	1	.001		
Continuity Correction[b]	9.712	1	.002		
N of Valid Cases	181				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 17.65.
b. Computed only for a 2x2 table

Adequacy of Traffic Controllers (Q26) versus Extra bus arrangement during peak hours (Q25) Cross-tabulation

			Extra bus arrangement during peak hours (Q25)		
			Agree	Disagree	Total
Adequacy of Traffic Controllers (Q26)	Adequate	Count	16	56	72
		% within Adequacy of Traffic Controllers (Q26)	22.2%	77.8%	100.0%
		Adjusted Residual	2.3	-2.3	
	Inadequate	Count	11	99	110
		% within Adequacy of Traffic Controllers (Q26)	10.0%	90.0%	100.0%
		Adjusted Residual	-2.3	2.3	
Total		Count	27	155	182
		% within Adequacy of Traffic Controllers (Q26)	14.8%	85.2%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	5.145[a]	1	.023		
Continuity Correction[b]	4.223	1	.040		
N of Valid Cases	182				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 10.68.
b. Computed only for a 2x2 table

APPENDIX H -1: LOGISTIC REGRESSION MODEL (FOR RELIABILITY OF THE SERVICE)

	Variables in the Equation	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	Safety Level of the Bus (Q9)	0.032	0.518	0.004	1	0.95	1.033	0.375	2.849
	Average Bus Waiting Time (Q17)	0.588	0.527	1.248	1	0.264	1.801	0.642	5.055
	Comfort Level of Anbessa Bus (Q10)	1.043	0.673	2.401	1	0.121	2.837	0.759	10.61
	Travel_infor (Q14)	0.651	0.572	1.294	1	0.255	1.917	0.625	5.881
	Road condition of the bus routes (Q15)	1.19	0.536	4.929	1	0.026	3.286	1.15	9.392
	Adequacy of Traffic Planning (Q16)	1.539	0.74	4.33	1	0.037	4.659	1.094	19.85
	Effectiveness of Traffic Polices in peak hour congestion reduction (Q23)	1.347	0.567	5.631	1	0.018	3.845	1.264	11.69
	Extra bus arrangement during peak hours (Q25)	0.711	0.66	1.162	1	0.281	2.037	0.559	7.424
	Bus Drivers Care to folloe the traffic signals (Q24)	1.512	0.708	4.565	1	0.033	4.535	1.133	18.15
	Complaints about Anbessa bus service (22a)	0.279	1.118	0.062	1	0.803	1.322	0.148	11.83
	Constant	-13.659	3.703	13.608	1	0	0		

a. Variable(s) entered on step 1: Safety Level of the Bus (Q9), Average Bus Waiting Time (Q17), Comfort Level of Anbessa Bus (Q10), Travel_infor (Q14), Road condition of the bus routes (Q15), Adequacy of Traffic Planning (Q16), Effectiveness of Traffic Polices in peak hour congestion reduction (Q23), Extra bus arrangement during peak hours (Q25), Bus Drivers Care to folloe the traffic signals (Q24), Complaints about Anbessa bus service (22a).

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	48.920	10	.000
	Block	48.920	10	.000
	Model	48.920	10	.000

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	100.831[a]	.339	.472

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

APPENDIX H -2: LOGISTIC REGRESSION MODEL (FOR WAITING TIME)

	Variables in the Equation	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	Road condition of the bus routes (Q15)(1)	0.965	0.407	5.63	1	0.018	2.625	1.183	5.828
	Effectiveness of Traffic Polices in peak hour congestion reduction (Q23)(1)	0.315	0.45	0.489	1	0.485	1.37	0.567	3.31
	Extra bus arrangement during peak hours (Q25)(1)	-0.972	0.583	2.783	1	0.095	0.378	0.121	1.185
	Connect_Satisf (Q8)(1)	-0.827	0.514	2.586	1	0.108	0.438	0.16	1.198
	Travel_infor (Q14)(1)	-0.281	0.417	0.452	1	0.501	0.755	0.333	1.711
	Adequacy of Traffic Planning (Q16)(1)	-0.128	0.61	0.044	1	0.834	0.88	0.266	2.912
	Complaints about Anbessa bus service (22a)(1)	0.554	0.708	0.613	1	0.434	1.74	0.435	6.966
	Comfort Level of Anbessa Bus (Q10)(1)	1.252	0.57	4.82	1	0.028	3.497	1.144	10.694
	Constant	-0.12	1.01	0.014	1	0.905	0.887		

a. Variable(s) entered on step 1: Road condition of the bus routes (Q15), Effectiveness of Traffic Polices in peak hour congestion reduction (Q23), Extra bus arrangement during peak hours (Q25), Connect_Satisf (Q8), Travel_infor (Q14), Adequacy of Traffic Planning (Q16), Complaints about Anbessa bus service (22a), and Comfort Level of Anbessa Bus (Q10).

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	16.699	8	.033
	Block	16.699	8	.033
	Model	16.699	8	.033

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	163.170[a]	.117	.159

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.

APPENDIX H-3: LOGISTIC REGRESSION MODEL (FOR SATISFACTION OF USERS IN CONNECTIVITY OF THE BUS BETWEEN DIFFERENT ROUTES)

	Variables in the Equation	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	Adequacy of Traffic Controllers (Q26)	0.074	0.53	0.02	1	0.89	1.077	0.382	3.037
	Customer Service of Anbessa City Bus (Q13)	2.214	0.61	13.12	1	0	9.153	2.762	30.34
	Travel_infor (Q14)	0.415	0.66	0.394	1	0.53	1.514	0.415	5.523
	Extra bus arrangement during peak hours (Q25)	-0.95	0.79	1.429	1	0.23	0.388	0.082	1.831
	Adequacy of Traffic Planning (Q16)	1.401	0.72	3.829	1	0.05	4.06	0.998	16.52
	Stop Distance (Q7)	-0.05	0.59	0.006	1	0.94	0.955	0.303	3.013
	Road condition of the bus routes (Q15)	-0.17	0.57	0.086	1	0.77	0.845	0.274	2.602
	Effectiveness of Traffic Polices in peak hour congestion reduction (Q23)	0.99	0.54	3.415	1	0.07	2.692	0.942	7.694
	Fare Affordability Anbessa Service fare (Q12)	-1.94	0.7	7.56	1	0.01	0.144	0.036	0.573
	Flexibility of Anbessa bus service (Q19)	1.145	0.58	3.916	1	0.05	3.143	1.011	9.768
	Constant	-4.02	2.22	3.283	1	0.07	0.018		

a. Variable(s) entered on step 1: Adequacy of Traffic Controllers (Q26), Customer Service of Anbessa City Bus (Q13), Travel_infor (Q14), Extra bus arrangement during peak hours (Q25), Adequacy of Traffic Planning (Q16), Stop Distance (Q7), Road condition of the bus routes (Q15), Effectiveness of Traffic Polices in peak hour congestion reduction (Q23), Fare Affordability Anbessa Service fare (Q12), Flexibility of Anbessa bus service (Q19).

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	41.681	10	.000
	Block	41.681	10	.000
	Model	41.681	10	.000

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	105.194[a]	.244	.389

a. Estimation terminated at iteration number 6 because parameter estimates changed by less than .001.