

ACCESSIBILITY OF ANBESSA CITY BUS SERVICE IN ADDIS ABABA, ETHIOPIA: AN ANALYSIS OF STAKEHOLDER'S OPINIONS

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ABSTRACT: Addis Ababa is one of the fastest growing cities in the world, yet is constrained by poor accessibility of city bus services. This paper examines the factors affecting the accessibility of Anbessa City bus service in Addis Ababa through an analysis of the stakeholders' opinions. An exploratory research approach was taken, using in-depth interviews with the city bus transport regulators and Anbessa city bus transport service enterprise. The study found that inadequate infrastructure, poor transport operation and ineffective performance of stakeholders have resulted in inaccessible service to the users. Addressing the expectations of users necessitates engagement of modern public transport operation; strengthening the regulatory mechanisms and (traffic) law enforcement system; acquisition of skilled human, technology and materials resources; and attraction of private operators through different incentive mechanisms.

KEYWORDS: Accessibility, Public Transport, City Bus, Addis Ababa

ACKNOWLEDGMENTS: The research was supported by the Australian Government Research Training Program Scholarship grant and Central Queensland University.

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 as key nodes of economic activity. In Ethiopia, the national capital is Addis Ababa City, which is responsible for 60 per cent of the country's industrial production and 50 per cent of its GDP (Wondifiraw *et al.*, 2015; World Bank, 2015). The limited number of buses and taxis in Addis Ababa have resulted in low quality, safety and accessibility of the service delivery across the city (Berhan *et al.*, 2013; Kumar and Barrett, 2008). Some studies have claimed that institutional weaknesses have resulted in inaccessibility and in turn, ineffective service provision of the city buses (Berhan *et al.*, 2013; Kumar and Barrett, 2008). Users are hardly able to access public transport during peak hours or bad weather conditions (Fenta, 2014). Sometimes the commuters are required to pay an extra fare or forced to disembark when only mid-way through their route (Gebeyehu and Takano, 2007; Kumar and Barrett, 2008). Here, the service providers may be aware that commuters do not have other alternatives during these times, and thus press their advantage, pushing the consumer to pay above the limited fare in order to maximize their profit.

Variouly, the (in)accessibility of the city buses in Addis Ababa has been characterised by problems such as excessive transit times, poor infrastructure, unreliability and/or inadequacy of vehicles, financial constraints on operational upgrades, an ineffective regulatory system with role confusions, and increasing accident rates throughout the city (Kumar and Barrett, 2008; Litman, 2015; Yilak *et al.*, 2011; Yilma, 2014). This paper aims to explore factors affecting the accessibility of Anbessa city bus in Addis Ababa, through analysing stakeholder's opinions collected via in-depth interviews with the regulator and operator of the bus service. This paper is organised under five sections: introduction of the research, overview of the conceptual framework for public transport accessibility, an outline of the methodological approach, the key findings and analysis for the case study, and conclusions and practical implications.

2. CONCEPTUAL FRAMEWORK

Mobility and accessibility are often interrelated terms in transport studies. Mobility is a measure of action with which people choose to move themselves or their goods around. It is concerned with the effectiveness of

the transport system in connecting spatially separated locations, and the extent to which a particular individual or type of person can make use of the transport system (Bryceson *et al.*, 2003; Porter, 2010). On the other hand, the concept of accessibility in mobility studies has been broadly understood to summarize the ability of people to access their desired destinations through a given transport system (Curl *et al.*, 2011). It can also refer to the potential opportunities for interaction, the ease of reaching any area of activity using a specific transport system and the overall benefits provided by a given transport system (Bocarejo and Oviedo, 2012; de Stasio *et al.*, 2011). Mobility to a desired destination could be formidable without accessible means of commuting in developing countries where infrastructure are underdeveloped and transport facilities are inadequate to the users.

Litman (2015) asserts that a range of factors affects the accessibility of urban public transport:

1. *Motor vehicle travel conditions*: automobile travel speeds, affordability and safety.
2. *Quality of other modes*: walking, cycling, public transit, telework, delivery services speeds, convenience, comfort, affordability and safety.
3. *Transport network connectivity*: density of paths and roadway connections, directness of travel between destinations, quality of connections between modes.
4. *Land use proximity*: development density and mix.
5. *Weak regulatory system*: ineffective regulation and law enforcement system.

Considering these, it is clear that accessibility in public transport is a layered concept with many contributing and interrelated factors.

Stanley and Smith (2013) confirm that delivery of efficient and effective public transport systems and services require proper skills, integration, funding and communication. The involvement of the private sector is an opportunity for the state, as well as bus users, to enjoy efficient and effective service delivery, introduction of innovative products, high-quality service and fare reduction. Citizen participation in interactive public transport management has already been acknowledged as a means

of empowerment and sharing of responsibility for a common goal (Verma and Priyadarshie, 2015). Moreover, government is another important stakeholder in public transport accessibility: here, effective service delivery can be achieved when the government protects the public interest through proper enforcement of the regulatory framework (Minnery, 2007; Sohail *et al.*, 2006).

Public transport also requires reliable management and service delivery. 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.

Urban public transport regulation is intended to ensure that appropriate standards are maintained through testing, monitoring and benchmarking of city transport provision (Daniel *et al.*, 2012; Sohail *et al.*, 2006). The role of urban transport regulators is crucial in meeting the state and users' needs and 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 perceived demand, and that the service is provided at an affordable fare to the urban dwellers (Tsamboulas *et al.*, 2013; Zhang, 2014). In doing so, regulators have the potential to operate for the public advantage, putting into practice the policies of government as efficiently and effectively as possible (Sohail *et al.*, 2006).

The inter-relationships between the private sector, state, transport service delivery entities and users is provided in Figure 1 below. This shows the complex system of overlapping and related factors, which must come together effectively if an accessible public transport system, is to exist. From this figure, it is easy to identify the interaction amongst factors and what role each one has to play to achieve the desired goal.

Addis Ababa city is one of the nine autonomous regions in the Ethiopian federal system, located in the heart of Oromia region (UN-HABITAT, 2011), Anbessa city bus has been the key mode of (formal) public transport for the city and at least thirteen of the surrounding Oromia region towns for more than seven decades. It has played significant role in integrating the culture and socio-economic life of the city and neighbouring Oromia towns through covering long distances and being relatively affordable to the lower class citizens (Tsegaye, 2015). Studies suggest that, on the other hand, adequate growth and transformation has not been observed in modernising the service delivery system in a way that it is accessible to the

in need urban dwellers, (Fenta, 2014; Gebeyehu and Takano, 2007). The extent of commitment and coordination of regional government(s) agencies, the operator and the community at large allow understanding the challenges and pursuing the transformation of the existing service accessibility to a better position. Overall, the research is particularly important in regional studies because public transport [in] accessibility is the main concern of dwellers in peri-urban sub-cities of Addis Ababa where road facilities, (traffic) law enforcement system and regulatory mechanisms are at stake.

A key information gap for developing nations, particularly in Addis Ababa city, is to understand the performance, roles and responsibilities of these stakeholders in addressing the need and expectation of the community. The paper focuses on presenting a qualitative data analyses and discussion on these aspects.

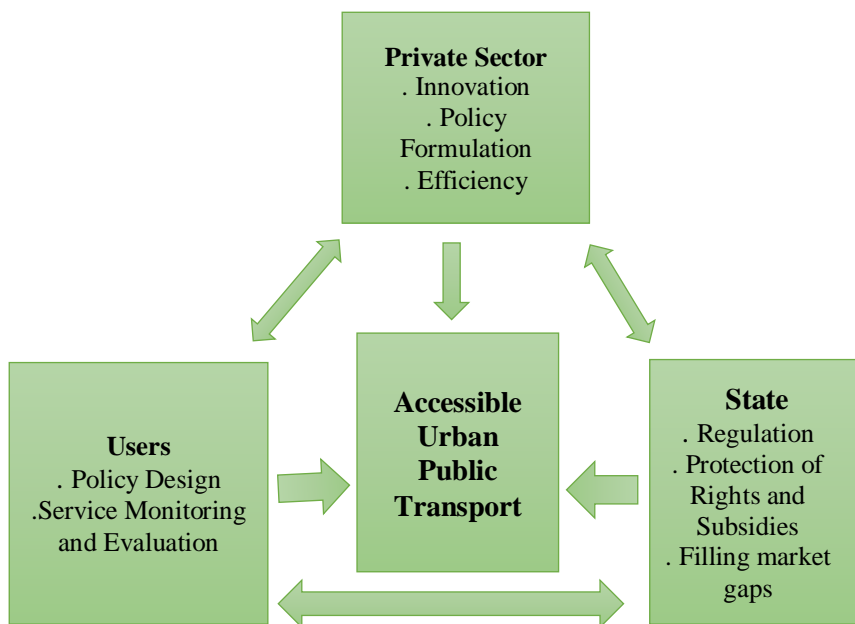


Figure 1. Urban Public Transport Delivery: Stakeholders Functions.

Note: The Arrows illustrate one way/two-way interaction among the stakeholders. Source: the Authors.

Effective participation of different actors not only allows an accessible city bus service, but also accountability to each affiliate. Particular to Addis

Ababa, the Federal and City government and transport regulatory bodies take the lions share in protecting the right of users through allocation of considerable funds to transform the sector, (Sohail *et al.*, 2006; Sohail *et al.*, 2004). This encompasses, upgrading the operational capability of the operator, training the concerned staff from each stakeholder, capitalizing the road and traffic facilities and provision of subsidies to the users. On the other hand, the government can facilitate the public transport sector to become more attractive for (private) entrants through waiving or minimizing import duties of buses and parts, provision of depots, arrangement of credit facilities in collaboration with banks and insurance companies.

Better accessibility of Anbessa buses could also be possible through the role of citizens and civil society groups in influencing the operator regarding the service provision. Active participation of the community, coupled by engagement of lobby groups that intend to play a role in public transport service provision influence the accessibility of the Anbessa bus service through challenging other stakeholders on different platforms and attracting the attention of media, (Sagaris, 2010, 2014). What matters in Ethiopia, however, is that the community, media and civil society groups lack confidence to lobby or express their views on government enterprises due to fear of negative consequences from the government that is likely to harm their immunity (Bekele and Jagne, 2002; ICG, 2009).

Alliance city bus is the only formal private mass transport service provider in Addis Ababa, established in 2011, yet limited in number and route coverage. It appears that the current challenges of mass mobility in Addis Ababa necessitate not only public owned (Anbessa) city buses but also active engagement of independent private operators and the introduction of public-private partnership models which would broaden travel choices and quality of service to the users (Abreha, 2007; Siemiatycki, 2013). This assists in filling the gap of service accessibility, technology, application of modern public transport operation, employment creation and fostering the productivity of citizens.

3. METHODOLOGY

A qualitative research approach was adopted for this study, via in-depth interview with twelve respondents from the service provider and the regulatory bodies, namely Anbessa City Bus Service Enterprise (ACBSE), Addis Ababa Traffic Management Agency, Addis Ababa Transport Authority and Addis Ababa Transport Program Management Office. This

allowed a fuller picture to be generated on the state of factors affecting the accessibility of Anbessa City Bus in Addis Ababa. A range of academic and grey literature has been reviewed to build the conceptual framework. Moreover, secondary data from the stakeholder institutions were reviewed to provide a better framing of the discussions held with the stakeholders. Descriptive and thematic content analyses were used to interpret the data, including narrative interpretative analysis. The research presents the findings from the in-depth interview, which was an exploration into the different factors that have contributed to the inaccessibility of the city bus in Addis Ababa.

4. FINDINGS AND ANALYSES

Overview of Key Themes

After completing the interviews, transcribing and translating the material (from the native Amharic into English), a thematic analysis was conducted. This was prepared by considering each interviewee's response case-by-case, and allowing major and minor themes to emerge. Overall, the areas of law enforcement, infrastructure, accessibility and institutional frameworks received the dominant share of frequencies, with the items of transport operations, comfort and safety, and stakeholder engagement receiving fewer mentions. Some of the key themes are described in further detail in the following sections.

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 *et al.* (2010) indicated that the application of systems and technologies, comparing 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 by far a poor level of integration amongst the actors and institutional arrangements that doesn't go beyond simple dialogues and information sharing with poor commitment for action (Dagnachew, 2007). As one stakeholder noted: "*the private firms are reluctant to join the public*

transport market in the city owing to uncertain transport market regulation and institutional arrangements.” Private operators prefer to join the market only on condition that the cost benefit analysis is found to be feasible. The city’s public transport regulatory and operational bottlenecks, absence of government’s commitment to attract discourages the private stakeholders to avoid the uncertainties.

Discussions held with the stakeholders, as well as the 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 among the stakeholders, poor law enforcement systems, uncertain markets, and the absence of incentives from the Federal or city government to encourage mass import of transport vehicles and their parts (FDRE-MoT, 2011; Kassahun, 2007; Yilma, 2014) have impaired the interest of the private firms to participate in the market. Provision of accessible public transport requires a joint effort of the regulators and (private) service providers through a win-win approach to address the public transport need. In the same token, agitating for change to achieve better accessibility of Addis Ababa bus transport system requires the engagement of the stakeholders through participative governance (Díaz-Cayeros *et al.*, 2014). However, it has been previously reported that Anbessa City Bus Service lacks participatory management where the voices of users and private firms are not heard (Kumar and Barrett, 2008).

Some stakeholders mentioned that, whilst the operator does approach the community through different channels, the practical aspect of Anbessa city bus operation doesn’t reflect the users’ needs. For example, during interviews, the stakeholders noted that Anbessa city bus inaccessibility arises from land use problems, inadequate number (absence) 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) 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, for example, 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 towards the users’ complaints or demands are not given due

attention, or are 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 an accessible public transport service (Hrelja *et al.*, 2016). It was noted during the interviews that ACBSE works with Addis Ababa Road Transport Authority, Addis Ababa Traffic Management Agency and Addis Ababa Drivers and Vehicles Inspection and Control Authority and Addis Ababa Police Commission, either in a 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 the effective accessibility to the users. For example, the institutions lack of a comprehensive public transport policy and strategy framework which clearly indicates the duty and responsibility of each actor under the same hierarchy (Kumar and Barrett, 2008). In relation to this, one of the stakeholders indicated "the absence of clear demarcation of jurisdictions among the regulators and their 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 concept is that the regulatory bodies lack common understanding and boundary to work for a common objective.

Transport Planning, Infrastructure and Operations

Contemporary city planning must consider the strong relationship between territory and mobility. Based on this premise, and with an adequate plan, authorities can foresee and prevent problems experienced by commuters; address existing weaknesses, and where a relationship is truly solid, even create better communities (Crespo, 2012).

Currently, the inaccessibility of public transport in Addis Ababa is 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 (OAAMP), 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. A stakeholder who noted, "*The basic challenges of public transport accessibility in Addis Ababa is that the infrastructure is not adequate and conveniently built*", also highlighted these issues. 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 *et al.*, 2014), particularly when compared against modernised technological advances. From an accessibility point of view, the buses are unreliable as they often face breakdowns on the routes and even cause accidents due to technical faults (Fenta, 2014). A dedicated fleet replacement and maintenance program that would provide improvement 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 government) and recruitment of skilled professionals and supporting technology (Dagnachew, 2007). The bus serves the ten sub-cities of Addis Ababa and neighbouring Oromia towns adjacent to the city via 18 routes. Despite this large number of town administrations with a vested interest in to the service, no financial support exists to maintain 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).

A further issue 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. One of the stakeholders confirmed this, saying “*there is no clear installation, ownership and management of the bus stops/shelters in the routes of surrounding Oromia towns.*”

Traffic Control, Law Enforcement and Safety

Addis Ababa has suffered from an increasing rate of traffic accidents and an absence of a single, fully-fledged/consolidated traffic management policy (Misganaw and 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 *et al.*, 2013). The problems are

compounded by poor enforcement practice as identified by the key informants at the transport bureau. As one of the stakeholders mentioned: *“the traffic law enforcement system of the city is not adequately implemented to enhance the traffic flow and accessibility of the city buses.”* The traffic control system of 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 at these places especially at night and during wet weather (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, which results from a combination of weak training, low literacy, young age and abuse of the licencing procedure by the regulatory bodies (Yilak et al., 2011). One of the stakeholders 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 behaviour of the drivers and the cashiers has negative psychosocial impacts 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; radar and breath analysers which hinder the implementation of speed control and alcohol intoxication laws, although the drivers often consume alcohol or Chat, an Ethiopian grown stimulant legally permitted to consume, while on driving duties (Abegaz et al., 2014; Tulu et al., 2013). One of the stakeholders from the operator stated, *“there are ethical problems or complaints coming from the community about employees.”* 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 pedestrian walkways, combined with the use of (technically poor) worn-out vehicles poses particular challenges to the traffic control system (Persson, 2008). A stakeholder confirmed *“the city’s mobility system is challenged by a mixed traffic system in which pedestrians, vehicles and cattle transit on the same lane.”* In such an unrestrained mobility system, an intensive community awareness, strong regulatory and law enforcement system, equipped with modern technology and educated labour force can mitigate challenges encompassing the road transport management of the city.

The operator's financial incentive scheme to motivate the bus drivers and cash collectors has a direct negative impact on the accessibility (safety and comfort) of the users. Tsegaye (2015) indicated that the Enterprise pays an amount of 0.03 Birr to bus drivers and 0.02 Birr to fare collectors, per passenger, as an incentive package in the application of a business process reengineering (BPR) system to motivate the employees to board more passengers per trip. These employees obviously need to load more users at each bus stop to increase their marginal revenue per passenger, at the expense of other commuters' preference. Here the strategy of the 'BPR' contradicts with the safety and comfort of commuters.

Fare Affordability

Studies indicate that 20 per cent of the population of Addis Ababa is still too poor to afford the standard bus fare (Dagnachew, 2007). In contrast, the stakeholders believe that the fare of Anbessa city bus is affordable to the lower and middle-income group of the users that allows them to transit long distances between two corners of the city and neighbouring towns. One of them mentioned, "*The fare is affordable to the lower class category of the 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 and Barrett, 2008). The affordability and long distance coverage of Anbessa is the principal means to connect the low-income users living on the outskirts of the city to the city centre.

On the other hand, concession is an incentive arrangement to encourage the less privileged groups of the community such as students, pensioners and people with disabilities to use the available public transport (Carruthers *et al.*, 2005). There is no literature or firsthand information indicating that Anbessa bus has a fare arrangement for different social groups demanding fare concessions, nor was this mentioned by the stakeholders during the interviews.

Possible Accessibility Gap Interventions

Accessible public transport mobility is a cumulative result of reliable, affordable, well-designed transport planning and built environment for better service coverage (Nurlaela and Curtis, 2012). In contrast, the

inaccessibility of Anbessa City 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 transport system and weak financial capability 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 public transport system could be increased when an adequate number of buses are engaged and the system is supported by an intelligent transport system (ITS) to support information sharing, time management and safety precautions (García *et al.*, 2015). Though the buses have a nominal timetable, the running times are not made public at all, and are characterized by delays, crowding, overloading and low frequency, hence resulting in unreliability and an increased susceptibility for fare evasion (Dagnachew, 2007). Unfortunately, Anbessa city bus lacks the application of ITS to promote its reliability, and the demand for public transport service is much higher than the supply. The recruitment of information technology, a skilled labour force and an adequate number of buses relies on the financial capacity and commitment of the operator or the city government to realise all-inclusive change. Anbessa has not been working towards a vibrant business operation supported by a modern transport management system to become more accessible to the users (Gebeyehu and Takano, 2008 ; Kasahun, 2007).

Productive engagement of stakeholders from the government, private transport business operators and the community could improve the existing poor accessibility system of Anbessa city bus. This could be made through provision of better roads and an intelligent transport system and information communication technology (ICT) facilities for traffic management. Possible intervention to foster the bus service could also be made through structural and operational arrangements in a way that it accommodates modern operation. It appears that a dynamic approach of service provision necessitates capitalization of physical resources, right sizing of organizations, reformation of work cultures, and development of the human resources. Notwithstanding this, addressing all the concerns of the inaccessibility of Anbessa city bus is 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.

5. CONCLUSION AND RECOMMENDATIONS

In Addis Ababa, an accessible public transport is a collective outcome of different actors and systems, interacting together efficiently and effectively. Anbessa city bus service enterprise has been acknowledged as a pioneer in Addis Ababa public transport service delivery, being a solely government-owned 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 city bus service is not as easily accessible, as it ought to be, due to an aggregate of factors. Literature reviews and discussions held with the stakeholders 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 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 a sufficient infrastructure and traffic control system and a weak regulatory framework in the city. Adequate infrastructure, transport planning and operation play major role in enhancing the accessibility of public transport.

Accessible Anbessa city bus service may not be as easy as implementing 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. Overall, it could be said that the inaccessibility of the Anbessa city bus service is not only the consequence of the poor organizational and operational weaknesses of the service providers, but also the effect of fragmented actions and commitments of each entity. Future research should consider how the existing difficulties could be curbed based on a reliable policy framework

that encompasses clear responsibility, jurisdiction and an extended line of accountability for each actor.

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