E-ISSN: 2321–9637
Volume 1, Issue 5, December 2013
International Journal of Research in Advent Technology
Available Online at: http://www.ijrat.org

THE SERVICE ADEQUACY OF LONG DISTANCE BUS TRANSPORT IN ADDIS ABABA, ETHIOPIA

Fekadu kassa
Department of Geography and Environmental Studies, Arbamnich University
Tegegn Gebre Egiziabeher (Prof)
Department of Geography and Environmental Studies, Addis Ababa University

Abstract

The article presents the adequacy of the industry which seen from both the demand and supply corners. The supply corners indicate that on average in both seasons, the operators would get the passenger by waiting for about 1 hour (64.5%), the rest 35.5% would take above 1 hour. The level one and two buses have stay for fewer days without work than level three. On average, the LDB is not works for about 1-4 days in the week. However, the majority of operators found that they aren't yet working for about 1 to 2 days (61%). The passenger's side indicators of the adequacy can also be seen in different ways. The majority of passenger would get the ticket on the date of the journey and a fewer passengers would also get the ticket ahead of 1 day of the travel. The average service taker only from Mercato bus terminal is for about 16,000 passengers per day by carried for about 200 buses both that incoming to the city and out going from the city. In terms of waiting time to get bus after ticketing, about 75.5% of the passengers are waiting below one hour. The tendency to get bus when they reach the bus station is about 66% or 2/3 of the passengers get the bus and the ticket immediately when they come to the terminal. But the rest 34% or more than 1/3 of the passengers are not yet get the service as soon as they come to the terminal. With regard to the correlation among the supply and demand is various, some variables are shown weak negative relation and the other variables are weak positive. Thus, the majority of passengers would get the service and the ticket immediately when they come to bus terminal.

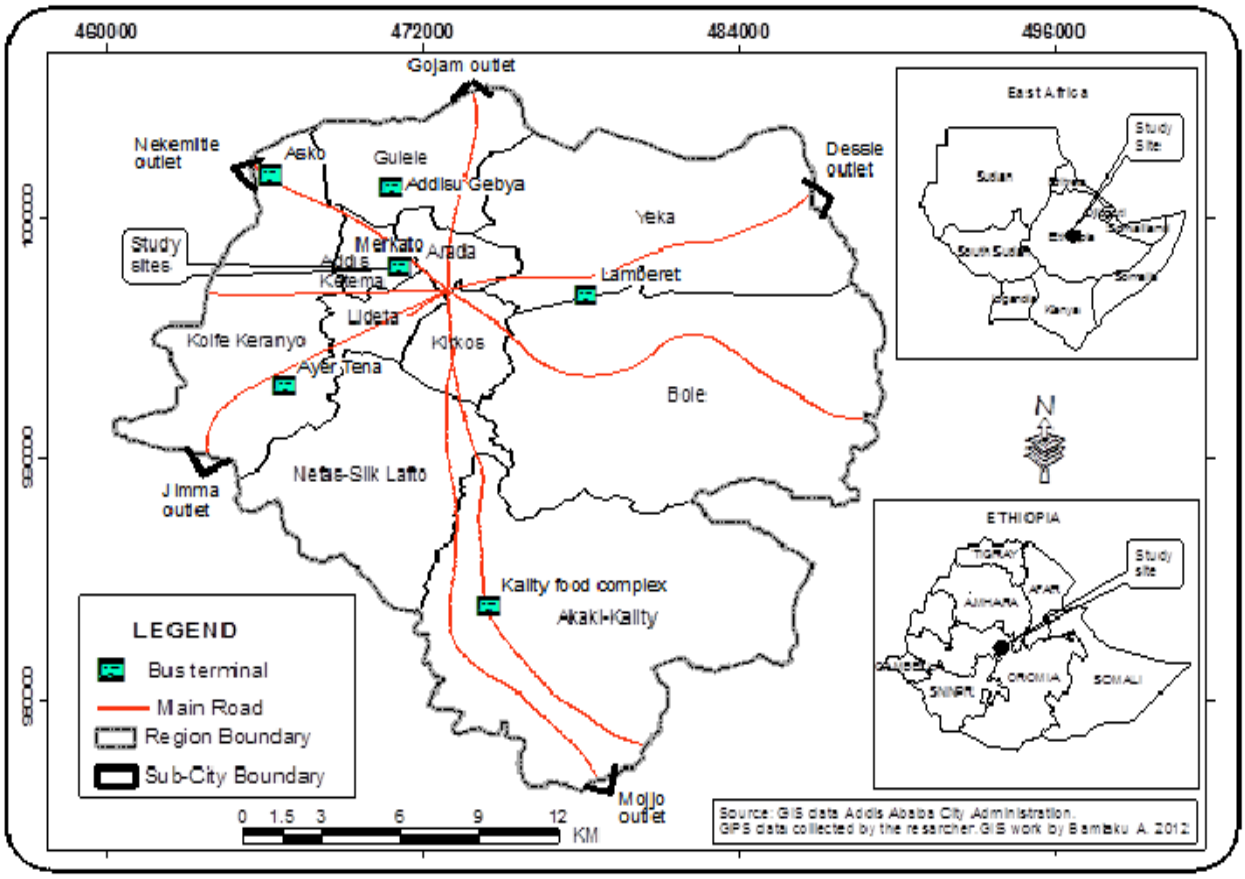
Key words: Supply and Demand, Long Distance Bus, dispatch, on/off seasons, adequacy

1. INTRODUCTION

Ethiopia is found in the Horn of Africa with the area coverage approximately 1,221,900 square kilometers, it is nearly the size of France, Germany and the United Kingdom combined (AACC, 2009). Ethiopia is also astronomically locates 3°-15°N and 33°- 48°E (ERA, 2005 and CSA, 2007). The elevation ranges from 1,500 to 3,000 meters above sea level. World Bank (2008) depicts that Ethiopia has a population of 76.5 million in 2007 that made the nation the second most populous in Africa, after Nigeria, but the existing population of Ethiopia will be more than 80 million and it will reach 106 million by 2020 and reach to 180 million in 2050 (Oladele, 2010).

The physical set up of Addis Ababa is found at the heart of the nation and is located at 9°02'N to 9.03°N 38°44′E to 38.74°E (ERA, 2005 and CSA, 2007). Addis Ababa is the capital city of Ethiopia and Africa. Again, it is the largest city in Ethiopia, with a population of 3,384,569 according to the 2007 population census (CSA, 2007). And various estimates also depict that until 2020 the city is expected to host 6-7 million inhabitants (Iginis, 2008 as cited in Mesfine 2009). The City of Addis Ababa has the dual status of both a city and a state capital (CSA, 2007 and MoFED, 2006) (Map 1).

E-ISSN: 2321–9637
Volume 1, Issue 5, December 2013
International Journal of Research in Advent Technology
Available Online at: http://www.ijrat.org



Map1: the geographic placement of Ethiopia and the capital-Addis Ababa

Transport has a necessary role to play for economic growth and social development of Ethiopia. Land transportation in general, among other modes, and road transport in particular is the most widely used transport sector all over the world. It also provides a base for local, national, regional and international flow of goods and passengers. Asnake (2006) states that road transport sector plays significant role in developing countries national economy through direct contribution to GDP and employment. Indirectly it also, provides services that are indispensable for the development of other economic sectors. Road transportation plays a vital role in the distribution of essential goods and services from place to place (Meket, 1997; Herbert, 1979 as cited in Yayeh, 2003).

In Africa, road transport is the most dominant mode of motorized transport that accounts for 80 per cent of the goods traffic and 90 per cent of the passenger traffic in the continent. There are three modal systems of transport that exist in the nation (road, air and rail). Nonetheless, studies that conducted in the nation are ERA (2005) and EFTA (2011) noticed that about 99.31 per cent of the total passengers that used road transport for their mobility, 0.65 per cent used airline and 0.04 per cent used railway transport. This indicates that the mobility trend of the society is highly depends on road transport industry than other modes (ERA, 2005). And the Ethiopian Federal Transport Authority EFTA (2011) report the sector is facing certain challenge because the entire people of the nation highly lies on road transport than other alternative modes. There is also a prevalence of poor quality of services in the sector. As the result of this report noted that exists in road passenger transportation of the nation is not satisfactory. This implies that to bring maximize service satisfaction that need to work more for the industry is important.

E-ISSN: 2321–9637
Volume 1, Issue 5, December 2013
International Journal of Research in Advent Technology
Available Online at: http://www.ijrat.org

With regard to the road density, Africa had about 2.06 million km of roads in 2005. The Ethiopian road coverage is about 80,000 kilometer in 2013. This resulted in a road density of 6.84 km per 100sq.km with an average road to population ratio of 26 km per 10,000 inhabitants, with marked regional variation (UNESCECA, 2009). Central Africa and Southern Africa had the highest road distribution, with 49.5 km and 56.3 km, respectively for every 10,000 population. In 2005, only 580,066 km or 22.7 per cent of the total African road network was paved (UNESCECA, 2009). It is also identified that relatively the lowest road coverage and distribution is found in East Africa region including Ethiopia. The tragedy here doesn't only the rise of demand for basic needs but also for efficient services such as for transportation, economic and safe provision of goods, services and passengers. The nation heavily depends on road transport to satisfy the growing demand for the sector. The development and expansion of road transport have hence been seen to bring about 4 linkages i.e. forward, backward, service, and trade linkage between and among towns, cities and even rural areas in the nation.

The EFTA (2011) report indicated that there is a slight growth in the passenger transport industry particularly in the medium commercial passenger transport about 15.7%. The maximum growth 74.7% is registered in the small commercial passenger road transport sector such as the Mini buses while long distance buses showed a slight increase of 9.6%. The report further indicates that in 2010, the total passenger transport vehicles that rigorously served the society were 13, 684 buses. Of these, about 7.75% were long distance buses with 44 and above seats and the rest 12, 623 about 92.25% were buses with 24-44 seats. This indicates that the growth of cross-country commercial passenger transport is relatively low in terms of quantity. With regard to the number and types of buses by levels, in 2010 only 23 buses works at level one, 381 as level 2 and 657 as level 3. The level three consists only about 61.9% of the total buses in the nation (EFTA, 2011). This puts the adequacy of the service provision into questions. Again with regard to the passengers transported, the CSA (2009) gives a report of passenger and freight transport activities in the nation. This indicates that in 2004 to 2008, the growth rate of transported passengers' by medium and large passenger road transport has risen from 4.1 to 6.7% (SBPLC, 2009).

In terms of vehicle population of the nation, Addis Ababa holds more than 75% of the nation. Again, out of the total national vehicles population about 400,000, i.e. about 130,000 vehicles in the country in 2004 were located in Addis Ababa. Of these, the passenger road transport of the city consists about 45% of the total vehicle stock (AACRA 2010 and EFTA, 2011). Again, from the total long distance bus transport of the nation, about 90% are found in the city. It is why; the investigator was intended to make this study in the city. This research focuses on passenger road transport mainly at Addis Ababa-the national capital. It also examines the roles of transport in linking the capital with other cities and towns.
Despite the growth of the passenger road transport, the adequacy of the sector focuses more on the supply and demand situations. The demand can be seen from the passenger side and the supply is from the side of operators. On the other hand, it shows the ease of use of the supply and demand of transport, and other related issues in the sector. The knowledge of structure and adequacy also help to identify critical areas of intervention to improve the service.

Existing studies on transport which were carried out in the nation don't properly addresses the issue under investigation. For instance, ERA (2005) in designing national urban transport policy examined only the general nature of road network rather than the inter-urban passenger transport. Mintesnot and Takano (2007) made a diagnostic evaluation of public transportation mode choice in Addis Ababa with a special focus on intra-urban government bus transport. And, as AACC made study in 2009 that entitled on the management of commercial road transport in Ethiopia. Among these and other studies, no one can investigate in areas of the service adequacy of long distance bus in Addis Ababa. These indicate that there is a gap in the studies with regards to service adequacy of sector. Therefore, this study is intended to fill that gap and investigate the service adequacy of long distance bus in Addis Ababa in Ethiopia.

2. OBJECTIVES AND METHODOLOGY

The focus of this study is to assess the service adequacy of long distance bus transport in Addis Ababa Ethiopia. Therefore, as per the insight of this objective the following methodological mechanism was undertaken. In light of research design, it employed qualitative and quantitative approaches. Both qualitative and quantitative approaches were chosen for research analysis, but high emphasis is given to qualitative and less weight for quantitative approaches. The philosophical Views of the Study are focus on the positivist deals on quantitative mechanism while

E-ISSN: 2321–9637
Volume 1, Issue 5, December 2013
International Journal of Research in Advent Technology
Available Online at: http://www.ijrat.org

the phenomenological one focused on interpretative ways. Both primary and secondary data sources were used for this study. The primary sources were obtained via interview, structured interview (questionnaire), observation tools and focus group discussions. The additional data also collected by the instruments used for this study are maps, photographs and other.

On the subject of place and study site selection, it was carryout in the city of Addis Ababa especially on Mercato terminals (maps 1). It has been the main and the only national bus terminal that serves the whole nation and placed at the center. And also, it has high accumulation of formal LDB operators are working from this terminal. The selection of route and towns of the survey was carryout by using lottery method. Out of 5 major highway routes, four were selected by lottery method. These 4 lines and towns are at Metehara, Debre Sina, Gebre Guracha and Hosanna towns. And the key government officials those are currently work on the formal LDB such as heads of bus terminal, head of Associations, head of traffic officers of the city.

In this way, selected types of informants distinguished; principally selected 241 informants were taken from the Passengers of LDB. The researcher selected passenger about 10% from each bus and these individuals were asked to fill the questionnaire and about 6 passengers from each sampled bus multiplied by 8 buses and again multiplied by four routes at two survey seasons i.e. (6*8*4*2=384). Totally, 384 surveyed passengers were also addressed. Out of this, about 241 questionnaires only were fully completed and returned.

The operators were about 64 buses or operators selected by systematic sampled. And the total number of operators is necessary to know the amount of Bus that dispatched from the terminal. It is found that there are about 100 to 120 large buses which leave the terminal and the similar amount also enter to the terminals per day. Out of these, 6% of the buses from each route took about 8 buses were selected from both going and coming along 4 routes at two survey seasons were used (i.e. 8*4*2=64) buses. Therefore, the researcher took 64 drivers/operators for this study. The passengers' selection was also applicable by using systematic approach that took the K^{th} bus alongside the sampled routes. The required information for the selection of buses identified by plate numbers, side reference numbers, and name of Association and so on.

The questionnaire was used as the main data instrument. It incorporated about 87 questions for operators and 70 questions for passengers. The questions were primarily focused on challenge and stimulating factors. The data from passengers and operators were made by longitudinal survey for four times at two off and on journey seasons. It was takes place within 2011 and 2012. Particularly it carries on 1 September up to 15 Jan (on-season) in 2011 and April to May 2012 (off-season). Observation was guided by check list mainly focus on the challenges of the sector that took mostly at early and late evening for some consecutive days. The other informants particularly off-journey passengers at their loading place or in the terminal were parts of Focus group discussions (FGDs), comprises 4 or 5 participants. The analysis also made based on some quantitative like the inferential statistics and the high emphasis also given for qualitative and content analyses were also undertaken based on open ended questionnaire and informal oral and structured interview. It was primarily carried out by using thick description on the issue.

3. RESULTS AND DISCUSSIONS

This section discusses more on the service adequacy of the industry. It includes the adequacy of LDB transport that can be seen from supply and demand sides of both operators and passengers. The other component presents the reflection of Operator on the Supply-Demand Situation of the industry and woefully mentioned the stimulating factor for the stirring of the supply and demand situations. It also includes the future threat of the Industry as well.

The adequacy is seen from both supply (operators) and demand sides (passengers) of the industry and the office worker from transport offices. The issue of adequacy can be seen from operators side or supply of the industry should get due attentions. Ideally, it is very difficult to narrate the two big variables i.e. supply and demand in separately because they overlap each other. The supply side service provision can be seen from both passengers and operators angles whereas the demand side of adequacy can also be perceived from passenger corners for the sake of triangulation purpose in order to incorporate the ideas from office side. Hereunder, we can discuss the adequacy from supply side and later on the demand.

E-ISSN: 2321–9637
Volume 1, Issue 5, December 2013
International Journal of Research in Advent Technology
Available Online at: http://www.ijrat.org

3.1. Adequacy of LDB

The adequacy refers that the concepts that understand whether the supply and demand of the industry is compatible. In this section, it gives priority on the supply side and come later on passengers (demand). The supply side includes the information get from the operators (Drivers, Co-drivers, conductors and Associations) and the demand side is only seen from passengers.

3.1.1. Adequacy on the Supply Side

To know the adequacy of the industry which mean the supply of the industry with the prevailing demand has been clearly seen on table 1 and analyzed by taking the following imputes such as waiting time to get full load in days, waiting time to get the turn, time taking to carrying full load, number of days that probably to leave the terminal without getting full load and number of working days per week. It can also be seen from number of Associations, numbers of buses and quality of service provision. Therefore, the adequacy of the industry is measured by aforementioned variables only from supply side.

With regard to the time that to get full load after opening the bus or begun to sell the ticket, the survey shown that the majority of passenger would get the ticket on the date of the journey and a fewer passengers would get the ticket ahead of 1 day the journey. The operators reflect that it is determine by seasons. For instance, on-journey seasons, the buses that would get the ticket are not easily but they would get with combating and high queue (photo 1). However, in off- journey seasons we will take more time to get the passengers or to sell the ticket. On average, in both seasons the operators would get the passenger by waiting for about 1 hour (64.5%). However, the rest 35.5% would take above 1 hour (table 1). Thus, about two third of the operators would be sold the ticket.

Table 1 shown that there is a tendency of operators that to leave the terminal without carrying full load. As the survey explore that about 70% of the operators declares that we can leave the terminal without getting full load. It is the fact that the operators open their buses either at late dispatch or the allowed time to load the passenger is over. According to EFTA (2011) manual, the allowed time to carry passengers after opening the bus is about 45 minutes only. If the time is over, in principle the operators has to begin the travel at least with 50% of passengers. As the survey explore that the overwhelming operators are waiting more in the terminal until to get full load. However, about 70% of operators also begin the travel at least 1 to 2 seats are vacant. The rest 24.3% of operators reflected that they don't begin the travel without getting full load. This implies that the operators are open their buses in early morning and sold the ticket before one day of the travel. Among the operators, about one-fourth is beginning the travel with full load.

Table 1 explains on average about 87% of operators reflected that they are unable to get turn that to load the passenger and begin the journey without getting full load is 1 to 3 days per week. And about 70% of operators also begin their journey without getting full load for about 1-2 days. About 81% of the operators' may start the journey without getting full load for about 1 to 4 days and the rest 13% reported that it takes more than 3 days per week to get access and to turn or load the passengers. It also represents that the majority of operators begin journey without getting full load. The study shows that the main reason to begin the journey without getting full load was lack of passenger and the allowed time to load the passenger. These operators are forced to leave the terminal and try to fill the rest passenger along the road and finished the journey by loading and unloading the on-off passenger. In this regard, the turnover would be raised and the speed of passenger that is to reach to the destination is delays.

With regard to waiting time that to get turn i.e. either to sell the ticket or to open the door of the bus to begin loading, about 67% of operators reflected that they would take 1 to 2 days to get the turn to be eligible to load passenger. In this sector after 2009, there has been an obvious means to sell the ticket is only on bid or franchise but not only in turn. Therefore, the level one bus has got more chance and their waiting time is very low. This survey indicates that they will wait below 1 day. This implies that they can get the right to make other travel without idle time like level three and sometimes level two buses. Table 1 revealed that the maximum duration to get the chance that make trip per week is about 3 to 4 days which is highly seen on level three buses. Thus, the waiting time is positively correlated with bus level so that the level one bus makes the trip without idle time like level three and sometimes level two buses (table 2).

In the supplier corner, the number of working days is different by the level of buses. That is not all type of LDB has spent equal days in one week without work. The study has revealed that level one and two buses have stay for fewer days without work than level three. It is due to its service quality and the preference of passengers, and they can also

E-ISSN: 2321–9637
Volume 1, Issue 5, December 2013
International Journal of Research in Advent Technology
Available Online at: http://www.ijrat.org

win the bid and franchising chance of the industry than level two and three. Even passenger is also interested to make mobility on level one than others. On average, the survey explains that the LDB is not works for about 1-4 days in the week. However, the majority of operators found that they aren't yet working for about 1 to 2 days (61%). With regard to number of not working days per week, the total working days of LDB were about 4 to 5 days with the return trip. It is found that on average, the operators can work more than 4 days per week to get at least two journey from Addis Ababa bus terminal that covers about 200 to 600 distances. Thus, it works for about 4 days in round trip. However, the insignificant figure of the survey shows that the majority of LDB industry works above 4 day per week (table 1 and 2).

On the other day, they also waste some days by waiting and seeking their trip. The rest three to four days are spent without work due to high queue to get the turn at the terminal, maintenance of the buses and other related cases. However, the in accessible areas of destination town, they would get at least one trip from origin to destination places. For instance, if the distance is more than 600 km, it will take about 4 days on work to finish the round trip and if the distance goes up the number of days would increase. In Inde Sellasie and Gonder lines are the most inaccessible and it consume about 4 days to complete the trip. Thus, it is inferred that on average, in the dispatch of very long distance (above 600 km), it would takes about 4 days to finish the trip. But the majority of LDB are provided the service within one trip they come back to Addis Ababa in the next days (61%). In the next day they can even get another travel but in most cases they are expected to take rest for one day. In rare case, they are assigned especially for daily round trips in areas of nearby distance from the center that can get the other service without rest. Thus, more than two third of the operators provide the first trip service within 1 to 2 days.

In general, the waiting time to get full load, number of working day per week, the tendency to leave the terminal without getting full load, and waiting time to get the chance to make other travel is very high on level one and going to be lesson in level two and three buses. Thus, the waiting time to get full load and the chance to make other travel are positively correlated with bus levels. Level one is highly privileged than other levels (table 2).

Table 1: the nature of service provision of the industry

1	The time wait to get full load	Percentage
	below 45 munities	37.1
	45-60 munities	27.4
	Above 1hrs	35.5
	Total	100
2	Not working days per week	
	1-2	61.3
	2-3	25.8
	above 3	12.9
	Total	100
3	Do you left the bus terminal without carrying full load?	
	Yes	69.4
	No	24.2
	Unknown	6.5
	Total	100
4	Days without getting full load	
	1-2 days	58.1

E-ISSN: 2321–9637
Volume 1, Issue 5, December 2013
International Journal of Research in Advent Technology
Available Online at: http://www.ijrat.org

	2-3 days	22.6
	4 and More	14.5
	Unknown	4.8
	Total	100
5	Waiting Time to get turn in days	
	below 1	12.9
	1 to 2	54.8
	3 to 4	25.8
	above 4	6.5
	Total	100

Source: *Own field survey in 2011 and 2012*

The table 2 indicate that the relationship between variables. These variables are a variable that show the supply situation of the industry. The variables that have been seen relationship among various variables are both negative and positive weak correlated. In this table, there is positive relationship among various variable but the type of relationship is weak. The level of bus has positive relationship with time to wait to get full load and the tendency to miss the travel. For example, Pearson's r is 004 and .087 respectively. This number is very close to 0. For this reason, we can conclude that there is a weak relationship between levels of bus with time to wait to get full load and a tendency to miss the travel Variables. This implies that the increases in one variable are slightly correlated with decreases in other variable.

On the other hand, it has weak negative relationship with number of not working days per a week, number of days to leave the terminal without getting full load, time to wait to get your turn to load and the tendency to make a round trip per day. The level of bus has negative correlated but its strength is weak because the Pearson's r is -.170, -.145, -.033 and -.028 respectively. This implies the increases in one variable are weak negatively correlated with decreases in other variable. However, the number of not working days per week has relatively high negative correlation with the level of buses. This implies that the working days of the buses are increase when the level of bus is coming to level one and two than three. Again the round trip per day has also negative correlation with the level of buses. It has inverse relationship the fact that the level of buses going to be improved in terms of service provision and adequacy it gone from level three to one. This implies that the round trip of level of buses is increase when the level of bus is coming to level one and two than three.

Table 2: The correlation between the supply side variables

		Level of bus	No of Not working days per a week	For how many days do you leave the terminal without loading full load	For how long time do you wait to get your turn to load	For how long time do you wait to get full load	Do you have to made round trip	Do you ever missing the travel ?
Level of bus	Pearson Correlation	1	-.170	-.145	-.033	.004	-.028	.087
	Sig. (2-tailed)		.187	.262	.799	.978	.829	.503

E-ISSN: 2321–9637
Volume 1, Issue 5, December 2013
International Journal of Research in Advent Technology
Available Online at: http://www.ijrat.org

	N	62	62	62	62	62	62	62
Number of Not working days per a week	Pearson Correlation	-.170	1	-.059	.052	-.013	.187	-.068
	Sig. (2-tailed)	.187		.651	.689	.921	.146	.597
	N	62	62	62	62	62	62	62
For how many days do you leave the terminal without loading full load	Pearson Correlation	-.145	-.059	1	.006	.197	.025	-.120
	Sig. (2-tailed)	.262	.651		.965	.124	.845	.355
	N	62	62	62	62	62	62	62
For how long time do you wait to get your turn to load	Pearson Correlation	-.033	.052	.006	1	.106	-.050	-.059
	Sig. (2-tailed)	.799	.689	.965		.412	.697	.649
	N	62	62	62	62	62	62	62
For how long time do you wait to get full load	Pearson Correlation	.004	-.013	.197	.106	1	-.177	-.230
	Sig. (2-tailed)	.978	.921	.124	.412		.169	.072
	N	62	62	62	62	62	62	62
Do you have to made round trip	Pearson Correlation	-.028	.187	.025	-.050	-.177	1	-.117
	Sig. (2-tailed)	.829	.146	.845	.697	.169		.365
	N	62	62	62	62	62	62	62
Do you ever missing the travel?	Pearson Correlation	.087	-.068	-.120	-.059	-.230	-.117	1
	Sig. (2-tailed)	.503	.597	.355	.649	.072	.365	
	N	62	62	62	62	62	62	62

In terms of service adequacy, it shown on table 2 indicated that number of not working days per week, time to wait to get your turn to load and to get full load. These variables are key variables to show whether the service adequacy is adequate or not. For instance, the number of not working days has weak positive relation with waiting time to get the turn to load. For instance, the P value is .052. It is closer to 0. This implies that the number of not working days has weak positive relation with waiting time to get the turn to load. This implies the increases in one variable are a bit correlated with decreases in other variable. With regard to the Sig. (2-Tailed) value also show that whether there is a statistically significant correlations between two variables. The Sig. (2-Tailed) value in all variables is greater than 0.05. Because of this, we can conclude that there is no statistically significant correlation that has seen between the variables.

In general, the finding shown that all variables have both positive and negatively related in terms of service provision and adequacy of the supply in contusive way. But the undeniable aspect on the finding has weak relationship whether it has a positive or negative lie with variables.

E-ISSN: 2321–9637
Volume 1, Issue 5, December 2013
International Journal of Research in Advent Technology
Available Online at: http://www.ijrat.org

3.1.2. The Passenger Reflection on Adequacy of the Service (demand sides)

The demand can also be seen from both operators' and passengers' perspectives but high weight is given for passengers. It mainly includes how passenger can get ticketing accesses, waiting time to get bus and begin the travel, and the tendency to cancel the travel due to lack of buses. The perception of passenger with regard to the service that they get from the industry are seen by waiting time to get bus, time to reach to Bus station, preference time for long journey, tendency to miss a bus after ticketing and the tendency to use vehicle other than bus for intercity and others. In addition to see the time punctuality of bus when begin the travel, confortable to seat, cleanness of the bus and terminal, and mechanism to entertain the users and others issues are also seen in the side of the demand. Therefore, the adequacy of the industry is measured by aforementioned variables from demand side.

To understand the rate of demand of the industry, it is a must to see the growth and amount of the passengers that utilized only from Mercato bus terminal. The rate of passenger on and off-journey seasons has shown some difference. As the evident, more than 110 buses give service only from Mercato bus terminals on average per day. The estimated amount of passengers that on average leave the terminal for the intercity movement was about 7,800 users by using long distance buses only and it starts from the heartland and similar amount of buses were hauling into the city. In comprehensive, the sector gives service only from Mercato bus terminal is for about 15,600 passengers per day both incoming to the city and out going from the city. This figure easily indicated that about half million peoples are transported only from Mercato bus terminal per month.

Table 3 revealed that the tendency to get bus when they reach bus station was about 66% or 2/3 of the passengers get the bus and the ticket immediately when they come to bus terminal. But the rest 34% or more than 1/3 of the passengers were not yet get the service as soon as they come to the terminal. This passenger is getting the bus after waiting several minutes and most of the time those who come to the station early in the morning to late dispatch. This is due to the pre-ticketing service. However, the nature of getting bus and its speed would be differing on the on-off seasons. In on-season of the industry, the passenger would get bus on time and it would get full load on the spot. On average, about 66% of the passenger would get from the industry regardless of the seasons and the rest 34% informants do not get from the terminal.

The waiting time to get bus after ticketing is again explained on Table 3. In terms of waiting time to get bus after ticketing, about 75.5% of the passengers were waiting below one hour. But the majority of the passengers wait to get bus after ticketing was lies on 30 to one hours (60.6%). It realizes that almost the majority of passenger would get the bus after ticketing. Whereas, the two extreme times that spent within the terminal was about below 30 minutes and above 1 hour. The small informants reflects that the less waiting time was below 30 munities which is recorded during the most congested seasons, holiday weeks and at early morning of every day. Whereas, the other equal amount of informants also reflected that they were waiting for about more than an hour's. In most of the time, it is observed that often 10am towards 1 pm. Thus, the service provision of the industry is accessibility to the people.

It is found that there are various trends and reasons for the passenger that preferring the suitable time for their mobility. The majority of passengers need to commence their journey at the early in the morning. It is shown on table 3, about 93% of the passengers made their journey on early and late morning. It is the fact that because of the whether condition not became strong and it became suitable in the morning. This study revealed that the other slight reasons for the making of mobility at early morning they might not get bus access from the terminal if the time is gone. That is if their distance of journey is very long and other similar cases. Again, very few parts of the users were wanted to make the journey at afternoon or evening of day (about 7%). It was found that they might get the bus access and their place of the destination is found within three hundreds distance from Addis Ababa. The fact that the places found in certain radius which is found below 300 km gets late dispatch from the terminal. For instance, the dispatch towards Hawassa, Hossaina and Shashemene was the most known and common one.

E-ISSN: 2321–9637
Volume 1, Issue 5, December 2013
International Journal of Research in Advent Technology
Available Online at: http://www.ijrat.org

Table 3: The perception of passenger on the service adequacy

Waiting time to get bus after ticketing		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<30munites	36	14.9	14.9	14.9
	30-1 hours	146	60.6	60.6	75.5
	1hr +	59	24.5	24.5	100.0
	Total	241	100.0	100.0	
Have you got Bus when you reach Bus station?		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	158	65.6	65.6	65.6
	No	83	34.4	34.4	100.0
	Total	241	100.0	100.0	
Preference time for long journey		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Early Morning	170	70.5	70.5	70.5
	late morning	53	22.0	22.0	92.5
	Afternoon	15	6.2	6.2	98.8
	Late Afternoon and on evening	3	1.2	1.2	100.0
	Total	241	100.0	100.0	
Tendency to miss a bus after ticketing		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	123	51.0	51.0	51.0
	No	108	44.8	44.8	95.9
	Unknown	10	4.1	4.1	100.0
	Total	241	100.0	100.0	
Do you ever use vehicle other than bus for intercity?		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	144	59.8	59.8	59.8
	No	97	40.2	40.2	100.0
	Total	241	100.0	100.0	

Source: *Own field survey in 2011and 2012*

The relationship of demand side variables refers both positive and negative correlation can be explained on table 4. Of these, various variables are shown negative relation and the other variables are positively correlated. The positive correlated variable has weak relation. For example, Pearson's r is 0.156. This number is very close to 0. For this reason, we can conclude that there is a weak relationship between waiting time to get bus after ticketing and the tendency to get bus when you reach terminal variables. And the other two variables also have positive relationship because its value is above zero. For instance, the tendency to get bus when you reach terminal has positive relation with waiting time for bus to get full load and the time of taking ticketing. This implies that the changes in one variable are weakly correlated with changes in the second variable.

E-ISSN: 2321–9637
Volume 1, Issue 5, December 2013
International Journal of Research in Advent Technology
Available Online at: http://www.ijrat.org

Table 4: the probability of the variable of demand of the industry

Passengers issues to indicate the Demand of the industry		Have you got Bus when you reach to Bus station?	Waiting time to get bus after ticketing	Waiting time for bus to get full load	Time of taking ticketing	Preference time for long journey
Have you got Bus when you reach Bus station?	Pearson Correlation	1	.156(*)	.012	.001	-.062
	Sig. (2-tailed)		.015	.859	.991	.338
	N	241	241	223	241	241
waiting time to get bus	Pearson Correlation	.156(*)	1	.013	-.050	-.099
	Sig. (2-tailed)	.015		.843	.442	.125
	N	241	241	223	241	241
waiting time for bus to get full load	Pearson Correlation	.012	.013	1	.113	-.031
	Sig. (2-tailed)	.859	.843		.093	.646
	N	223	223	223	223	223
time of taking ticketing	Pearson Correlation	.001	-.050	.113	1	.018
	Sig. (2-tailed)	.991	.442	.093		.778
	N	241	241	223	241	241
Preference time for long journey	Pearson Correlation	-.062	-.099	-.031	.018	1
	Sig. (2-tailed)	.338	.125	.646	.778	
	N	241	241	223	241	241

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

However, the other variable is negatively correlated, for instance, preference time for long journey and other two variables. The tendency to get bus when you reach to bus station, waiting time to get bus after ticketing and waiting time for bus to get full load have negative correlated but its strength is weak because the Pearson's r is -.062, -.099 and -.031 respectively. If the value is gradually slopes downward that can conclude it has weak negative correlation between these variables. The increases in one variable are slightly correlated with decreases in other variable. But it has positive relationship with time of taking ticketing. In general, the variables have positively weak correlation. That means the variables are weakly related to one another. Increases or decreases in one variable have weak effect on increases or decreases in the second variable. The Sig. (2-Tailed) value also show that whether there is a statistically significant correlations between two variables. The Sig. (2-Tailed) value in most variables is greater than .05. Because of this, we can conclude that there is no statistically significant correlation between variables.

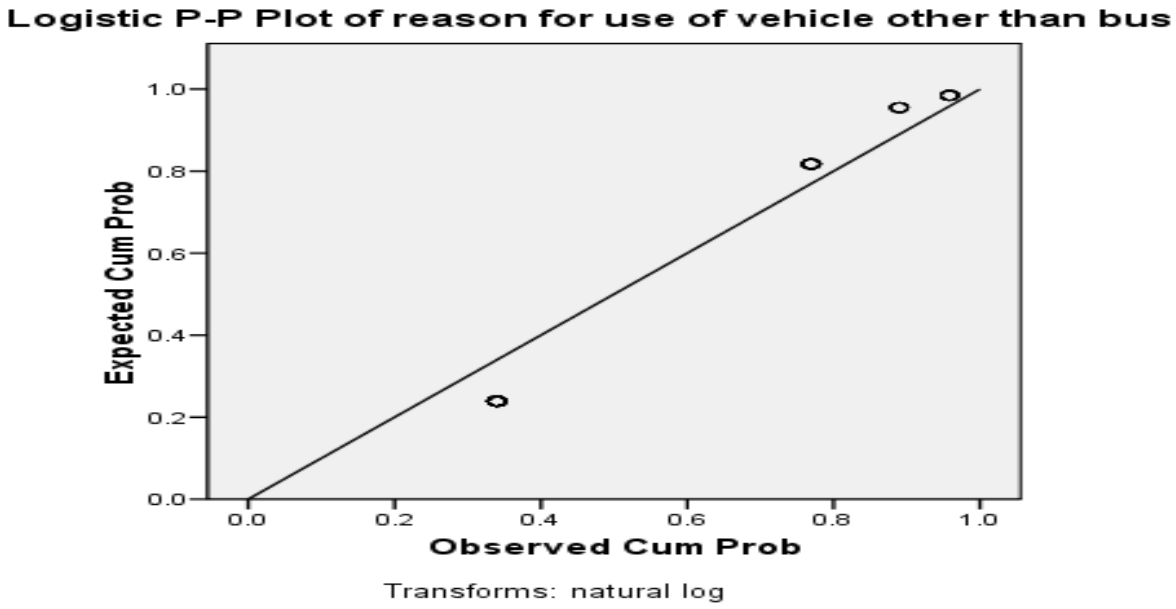
3.1.3. The possibility to use other than bus transport for intercity travel

The other reference to see whether the supply is goes in line with the demand is that by observing the probability of passenger to use for intercity travel other than bus transport. Again, the pertaining reality of the majority of respondents articulates that there would be a prevalence to make intercity mobility without using bus. Table 3 also shown that about 60% of the passengers explained that there is a tendency that to make the intercity mobility without using bus transport. It is noticed that it was lack of options for bus transport in late and night dispatch. This might refer that they are able to afford informal transport by preferring their facility and they are demanding

E-ISSN: 2321–9637
Volume 1, Issue 5, December 2013
International Journal of Research in Advent Technology
Available Online at: http://www.ijrat.org

automobile, tourist vehicles and government office vehicles so far. This shows that they may give high weight for their comfort and speed. Of these, about 40% noticed that not utilize other than bus for their long travel; it is the fact that lack of other options rather than bus transport. And it was the only public transport that is accessed for the society in all parts of the nation.

Fig 1: The possibility to use other than bus for intercity travel (logistic regression)



With regard to the possibility to use other than bus for intercity travel, the logistic regression also estimates the coefficients of the linear equation involving one or more independent variables that best predict the value of the dependent variable, and it has similar task with logistic regression. As figure 1 explains that the resulting scatterplot appears to be suitable for linear regression, with two possible causes for concern. The variability of the probability is to use other than bus for intercity travel and its reasons that appear to increase with increasing diameter. In this figure the point on the far right of the graph exerts less influence to lain on the regression line. However, the logistic P-P plotted residuals should follow directly with the 45-degree line. And no point can be seen likely influence the regression line and all the points that are observed and expected of the chi square is best fitted to express this model.

4. CONCLUSION AND RECOMMENDATIONS

4.1. Conclusion

The general conclusion of this article is, the waiting time to get full load and the chance to make other travel are positively correlated with bus levels. Level one is highly privileged than other levels. In general, the finding shown that all variables have both positive and negatively related in terms of service provision and adequacy of the supply in contusive way. But the undeniable aspect on the finding has weak relationship whether it has a positive or negative lie with variables. The off-seasons also infer reduction of demand of passengers. Thus, lack of integration between different offices and stakeholders are categorized as number one factors for the supply and demand of the industry.

4.2. Recommendations

As to the foregoing discussion, the following key points were provided as possible suggestions to improve the overall situation of adequacy of long distance bus transport. The following strategies were forwarded in priority order and in terms of their weight.

1. Work with stakeholders to reduce passenger congestion in the terminals

E-ISSN: 2321–9637
Volume 1, Issue 5, December 2013
International Journal of Research in Advent Technology
Available Online at: http://www.ijrat.org

2. Serve for about 24/7 or 18/7
3. Open and expand ticketing office and develop web site
4. Expand Long Distance Bus Services to neighborhood countries
5. Provide light food and Soft drinks to customers in both outgoing and incoming travel
6. Upgrade the standards of Mercato Bus Terminals
7. Allow special seat reservation for VIP and special cases (Pregnant Women, children, disable, aged individuals)
8. Shift and decentralize the service sectors and selected International and Federal offices to the preferred Regional Capitals
9. Upgrade the Associations into Companionship Corporation
10. Require Proper and Timely Data Handling at All Levels of Transport Offices

Acknowledgments

The authors would like to acknowledge to the workers of Federal Transport Authority of Ethiopia to provide various secondary data and willingness to provide primary information. Of them, my special thanks would goes to Mr Animute Kassie for his data provision and GIS work and it also goes to Mss Meseret Hailu for her encoding the data as it become suitable to this presentation. All errors particularly related with the survey data, is the responsibility of the authors. This article is designed based on a study that sponsored Arbamnich University research fund and UNISA bursary.

REFERENCE

1. Addis Ababa Chamber of Commerce (AACC), (2009): The Management of Commercial Road Transport in Ethiopia Private Sector Development Hub/Addis Ababa Chamber of Commerce and Sectoral Associations, 2009, May 2009
2. Addis Ababa City Government, office (AACGO) of the Mayor 2011/12.
3. Addis Ababa Transport Authority, (AATA), (2009): Draft BPR Document on Passenger Transport (Draft)
4. Asnake Tadesse (2006): Road Freight Transport in Ethiopia with Special Emphasis on Addis Ababa – Djibouti Corridor. Addis Ababa University School of Graduate Studies June, 2006 Addis Ababa
5. Central Statistical Authority (CSA) (2009): The Federal Democratic Republic of Ethiopian Central Statistical Authority Annual Abstract Country Summary.
6. Central Statistical Agency (CSA) (2007): Compilation of Economic Statistics in Ethiopia, July 2007 Addis Ababa
7. Central Statistical Agency (CSA) of Ethiopia. "Census 2007 preliminary (pdf-file)" (http://www.csa.gov.et/pdf/Cen2007prelimineray.pdf. Retrieved 2008-12-07).
8. Central Statistical Authority (CSA) (1984): Ethiopia 1984: Population and Housing Census of Ethiopia. Preliminary report, Addis Ababa.
9. Central Statistical Authority (CSA) (1996): The Federal Democratic Republic of Ethiopian Central Statistical Authority Transport and Communication Statistics Statistical bulletin No 246, Addis Ababa march 1996.
10. CSA, 1984. Ethiopia 1984: Population and Housing Census of Ethiopia. Preliminary report, Addis Ababa.
11. Ethiopian Federal Transport Authority (EFTA) (2011): The Directorate of Commercial Passenger Quality Certificate Office, July 2011
12. Ethiopia Ministry of Education (MoE) (2010): Annual Abstract 2001 E.C. /2008-09 G.C. / Ministry of Education EMIS, Planning and Resource Mobilization Management Process March 2010 Addis Ababa, Ethiopia (www.moe.gov.et)
13. Ethiopia Ministry of Finance and Economic Development (MoFED) (2010): The growth and Transformation plan 2010/11 to 2014/15 Ministry of Finance and Economic Development, Nov 2010 Addis Ababa Vol I. main text.
14. Meket Belachew. (1997): "Some Thoughts on Intra-Urban Transport Problems in Ethiopia The Case of the Anbessa City Bus Transport," In Ethiopian Journal of Development Research A.A.U. Addis Ababa vol. 19 (1).
15. Mintesnot Gebeyehu and Shin-Ei Takano. (2007): "Diagnostic Evaluation of Public Transportation Mode Choice in Addis Ababa" Hokkaido University, Sapporo Japan Journal of Public Transportation, Vol. 10, No. 4, 2007.
16. Ministry of Finance and Economic Development (MoFED) (2006): Ethiopia: Status Report on the Brussels Pogramme of Action (BPoA) for Least Developed Countries (LDCs) Ministry of Finance and Economic Development (MoFED) January 2006 Addis Ababa
17. Ministry of Finance and Economic Development of Ethiopia (MoFED) (2010): In Conjunction With: Ministry of

E-ISSN: 2321–9637
Volume 1, Issue 5, December 2013
International Journal of Research in Advent Technology
Available Online at: http://www.ijrat.org

Agriculture And Rural Development Global Agriculture and Food Security Programme Request For Funding Public Sector Window Agricultural Growth Program (GAFSP GAP Financing) Draft 29 September 2010
18. Ministry of Transport and construction (MoTC) (2009): Annual statistical bulletin 2001 to 2008
19. Oladele O. Arowolo, (2010): Country Case Study: Ethiopia Country case study prepared for the *Center for Global Development Working Group on UNFPA's Leadership Transition* November 2010
20. United Nations Economic and Social Council Economic Commission for Africa (UNESCECA), (2009): Sixth Session of the Committee on Food Security and Sustainable Development regional implementation meeting for the 18th Session of the conference on sustainable development 27-30 October 2009 Addis Ababa Ethiopia.
21. Yayeh Addis (2003): The Extent, Variations and Causes of Road Traffic Accidents in Bahir Dar Addis Ababa University School of Graduate Studies June, 2003 Addis Ababa.