

ASSESSMENT OF THE CONTRIBUTION OF BUS RAPID TRANSIT TO THE DEVELOPMENT OF DAR ES SALAAM CITY, TANZANIA.

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ABSTRACT: Dar es Salaam Bus Rapid Transit (DBRT) is a high-quality bus-based transit system that delivers fast, comfortable and affordable cost. It does this through the provision of dedicated bus lanes and iconic stations aligned to the center of the road, off-board fare collection and regulation time schedule operations. For more than thirty years, the residents of Dar es Salaam city faced public transport problems mainly delays to work due to congestion, vehicle accident which result to death and loss of properties. Since 1980s the government of Tanzania struggling to minimize the transport problems in the city with little success. The BRT system which started its operation in 2016 has been found to be an effective solution for urban transport problem in the city. This study used questionnaire, interview and observation method to get and analyze responses from household, commuters, BRT director and city development officer for the purpose of investigating the contribution of DBRT to the development of the city. Methodology survey designed was used qualitative and quantitative method of data collection and analysis was used probability and non-probability sampling was used to determine the sample ranging in the study areas respondent. Also, the data which were collected from the field were analyzed by using SPSS this include both qualitative and quantitative data. This study was assessing the contribution of

DBRT system to the development of the Dar es Salaam city since the BRT start working up to date. The study reveals that BRT has more contribution to the development of Dar es Salaam city.

INTRODUCTION

Background of the Research Problem

Over the last five years bus rapid transit has expanded faster in China than in any other region with 320 km of BRT systems opened in thirteen cities while these systems have impressive features, they were all relatives' low capacity, low to medium demand. System either in peripheral corridors or with a low demand design in central corridors; that is until the opening the Guangzhou BRT(Hughes, 2012).The Guangzhou BRT carries more passengers in a single direction than all the subway lines in mainland China with the exception of the Beijing line two subways and is in many ways a generational advance on the earlier systems. This article describes the development trends of BRT in China ranging from the earliest median bus way in Kunming in 1999through to the metro replacement level BRT in Guangzhou in 2010. It identifies a trend towards direct service operations rather than trunk and feeder operations and finishes with a summary of key lesson learned from the Guangzhou BRT (Xianyuan, 2012).

Bus rapid transit (BRT) also called a bus way or transit way is a bus based public transport system designed to improve capacity and reliability relatives to a conversional bus system. Typically a BRT system includes road ways that are dedicated to buses and gives priority to buses at intersection where buses may interact with other traffic. A long side design features to reduce delays caused by passengers boarding or leaving buses or purchasing fares BRT aims to combine the capacity and speed of a metro with the flexibility lower cost and simplicity of a bus system. The first BRT system was the ride integrated transport (integrated transport network) in Curitiba Brazil which interred service (Public Transport Renaissance, 2010).

Many large urban areas have introduced a rapid transit system of traffic management. The first one in Britain was the Tyne ware Metro. It opened in 1980 and integrated

public and private transport systems. Its design has since been adopted by cities as far away as Singapore and Hong Kong (Waugh, 1994).

BRT in Tanzania Dar es Salaam bus rapid transit (BRT) is the bus rapid system that began operations on 10 May 2016 in Dar es Salaam Tanzania. The transit system consists of six phases and the construction of the first phase began in April 2012 by the Austrian construction company STRABAG. International GmbH construction of the first phase was completed in December 2015 at a total cost of £134 million funded by the African Development Bank, World Bank and the government of Tanzania. The first phase of the project has a total length of 21.1 kilometers with dedicated bus line on three trunk routes with a total of 29 stations. The entire system is operated by the Usafiri Salama. Dar es Salaam Rapid Transit (UDART) under the surveillance of the surface marine transport regulator authority (SUMATRA) currently the route is serviced by a fleet of 140 Chinese built Golden Dragon buses providing express and local services for 18 hours daily from 05:00am to 11:00pm (Rizo, 2014).

Statement of the Research Problem

Dar es Salaam, the largest city in Tanzania has high level of traffic congestion especially on its main arterial roads. The public transit options currently available in Dar es Salaam are typical of fast-growing East Africa cities: in addition to an informal network of minibuses, rickshaws and motorcycle taxis, there are two commuter trains and a ferry. The new BRT system consists of dedicated bus lines separated from other vehicle traffic and station platforms with off-board fare collection systems to reduce slow down and promote traffic flow. The first operation BRT lines which is currently under evaluation is the first of six planned routes which will run in spoke-like fashion from the central business district (CBD) to the outlying areas of the city. This system similar to other BRT lines in developing cities (e.g. Lahore, Bogotá, Quito) but it's the first of its kind to operate in East Africa (Febrance, 2019).

The result of this study could have implemented Addis Ababa is building a light rail system. Nairobi is considering a BRT, Accra is expanding their BRT system and

Kigali is investing heavily in upgrading buses. Researchers are partnering with Dar es Salaam Rapid transit Agency (DART) to conduct a study evaluating the impacts of the newly built BRT line in Dar es Salaam. Outcomes including travel patterns, employment income access to labor and goods markets, migration and neighborhood amenities since the location of the BRT line is fixed (and cannot be allocated randomly), researchers are using a quasi-experimental design based on a difference-in-difference strategy (UATP, 2014)

Researchers first surveyed close to 1,750 households in the Dar es Salaam metropolitan area. They are comparing households at varying distances from the newly constructed first phase of the BRT and later phases of the BRT system. A wide range of outcomes, consumption, assets, property values and neighborhood amenities. The research team has initiated monthly mobile surveys of the original respondents to help with tracking respondents over long time periods and together data on a subset of outcomes on a high-frequency basis. A full midline survey of all households included in the baseline survey (whether or not the original respondents still live in the household) and all individuals interviewed at baseline (including those who have migrated elsewhere) is currently underway (Rizzo, 2017)

In addition to the study described above, researchers are planning two randomized evaluations to investigate potential policy options for increasing the extent to which the poorest may benefit from the BRT. The first of these interventions will subsidize access to the BRT for certain individuals and the second will be a spatially conditional cash transfer program which aims to understand the costs of displacement resulting from public infrastructure projects.

The design of the second intervention will be influenced by the results of a qualitative study conducted over summer in 2017. Through a series of focus group discussions throughout Dar es Salaam, researchers sought to better understand the make-up of the housing market in Dar, how secure land and property titles are (both on paper, legally, as well as in practice), gauge monthly cost increases at which respondents would consider moving from their home, and identify the core reasons for moving.

In this research about the contribution of BRT to the development the things which will be researched on that. First on how the introduction of BRT in Dares Salaam stimulate the development of dare s salaam city in all aspects such as social, economic and political development. Also to provide some advices to the ministry of transport In Dar es salaam to change the system of that BRT to operate because now days although the BRT has contributed the development of Dar es salaam but the passengers, they face a lot of challenges for example. You may arrive in the station on 07:00am but due to the poor arrangement of busses you can start your journey on 08:30am so that is challenge to the passengers. And the aim of this research is to know how can these challenges were be solved and the BRT in Dar es Salaam will continue to be the most contributor of the development in the city (Chapman, 2016).

Objectives of the Research

General Objective

To assess the contribution of bus rapid transit (BRT) to the development of Dar es Salaam, Tanzania.

Specific Objectives

- i. To evaluate the contribution of BRT related to the development of Dar es Salaam, Tanzania.
- ii. To explain the relationship between BRT and development in Dar es Salaam, Tanzania.
- iii. To evaluate the impacts of bus rapid transit related to the development in Dar es Salaam, Tanzania.

Research Questions

- i. What are the contributions of bus Rapid Transit to the development of Dares Salaam city, Tanzania?
- ii. What are the relationship between bus Rapid Transit and Development of Dar es Salaam city, Tanzania?
- iii. What are the impacts of bus rapid transit to the development in Dar es Salaam city, Tanzania?

Significant of the Study

The study was significant because BRT can help particularly useful in developing countries because it can bring or extend many of the benefits of rail transit system speed predictability, priority comfort while requiring considerably less capital investment. The key to success is assigning dedicated travel lanes to the BRT vehicles so they avoid congestion, and commuting to modern stations at appropriate intervals with streamlined fare collection and boarding.

For example in dare s salaam the BRT it is helpfully to the people because now days when you travel from one place to another especially those areas which the BRT road system passes through. Is easily to move so that it can help to the development because people they arrive in their work station on time and they can continue with their work. So that is development comes from the introduction of bus rapid transit (BRT) in Dar es Salaam Tanzania (Theresa Enright U. R., 2017).

LITERATURE REVIEW

Definition of Key Concept or Terms

Transport

Is the movement of humans, animals and goods from one location to another. In other world the action of transport is defined a particular movement of an organism or thing from point A to point B modes of transport include air, land, water, cable, pipeline and space. The field can be divided in to infrastructure; vehicles and operations. The unique purpose of transport is to overcome space which is shaped by a variety of human and physical constraints such as distance and time (Jean-Paul Rodrigue, 2013).

Bus Rapid Transit

Is the bus based public transport system designed to improve capacity and reliability relative to a conventional bus system typically, a BRT system includes road ways that are dedicated to buses and give priority to busses at intersection where bus may interact with other traffic; alongside design features to reduce delays caused by passengers boarding or leaving buses or purchasing fares (Suryani Eka Wijaya, 2019)

Conceptual Framework of the Study

According to Tromp (2006), defined conceptual frame work as a set of broad ideas and principle taken from relevant field of inquiry and used to structure a subsequent, presentation. The contribution of bus rapid transit to the development of Dar es Salaam city depends on some factors such as infrastructure, climate condition, as well as by law. Therefore, if these factors managed well will results the efficient and effectiveness of bus rapid transit. The relationship between variable which is independent and dependent variable is shown on the figure below.

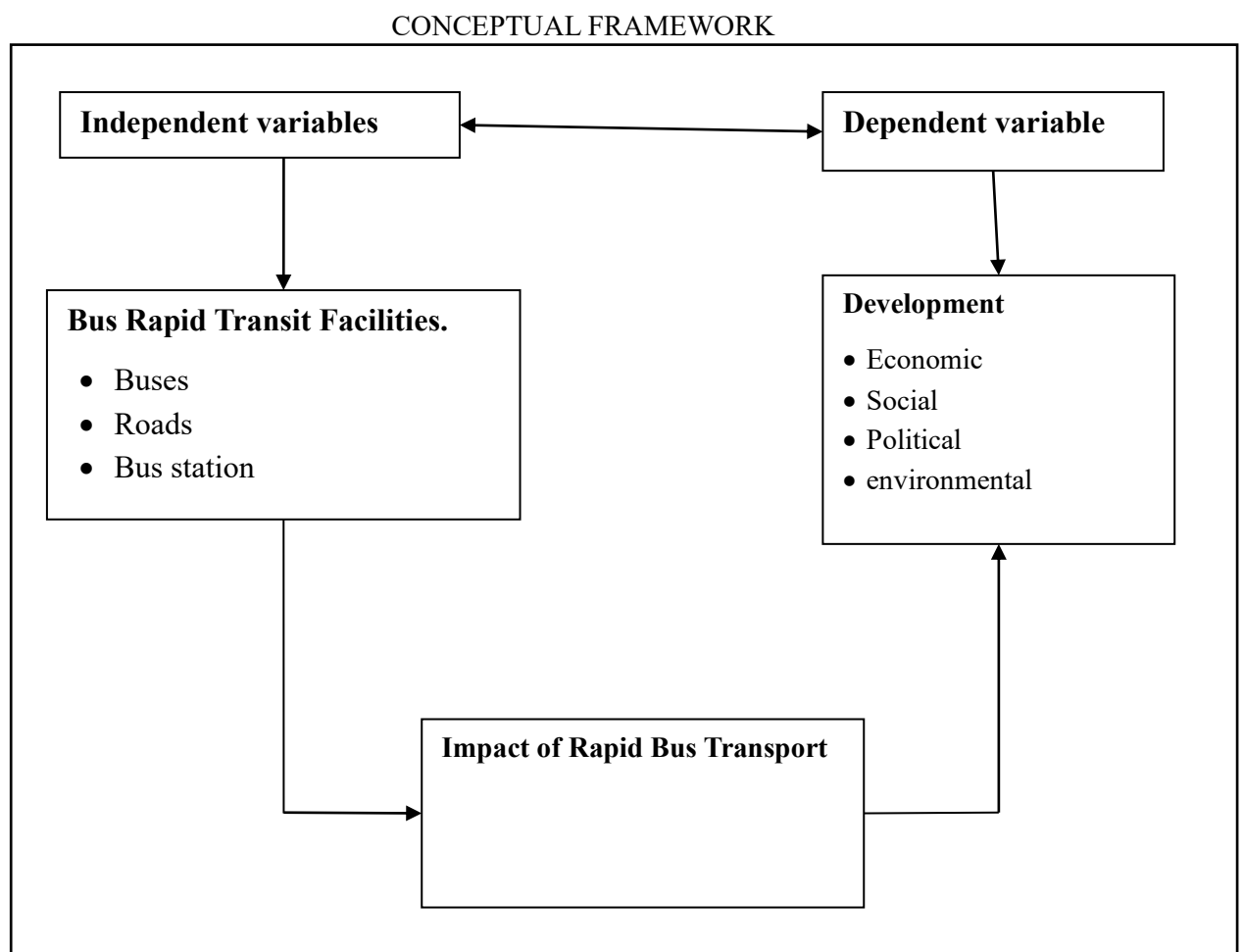


Figure: 2.1: Conceptual Framework of the Study

Source: Own Construct (2025)

Summary of Empirical Review Box

S/N	Author	Year	Theme	Weakness	Relevant
1	Hidalgo	2017	Impacts of operational bus rapid transit(BRT)	Doesn't show how it contribute the development	this is relevant to my study in objective number one
2	Duwa, Hamis and Chengula	2016	to assess the effectiveness of bus rapid transit(BRT)	This study fail to show the real data on how the BRT is effectiveness in working	This is relevant to objective number one
3	Khaled	2007	Evaluating and planning bus rapid transit BRT	Does not show the planning has successful	This is relevant to objective number two
4	John D. Nelison	2010	Recent development in bus rapid transit	Does not show the development caused by BRT	This is relevant to objective number three
5	M. Juncal Gutierrez-Mngado	2019	Cross-Linguistic Influence: From Empirical Evidence to Classroom Practical	Does not explain on how the accessibility contribute the development	This is relevant to objective number two
6	AnkitKathurta	2016	Assessment the implementation of BRT in India	Does not show the strategies of that implementation	This is relevant to objective number one

7	Graham Currier and AlexaDelbosc	2011	Assessment the understanding of BRT route ridership drivers	They explain only about BRT route and not other issues	This is relevant to objective number three
8	Andres L. Vecino	2015	Road safety effect of BRT system	Does not show the strategies taken to ensure the road safety of BRT system	This is relevant to objective number three
9	R.S Thilakaratne and S. C. Wirasighe	2016	Implementation of bus rapid transit system on an optimal segment of a long regular bus route	Does not show how does this implementation motivate the development	This is relevant to objective number one
10	Omar Ibarra Rojas	2015	Transportation research	Explain only the transportation network and not other things comprising in the system	This is relevant to objective number one, two and three

Figure: 1.3: Empirical Review Summary Box

RESEARCH METHODOLOGY

Research Design

The study applied a qualitative research design which is used to collect data through observation method, questionnaire method and interview method and processed these data collected by using tabulation, classification and analyzed by using statistical analysis to assess the contribution of bus rapid transit to the development of the city. Also, the study applied quantitative research in order to determine the relationship between one thing an independent variable and another dependent or outcome variable in a population a quantitative research design is either descriptive or experimental. A descriptive study establishes only associations between variables (Atkinson, 2002)

Description of the Study Area

Dar es Salaam is the city located in Tanzania and was formed known as Mzizima. It was once the capital city until 1974, when Dodoma was named as the capital city. However, to today, Dar es salaam remains the largest city in Tanzania interims of population in fact its population is largest in all of east Africa the total population of dare s salaam is over 4.3million.

City size and population density. The city land area is 538square miles (1,393 square kilometers), making the population density 8,100 people per square mile (3,100 per square kilometer) (Karim, 2018). Climate here is tropical. The summers here have a good deal of rainfall, while the winters have very little. The average annual temperature in dare s salaam is 25.9⁰c. About 1089mm of precipitation falls annually (Karim, 2018).

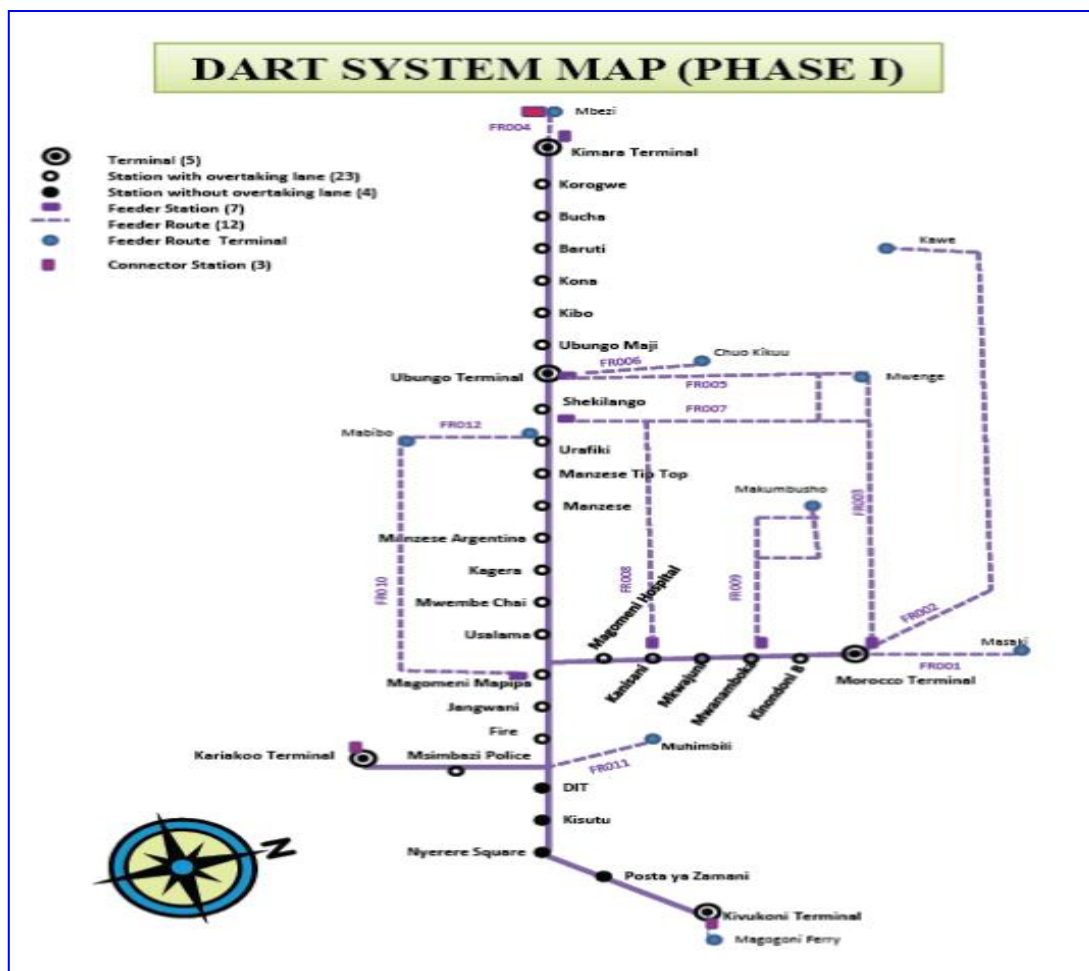


Figure: 1.4: The Map of Bus Rapid System in Dar es Salaam
Source: DART Tanzania (2025)

Sampling Techniques

The study used the simple random to get the sample of the study, in this case each individual is chosen entirely by chance and each member of the population has an equal chance or probability, of being selected. One way of obtaining a random sample was to give each individual in a population a number and then use a table of random numbers to decide which individuals to include. For example, if you have a sampling frame of 1000 individuals, labeled 0 to 999, use group of three digits from the random number table to pick your sample. So, if the first three numbers from the random number table were 094 select the individual labeled "94" and so on (Seema Singh, 2018).

Population Size of the Research Area

According to national census, (2012) the region had a population of 4,364,541, which was much higher than the pre-census projection of 3,270,255. For 2002-2012, the region's 5.6% average annual population growth rate was the highest in the country.

According to Kombo, (2006). The population of the study area refers to the group of people or items from which the sample size to be used in a particular study is being selected. The target population of this study includes all people who are responsible for controlling and managing the rapid buses; also, this study must involve passengers who use this means of transport.

The population of the study involved the participants from Dar es Salaam city council. Also, this study was conducted in two municipalities; these include Ilala and Kinondoni.

The sample size for the study area will be determined by using the following formula

formula,
$$S = \frac{N}{1 + N(e)^2}$$

Where,

S= sample size

N= Total household heads in selected municipality,

e=Level of precision and S= sample size.

$$\text{KinondoniS} = \frac{1775049}{1+2,995,660} \times \frac{96}{(0.1)^2} = 57$$

$$\text{Ilala S} = \frac{1,220,611}{1 + 2995,660} \times 96 = 39$$

Summary of Municipals Population				
S/N	Municipal	Frequency	percentage	Sampling techniques
1	Kinondoni	57	59%	Purposive
2	Ilala	39	40%	Purposive
3	Total	96	99.9%	

Figure: 1.5: Number of Sample Size of the Study Area
Source: National Census (URT, 2023)

PRESENTATION, ANALYSIS AND DISCUSSION OF THE FINDINGS

Demographic Information of the Respondents

This part gave the information on the age, education level, gender and occupation of the respondents. The purpose of choosing these characteristics was to get the general overview of what the respondents perceive BRT and its contribution to Dar es Salaam city.

Age groups of the Respondents

Table 1.6: Distribution of Respondents by Sex

Gender	F	%
Male	47	49.0
Female	49	51.0
Total	96	100.0

Source: Field Data (2025)

The Results in Table 4.1 indicated that, female contributed much than male as female was 49 respondents, which is (51%) and male 47 respondents which is (49%) respectively. In this finding, there is lower gender imbalance due to type of stratified and simple random sampling techniques which were employed by researcher since it was the intention of the researcher to avoid gender imbalance but it appeared in a very low amount which resulted into avoiding biasness of the information collected.

This result indicates that there are many females in study area than males. The study similar to study conducted by Morten (2019) conduct research in Dar es Salaam city about. Evaluating the impacts of the Dar es Salaam Bus Rapid Transit System study found that female was large compare to male and this is due to the nature of the area of the field.

Education Level of the Respondent

This part given the information of the of the education level of the respondent the purpose of choosing this character was to get general over view of what the respondent perceives about the contribution of BRT to the development of Dar es salaam city based on their level of education.

Table 1.6: Showing Education Level of the Respondents

Education level	F	%
Primary	15	15.6
Secondary	32	33.3
Collage	27	28.1
University	22	22.9
Total	96	100.0

Source: Field Data (2025)

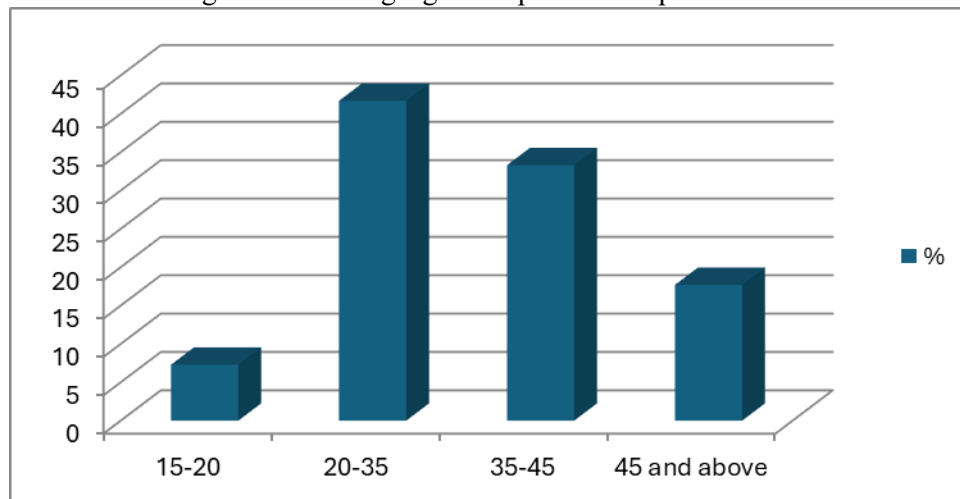
Key. F=Frequency, %= Valid percent.

In aspect of education level, 15 where is(15.6%) of the respondents had a primary education whereby 32 (33.3 %) respondents had the secondary education, collage education take 27 interviewed respondents (28.1%) while respondents with university education covered 22 where is (22.9%) of the respondents. This results indicates that Dar es Salaam as a developed town in Tanzania has got a good education foundation whereby the majority of the people have basic education as shown in table 4.1 above that (33.3%) of the respondents have secondary education. The study similar with the study conducted by Chengula (2015) in Dar es Salaam city who said the that the level of education in the field area helps to get the real information of the research objectives

The Age Group of the Respondent

The study also recorded data on the age group of the respondents here the respondents categorized in to four groups where is 15-20, 20-35, 35-45, 45 and above through this show that the study responded more by which age group.

Figure 1: Showing Age Group of the Respondents



Source: Field Data (2025)

The study also recorded data on the age group of the respondents whereby age group of 15-20 years covered 7 which is (7.3%) of the respondents, age group 20-35 years recorded 41 (41.7%) respondents, age group 35-45 recorded 33 people which is (33.3%) of the respondents, and the age group of 45 years and above recorded 17 which is (17.7%) of the respondents. This result displays that the age group 20-35 years is the most users of the BRT simply because this age group comprises of the students, secondary, college and university students, and the youth people at their middle age who are active in different aspects of life such as education, business and job which make them the most users of the project. The study similar with the study conducted by Chengula (2015) in Dar es Salaam city who said that the group of youth was highly participated.

Occupations of the Respondents

This part gives the information on the occupation of the respondents. The purpose of choosing these characteristics was to get the general overview of what the respondents perceive BRT and its contribution to Dar es Salaam city.

Table 1.7: Showing Occupations of the Respondents

Occupation	F	%
government workers	18	18.8
self employed	24	25.0
Student	17	17.7
Business	28	29.2
Others	9	9.4
Total	96	100.0

Source: Field Data (2025)

From the study, the table 4.3 above shows different occupations employed by the respondents. Government employees (workers) were 18 (18.8% of the respondents, self-employed were 24(25%) of the respondents, students covered 17(17.7%) of the respondents; businessmen and women were 28 respondents 29.2% of the population interviewed while others represented 9(9.4%) of the respondents. From the table above, 28 where is (29.2%) of the respondents were from business, either owners of the business or employed in different business opportunities in the city and 24 where (25%) of the respondents were from self-employment, which shows that majority of respondents are employed in different sectors than government jobs. This indicates that majority of the residents of Dar es Salaam city do not depend only on government jobs which recorded only 18 where is (18.8%) of the respondents but engage themselves in different economic activities to earn their lives hence become the most users of the BRT for their effective demands of daily transport requirements to their occupation premises. The study, similar with the study conducted by Chengula (2015).

The Extent to Which Respondents Use of Bus Rapid Transit (BRT)

Table 1.8 Shows the Responses of the Respondents on the use of RBT

Respondents use of BRT	F	%
Yes	80	83.3
No	16	16.7
Total	96	100.0

The study was interested to know if the residents of Dar es Salaam city use BRT. The results from the table above show that 80 (83.3%) of the respondents agreed that they are using BRT whereby 16 (16.7%) respondents denied on the use of the BRT. This implies that many of the residents, particularly low- and middle-income families are using BRT as their main transport option. The study similar with the study conducted by Chengula (2015) which show that many people in Dar es Salaam prefer to use BRT than daladala.

Respondents Understanding of BRT

This part show to what extent the respondents understand about the Bus Rapid Transit BRT in Dar es Salaam city.

Table 1.9 Showing Responses on the Understanding about BRT

Degree of understanding	F	%
Large	24	25.0
Medium	45	46.9
Small	27	28.1
Total	96	100.0

Source: Field Data (2025)

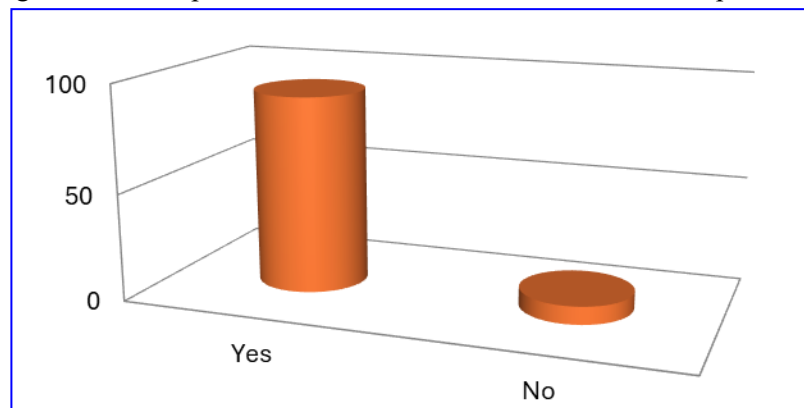
This category represents the extent to which the respondents understand about the Rapid Bus Transit (BRT) and the responses of the respondents on the uses of the RBT where research was undertaken it indicates that 24 (25%) of the respondents have large understanding of BRT while respondents with medium understanding of the project covered 45 where is (46.9%) of the responses and finally respondents with small understanding recorded 27(28.1%) of the total respondents. Majority of the interviewed respondents had medium understanding of the project. This medium understanding of the project seem to be due to the education level of the majority of the respondents whereby most of them have secondary education, and the nature of the implementation of the project from its first phase of construction where ordinary people were not educated much about the project. This shows that majority of the respondents are aware only on the ticketing and getting in and out the buses to their respective routes. The studies similar with the study conducted by World Bank Group

in Tanzania (2016) were show that the majority of Dar es Salaam dwellers don't have enough awareness about BRT.

Presence of BRT contribution to development in Dar es salaam City

This part show on how the BRT contribute to the development of BRT in dare s salaam city through the respondent whose participate in this study they can show their view on how the BRT contribute the development of dare s salaam city.

Figure 2: Shows presence of Contribution of BRTT to Development.



Source: Field Data (2025)

Transport is among the key influencing factors to the social and economic development to community. Presence of quality, effective and reliable transport facilities is important aspect for development of city like Dar es Salaam. The results from the table above display that majority of the respondents 88 where is (91.7%) are aware of the contribution of BRT to the development of Dar es Salaam city while 8 (8.3%) of the respondents did not seem to recognize the contribution of BRT to development. This finding indicate that BRT has positively impacted majority of the citizens in study areas respectively to their daily economic and social activities, this was evident from the number of people who were seen in queues waiting for the buses to and from their areas of activities and the formal and informal business along the BRT routes. The studies similar with the study conducted by World Bank Group in Tanzania (2016) were show that the operational of BRT in Dar es salaam has contribute more in the city economy.

Contribution of Rapid Bus Transit (BRT) to Development

Table 1.9 Contribution of RBT Different Development Aspects of Dar es Salaam City.

Contribution	strong disagree		Disagree		undecided		agree		strong agree	
	F	%	F	%	F	%	F	%	F	%
Traffic safety improvement	5	5.2%	2	2.1%	5	5.2%	21	21.9%	63	65.6%
Travel time saving	6	6.3%	1	1.0%	7	7.3%	21	21.9%	61	63.5%
Business improvement	4	4.2%	8	8.3%	12	12.5%	27	28.1%	45	46.9%
Traffic congestion controls	1	1.0%	4	4.2%	10	10.4%	47	49.0%	34	35.4%
Greenhouse gas and Local air pollution reductions	4	4.2%	8	8.3%	10	10.4%	42	43.8%	32	33.3%
Education	4	4.2%	8	8.3%	20	20.8%	42	43.8%	22	22.9%
Infrastructure improvement	3	3.1%	5	5.2%	15	15.6%	43	44.8%	30	31.3%

Source: Field Data (2025)

The results from the analysis as it is indicated in figure above shows that many of the respondents 63 (65.63%) explained that there is strong contribution of the BRT to the traffic safety while 21(21.88%) of the respondents agreed whereby 5 (5.21%) of the respondents fell under undecided and strong disagree respectively, finally 2 where is (2.08%) of the respondents disagreed that BRT contributes to road safety. This findings reveals that BRT has greatly reduced road accidents which were commonly caused by traffic congestion and rushing of the passers due to unpredictable presence of cars for transport and lack proper stations for passenger to wait for their transport facilities. Also BRT has significantly reduced robbery and theft which was common before BRT started its operation.

The results from figure above shows that 61 respondents which is 63.54% of the interviewed respondents strongly agreed that BRT has reduce travel time whereby 21

(21.9%) of the interviewed respondents agreed that the BRT has controlled travel time, while 7 (7.29%) of the respondent fell under undecided, 1.04% disagreed that BRT has contributed in saving travel time and 6 (6.3%) strong disagreed on the contribution of BRT on saving traveling time. These results imply that BRT has contributed much on saving travelling time due to the presence of specific stations where people wait for buses, and not the buses waiting for them, getting in and out of the buses made easier since passengers make two lanes getting into buses and travelling in their particular road lanes saves travelling time.(Rojas, 2014).

Moreover, the findings show that 45 (46.9%) respondents strongly agreed that presence of BRT has contributed to the business improvement as the contribution of BRT to development, while 27 (28.1%) respondents agreed on the business improvement, 12 respondents which is equal to 12.5% of the respondents neither agreed nor disagreed on the business improvement whereby 8 (8.3%) respondents disagree on the contribution of BRT to business improvement, and 4 (4.2%) respondents strongly disagreed on the contribution of BRT on business improvement. The introduction of DBRT system in Dar es Salaam city has developed new employments to the residents. In the beginning of DBRT operation the system employed more than 962 workers by DART and UDART including 300 drivers, more than 150 workers employed by ticketing agency (MAXCOM) (IJSBAR, 2017). But also, number of workers has been employed by cleaning and security companies working in DBRT stations and terminals. The employments have increased per capita income of households living in Dar es Salaam city. This implies that presence of BRT has contributed to the business improvement to many people in Dar es salaam city where respondents claimed that it has made easier for small businessmen and women to go to big market to get different products to fill their shop stores while others said that many business in town such those found in Kariakoo, morocco, Manzese and Ubungo and other areas adjacent to road have grown up due to easy and reliable movement of customers from different places of the city where BRT operates.

Furth more, results from the findings indicate that (35.4%) 34 respondents strongly agreed that traffic congestion has been controlled as the result of the introduction of BRT, 47 (49%) respondents agreed that BRT contributed to traffic congestion control

whereas 10 (10.4%) respondents did not neither agree or disagree while 4 (4.2%) disagree on the contribution of traffic congestion control and 1 (1%) respondent strongly disagreed that BRT has contributed in traffic congestion control. This implies that most of the public transport users have noticed the contribution of BRT on the traffic congestion control mainly due to the time serving, road overcrossing bridge like that of Mbezi Luis and Moroco help in congestion reduction from road crossing (zebra), presence of many DART buses that operate under BRT have reduce number of daladala (costa and other min buses) that were operating from Mbezi Luis to areas such as Ubungo, Moroco, Muhimbili and other populated areas, before introduction of BRT hence resulted into reduction traffic congestion. Also introduction of BRT was a way of road expansion hence many road lanes under reduction in number of daladala and establishment of few but effective bus stops resulted into traffic congestion control. This is supported by the study by Graham Currie, 2011 who explains that Bus Rapid Transit (BRT) system are an increasingly popular public transport option internationally and provide rail-like quality for bus service for a fraction of the cost of fixed rail whereas many claims of high and increasing ridership have resulted from BRT system development.

The findings show that 32(33.3%) respondents were strongly satisfied with the contribution of BRT over greenhouse and local air pollution, 42 (43.8%) respondents agree on the greenhouse and local air pollution reduction while 10 (10.4%) of them were not aware of the contribution of BRT on greenhouse and local air pollution control while 8.3% disagreed and 4.2% strongly disagreed that BRT has contributed on greenhouse and local air pollution control. This implies that establishment of BRT project results into improving greenhouse and local air pollution as the result of reduction or control of traffic congestion and reduced number of operating public buses and private cars which are great contributors of greenhouse emission and local air pollutants, especially when BRT is effective and efficient. This is relevant to the study held by Rojas (2014) which explains that BRT improves life in cities by saving travel time, reducing greenhouse gas (GHS) and local air pollutant emissions improving traffic safety and increasing physical activity.

Findings from the analysis show that 22.9% of the respondents had strongly agreed on the contribution of BRT on the education improvement, 44.8% agreed on the improvement of education as the contribution of BRT, 15.6% of the respondents neither agreed or disagreed on the contribution of BRT to education improvement, 8.3% disagreed that BRT has contributed on education improvement and 4.2% of the respondents had also strongly disagreed. This implies that BRT has made easier for students in all levels of education, particularly primary and secondary school students, to attend early in school and attend classroom in time since congestion and travel time has been improved under BRT. This is evident to many poor and middle-class families who are not able to afford private transport, BRT has fixed their travelling cost and time consuming on congestion. Also, education facilitators like teachers and lecturers attend on time on their work placed as the result of BRT.

Findings show that 43 (44.8%) of the respondents agreed and 30 (31.3%) of the respondents strongly agreed that BRT has contributed on infrastructure improvement, while 3 (3.1%) respondents strongly disagreed on the contribution of BRT on infrastructure improvement, 5 (5.2%) respondents disagree on the BRT contribution infrastructure improvement, 15.6% of the respondents did neither agree nor disagree. This reveals that physical, social and economic infrastructure comprising transportation in Dar es Salaam city has been improved as the result of introduction of BRT from road lanes used by rapid buses and bus stops. Bus stops have been improved to the extent that allow both normal and people of disabilities while road lanes have been upgraded to accommodate the standards of the BRT, ticketing has made easier and road overcrossing bridges have resulted in minimizing road accidents and congestion. Jean-Paul Rodrigue (2013) supports this as he explains that the unique purpose of transport is to overcome space which is shaped by a variety of human and physical constraints.

Relationship Between BRT And Development In Dar es Salaam

The study intended to know if there is relation between RBT and development. The findings show there is strong relationship between BRT and development as it focused in development issues such as traffic congestion control, travel time saving,

development of entrepreneur, student performance, increase of government revenue through tax collection and control of greenhouse gas and local air pollution.

From the table below, results show that 61 interviewed respondents (63.5%) strongly agreed that there is relation between BRT and traffic congestion control, 24 (25%) of them agreed also, 4 respondents (4.2%) did not decide if there is relation or not, 3 (3.1%) interviewed respondents disagreed and 4 respondents (4.2%) strongly disagreed. BRT has reduced the number of public buses operating especially daladala, increasing riding lane, reduced motorbike accidents. All of these have resulted into reducing congestion in main road as there is now few public transport buses, and driving lanes has increased.

Furthermore, the results from the table below indicate that 51 (53.1%) of the respondents strongly agreed that there is strongly relationship between BRT and travel time reduction, 29 (30.2%) of them agreed, 11 (11.5%) of the interviewed respondents did not express their views on this, 2 (2.1%) respondents disagree while 3 (3.1%) respondents strongly disagreed. This result implies that longer travel time and waiting time for daladala was because of high traffic congestion in the city roads, but after introduction of BRT travel time has greatly reduced. Short waiting time for BRT is because they use exclusive runway, the systematic delay occurs only at intersections and boarding time at terminals/stations. The indicated travel time from each terminal includes stopping time at intermediate stations/terminals and delays at intersections and pedestrians crossings. The maximum excess time from terminal to terminal is ± 4 which indicates that the bus operators adhere to the travel schedules. The waiting time at daladala stops during peak hours was more than 1 hour and for the DBRT is 15 minutes interval.

Photo show some of BRT buses



Source: Field Data (2025)

The study found that there is strongly relationship between BRT and entrepreneur development whereby 39 of the respondents (40.6%) strongly agreed, whereas 33 (34.4%) of them agreed, 15 (15.6%) respondents were undecided, 5 (5.2%) respondents disagreed and 4 respondents (4.2%) strongly disagreed. This gives implication that BRT has give chance to development of entrepreneurship among dwellers of Dar es Salaam city especially to those who engage themselves in small business. BRT has reduced travel time for those entrepreneurs make their routes to and from kivukoni, kariakoo and other places. This helps these entrepreneurs to make their purchase early and return to their destination early hence their business run effectively.

In another hand, BRT has strong relationship with students' performances in Dar es salaam as 43 (44.8%) respondents agreed, 28 (29.2%) of them strongly agreed, 18 (18.8%) respondents fell under undecided, 4 (4.2%) respondents disagreed and 3 (3.1%) interviewed respondents strongly disagreed. Students' performance has increased as the result of reduction of travel hour's students previously used in travelling, disturbance they got in daladala, time spent waiting for daladala in bus

stops, all of these challenges made students tired so much and lack enough studying time. But BRT has made easier for them to travel hence attend earlier in school and have enough time to study.

The finding indicates that there are relationship between BRT and increase of government revenue. 47 (49%) respondents agreed that BRT has relationship with increase in government revenue, 36 (37.5%) respondents strongly agreed, and 3 (3.1%) respondents disagreed. From this figures, it's is obvious that BRT has relationship with government revenue increase whereby the revenue collected from UDART has increased compared to previous revenue collected from daladala. Growth and development of business activities through the influence of BRT means increase in revenue collection hence government benefit much in revenue collection as the result of BRT.

The finding show that there is positive relationship between BRT and decline in greenhouse gas emission and local air pollution control whereby 38 (39.6%) respondents agreed, 29 (30.2%) respondents strongly agreed, 7 (7.3%) respondents disagreed and 4 (4.2%) respondents strongly disagreed. Many of the previous operating daladala were polluting much greenhouse gases as many of them were secondhand buses that have lost their efficiency. BRT buses are new and efficient in combusting petrol hence less emission of greenhouse gases. Also reduction of many cars, both public transport and private cars means controlling local air pollution resulting from car pollution.

2.0: Showing the Relationship Between BRT and Development

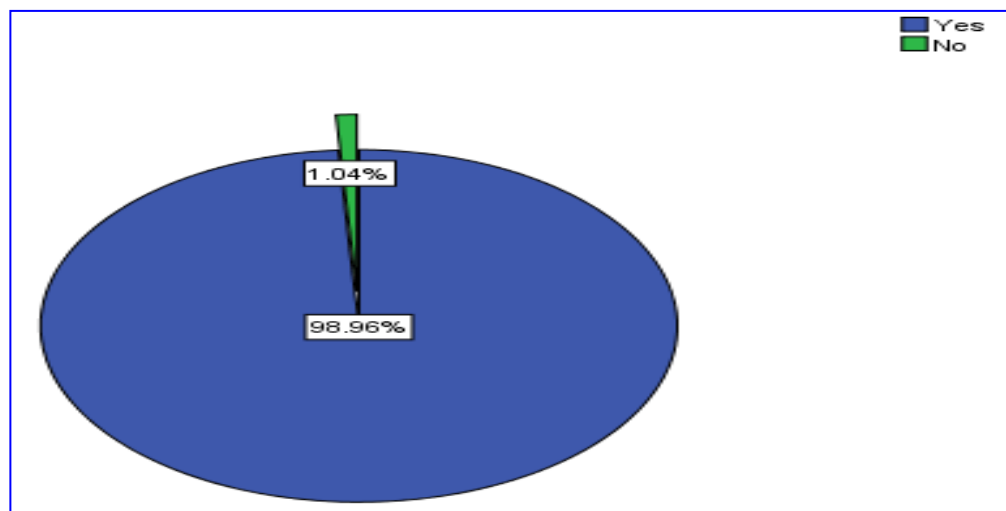
Development aspect	strong disagree		Disagree		Undecided		agree		strong agree	
	F	%	F	%	F	%	F	%	F	%
Traffic congestion control	4	4.2 %	3	3.1%	4	4.2%	24	25.0 %	61	63.5 %
Travel time	3	3.1 %	2	2.1%	11	11.5%	29	30.2 %	51	53.1 %
Development of entrepreneur	4	4.2 %	5	5.2%	15	15.6%	33	34.4 %	39	40.6 %

Student performance	3	3.1 %	4	4.2%	18	18.8%	43	44.8 %	28	29.2 %
Increasing of government revenue through tax collection	0	0.0 %	3	3.1%	10	10.4%	47	49.0 %	36	37.5 %
Greenhouse gas and local air pollution	4	4.2 %	7	7.3%	18	18.8%	38	39.6 %	29	30.2 %

Source: Field Data (2025)

Presence of Challenges Facing BRT

The figure 1.4 shows the responses of the respondents on the presence of challenges towards BRT operation whereby 94.8% agree that there are challenges facing BRT while 5.2% said that there is no challenges facing BRT. This reveals that there is need to make intervention since there are challenges that are facing BRT towards contributing on development of Dar es Salaam according to many (94.8%) respondents who agreed on the presence of those challenges.



Source: Field Data (2025)

Figure 1.4 showing presence of challenges facing BRT

Challenges That Are Facing Bus Rapid Transit

Findings from figure 1.4 show that 63 (65.6%) respondents had strong agreement on the presence of technical challenges that are facing BRT, 26 (27.1%) respondents agreed that technical challenges are facing BRT, 4 (4.2%) respondents were not

aware whether there are technical challenges or not while 2 respondents (2.1%) disagreed on the presence of technical challenges, and 1% of the respondents strongly disagreed on the existence of technical challenges towards BRT operations. This reveals that BRT operators have to intervene technical challenges for effective and efficiency of its operation towards contributing development of Dar es Salaam city. These challenges include malfunctioning in some bus stops ticket checking machines, system failure of the bus stop display in the some buses, failure of ticket scanning machines in BRT buses and many buses are seen packed in terminal station waiting maintenance. This is relevant to the study carried out by Annika C. Kanyama & Anna L. Linden (2015) that poor technology in testing the roadworthiness of vehicles and low capacity to measure and monitor air pollution in the city. As one of the respondents said

“BRT technology is very low to accommodate daily demands of the people especially ticket scanning machines are no longer working, and in bus screen to display bus stops are not working also”

Finding show that 2 (2.1%) respondents disagreed that BRT is faced with low level of education, 8.3% neither agreed nor disagreed that low education level is a challenge that is facing BRT, 33 (43.4%) respondents agreed and 53 (55.2%) interviewed people also strongly agreed that low level of education is challenge facing BRT. This indicates that education, particularly education on the use of BRT facilities is still a challenge to many users since BRT is mainly used by ordinary people with normal or no understanding of many things related to BRT facilities operations. This mostly happens in ticket scanning, bus stops identification for those who do not know how to read properly and failure to create proper ticketing system. Majority of road users are unaware of the rules, regulation and operation guidelines of the BRT which violate important regulations such as pedestrians walking along the BRT driveway and crossing on unmarked areas and other vehicles and motorcycles to share the BRT lanes which may cause accidents and interruption of flows and delays (IJSBAR) (2017).

Furthermore, the findings show that 56 (58.3%) respondents strongly agreed that high population of passengers set a challenge to BRT, 30 respondents (31.3%) agreed

that population is a challenge, while 9(9.4%) respondents were not in any response whether high population of passengers is a challenge to BRT whereby 1 (1%) respondent disagreed that high population is a challenge to BRT. This indicates that BRT is faced with daily increase of BRT users as the city is keep up growing in number of people resulting from internal (city) migration of people from other parts of the country since Dar es Salaam is the major economic center for Tanzania. High number of passengers is greatly seen during morning and during evening times since these are times people go and coming from their job and work places. For example, buses that are moving Mbezi Luis to and from morocco (Kariakoo) experience this challenge more than other routes. This has led to overloading of the buses in which people stand in buses beyond the carrying capacity designed.

Findings continue to show that 48 (50%) of the respondents strongly agreed that weather condition is a challenge facing BRT, 37 (38.5%) of them agreed that weather condition set a challenge to BRT whereby by 11(11.5%) respondents did not neither agreed nor disagreed as to whether condition to be a challenge to BRT. This implies that weather condition such rainfall is a challenge to BRT users as it leads to change of transport routes when Jangwani Bridge is overflow for those buses heading to Kimara. Also, rainfall is disturbance to passengers waiting for buses in BRT bus stops since the roofs of these bus stops leak to the extent that the passengers are not comfortable to continue with their journeys and other passengers postpone their journey.

The finding shows that 54 (56.3%) of the respondents strongly agreed that there is poor customer care service in BRT operations, 36 (37.5%) interviewed respondents the agreed on the same matter whereas 4.2% of the respondents had no agree or disagree on the poor customer care service provided by BRT and 2 (2.1%) respondents disagree that BRT provide poor customer services. From this point, the findings implies that BRT operations lack proper customer care services to their customers from poor ticketing services whereby in some bus stops there is not lining up for ticketing, sometimes ticketing system failure and passengers waiting for a long time , improper queues lining for getting into bus where action of pushing and pulling among the passengers are common actions which create a chance of theft

among passengers, number of buses are not enough to accommodate the number of people in need of the service hence disables, pregnant women, old people and children are not provide privileges as it was expected to be provided.

Finding also show that 53 (55.2%) of the respondents strongly agreed that BRT is faced with time management challenge, 33 (34.4%) of them agree that passengers are facing poor time management challenge from BRT, 9 respondents (9.4%) did were not aware of this challenge while 1 (1%) respondent disagreed on the presence of time management challenge from BRT. It is obvious that BRT is facing time management challenge as there were claims for delays in ticketing and bus arrival in their respective bust stops and bus terminals. This delay is caused by congestion of buses in some road-crossing points such as that of Ubungo, lack of enough buses whereby people wait for a long time for the same bus that has left the station to comeback and pick them up. Also, BRT delays to open up their stations and close them early than the time casted on the boards in the stations walls, all of this result into passengers' delay to their activities.

Table 2.1 Challenges That Are Facing Bus Rapid Transit

	strong disagree		Disagree		undecided		Agree		strong agree	
	F	%	F	%	F	%	F	%	F	%
Technical problem	1	1.0%	2	2.1%	4	4.2%	26	27.1%	63	65.6%
Low level of education	0	0.0%	2	2.1%	8	8.3%	33	34.4%	53	55.2%
High population of the passengers	0	0.0%	1	1.0%	9	9.4%	30	31.3%	56	58.3%
Weather condition such as Rainfall	0	0.0%	0	0.0%	11	11.5%	37	38.5%	48	50.0%
Poor customer Care service	0	0.0%	2	2.1%	4	4.2%	36	37.5%	54	56.3%
Time Management	0	0.0%	1	1.0%	9	9.4%	33	34.4%	53	55.2%

Source: Field Data (2025)

Photo show the passengers waiting for BRT buses



Source: Field Data (2025)

Measures Taken by BRT to Overcome Challenges That Are Facing Them and the BRT Users

From the data collected and the analysis made, respondents agreed that there are measures that are taken to overcome the challenges that are facing BRT. Those challenges are presented on the table below with their corresponding percentages as per respondents' responses.

Table 2.3 Measures Taken By BRT to Overcome Challenges that Are Facing Them and the BRT Users.

	Strong disagree		Disagree		Undecided		Agree		Strong agree	
	F	%	F	%	F	%	F	%	F	%
Provision of education to the people.	5	5.2%	5	5.2%	15	15.6%	44	45.8%	27	28.1%
Increasing the number of buses.	2	2.1%	6	6.3%	16	16.7%	49	51.0%	23	24.0%
To improve	2	2.1%	7	7.3%	13	13.5%	49	51.0%	25	26.0%

parking infrastructures.										
To reduce number of passengers.	1	1.0%	8	8.3%	20	20.8%	39	40.6%	28	29.2%
To have trained customer care providers.	4	4.2%	5	5.2%	26	27.1%	28	29.2%	33	34.4%
To have specific buses for disability persons.	6	6.3%	6	6.3%	18	18.8%	35	36.5%	31	32.3%

Source: Field Data (2025)

The finding show that 28.1% of the respondents strongly agreed that BRT provides education the people as a way of overcoming their challenges, 45.8% of them also agreed on the same issue whereas 15.6% had neither agreed or disagreed, and 5.2% of the respondents disagreed and strongly disagreed respectively that BRT is providing education as one of the methods to overcome their challenges. This indicates that BRT are aware of the challenges that are facing and decide to take action against them. Education is being provided through casting poster in buses stops that elaborate the BRT routes operations and the distance covered. Also, there are broadcasting rooms in terminals station such as that of Mbezi Luis that uses speakers to inform passengers about the trend of the transport issues from time to time, as well as there are service providers who are around the bus stops to give directions passengers in need.

Finding also show that BRT 24 (24%) respondents had strongly agreed that among the measures BRT is taking to overcome their is increase of number of buses, 49 (51%) respondents also agreed on the increase of number of buses as a way to overcome the challenge, 16 (16.7%) of them were neither of the side to agree or disagree, while 6 (6.3%) respondents disagreed on BRT increase of buses, and finally 2 (2.1%) of the respondents strongly disagreed that there is increase of number of buses to overcome challenges that are facing BRT. This result imply that BRT understand that there is increase in number of their passengers that have resulted into

surpassing the capacity of the available buses hence have decided to increase the number of buses to accommodate the daily increase number of passengers. For example, in 2015 UDART imported more than 200 buses to add more and replace those that are no longer operating in order to increase service provision. This is relevant to the suggestion given by Annika C. Kanyama and Anne L. Linden (2005) that BRT vision is to embark on a modern public transport system at a reasonable cost to the users with enough, quality and high-capacity buses that meet international service standards reduce travelling time and that are environmentally friendly.

The finding continue to show that 26 (26%) respondents strongly agreed that BRT is making improvement in parking infrastructure as the way to overcome its facing, 49 (51%) of them agree also that there is improvement of packing infrastructures, 13 respondents (13.5%) had nothing to suggestion either BRT is improving packing infrastructures as the way to overcome challenges or not, 7 (7.3%) respondents disagreed that there is packing infrastructure improvement, and 2 (2.1%) respondents strongly disagree that there is improvement of packing infrastructure as the method to solve some of its challenges. This indicate that BRT has determine that lack of proper packing facilities of their buses contributes to the congestion by packing their buses along the road after their operation, also this brings disturbance to other road users. Packing lot like that of Jangwani has been planned to be shifted to another place since the place is strongly affected by rainfall since the place water logged area which is adjacent to Msimbazi river. Overflow of this packing has led to regular maintenance of buses after the place is filled with water to the level that cause malfunction of the buses hence lack of enough buses under operation.

Furthermore, the findings show that 28 (29.2%) respondents strongly agreed that reducing the number of passengers per bus in a single route may help to overcome the overcrowding of passengers in a single bus, 39 (40.6%) respondents also agreed on reduction of number of passengers. In another hand 20 (20.8%) respondents were not sure whether reducing number of passengers will help to overcome the issue of overcrowding or not while 8 (8.3%) of the respondents disagreed on the reduction of number of passengers as the solution to the problem, and 1 (1%) of them strongly disagreed in the same matter. This reveals that passengers are suffering from

overcrowding in buses which pose a threat to human health as this may real to suffocation due to lack of energy supply of oxygen especially to those with respiration problems such as asthma patients, and from this BRT plan to reduce the of number of passengers respective to designed sitting and standing model unlike the current situation while increasing the number of buses.

Findings show that 33 (34.4%) respondents strongly agreed that provision of training to customer care providers is solution to poor customer care service, 28 (29.2%) of them agreed also on provision of training, 26 (27.2%) respondents were not sure whether provision of training to customer care providers will change the situation, 5 (5.2%) of them disagreed that provision of customer care training to the service providers will help to overcome the problem, and 4 (4.2%) interviewed respondents strongly disagreed on the same case. This means that for BRT to overcome the problem of poor customer care service to their customers, the BRT should retrain the customer care providers employed and train those have missed the training. The training should include language to be used during the service provision, respect to the people in need and respect the code of conductors since most of the respondents claimed that the language used by some of customer care providers is not appropriate and do not give a proper perspective of BRT to majority that it does not care about their customers.

Last but not the list, he finding show that 31 (32.3%) respondents strongly agreed that there should be specific buses for disabled, 35(36.5%) of them agreed on the introduction special buses for disabled, 18.8% of the respondents had not stand whether there should be introduction of special buses or not, 6 (6.3%) of the respondents disagreed and strongly disagreed on the introduction of special buses for disabled persons. This implies that the current buses with sits designed for disabled are used as intended since sometimes normal use disabled sits hence disturbances to disabled. Also, the areas designed for placement of disabled tools such as wheelchairs in current buses cannot accommodate more than five wheelchairs at the same time, hence provide limited number of disabled persons to travel at the same time.

References

1. Nevill, A., Atkinson, G., & Hughes, M. (2008). Twenty-five years of sport performance research in the Journal of Sports Sciences. *Journal of sports sciences*, 26(4), 413-426.
2. Brizee, A. (2020). What happens when we fail? Building resilient community-based research. *Journal of Technical Writing and Communication*, 50(4), 339-375.
3. Chapman, R. (2019). *The rules of project risk management: Implementation guidelines for major projects*. Routledge.
4. Connawy. (2010). Basic Research methods for librarians. UK: ABC-CLIO.
5. Dudoviskiy, J. (2019). research methodology. NMotion press publishing.
6. Ferbrache, F. (Ed.). (2019). *Developing bus rapid transit: The value of BRT in urban spaces*. Edward Elgar Publishing.
7. Ana, J. M. D. S. S., Hoeller Jr, A., Alves, H., & Souza, R. D. (2024). LR-FHSS-Sim: A discrete-event simulator for LR-FHSS networks. *arXiv preprint arXiv:2404.09539*.
8. Currie, G., & Delbosc, A. (2011). Understanding bus rapid transit route ridership drivers: An empirical study of Australian BRT systems. *Transport Policy*, 18(5), 755-764.
9. Gutierrez-Mangado, M. J., Martínez-Adrián, M., & Gallardo-del-Puerto, F. (Eds.). (2019). *Cross-linguistic influence: From empirical evidence to classroom practice* (p. xvii). New York: Springer.
10. Hughes, C. K. (2012). *Guangzhou bus rapid transit emissions impact analysis* (No. 12-1478).
11. Ibarra-Rojas, O. J., Delgado, F., Giesen, R., & Muñoz, J. C. (2015). Planning, operation, and control of bus transport systems: A literature review. *Transportation Research Part B: Methodological*, 77, 38-75.

12. Rodrigue, J. P. (2020). *The geography of transport systems*. Routledge.
13. Karim, m. m. (2018). world urbanization prospects. united nations population estimates and projections of major urban agglomerations .
14. Abdelghany, K. F., Mahmassani, H. S., & Abdelghany, A. F. (2007). A modeling framework for bus rapid transit operations evaluation and service planning. *Transportation Planning and Technology*, 30(6), 571-591.
15. Khew, C. (2016). bus interchange rolls.
16. Koh, T., Lye, L. H., & Lum, S. (Eds.). (2023). *Peace with Nature: 50 Inspiring Essays on Nature and The Environment*. World Scientific.
17. Shi, Z., Liu, M., Tian, G., & Kovács, K. F. (2024). Web of science-based literature review of peri-urban areas: a comparison between Europe and China. *European Journal of Remote Sensing*, 57(1), 2414475.
18. Neuhofer, B. (2018). *ISCONTOUR 2018 Tourism Research Perspectives: Proceedings of the International Student Conference in Tourism Research*. BoD–Books on Demand.
19. Maxwell, j. (1993). real world research. uk: blackwell published limited.
20. McLeod, S. A. (2019). Sampling methods. Simply psychology. Retrieved December, 4, 2020.
21. Mertens, D. M. (2008). *Transformative research and evaluation*. Guilford press.
22. Binns, T., Lynch, K., & Nel, E. L. (Eds.). (2018). *The Routledge handbook of African development*. Abingdon: Routledge.
23. Rizzo, M. (2017). *Taken for a ride: Grounding neoliberalism, precarious labour, and public transport in an African metropolis*. Oxford University Press.

24. Rojas-Rueda, D., De Nazelle, A., Andersen, Z. J., Braun-Fahrländer, C., Bruha, J., Bruhova-Foltynova, H., ... & Nieuwenhuijsen, M. J. (2016). Health impacts of active transportation in Europe. *PloS one*, 11(3), e0149990.
25. Wijaya, S. E., & Imran, M. (2019). *Moving the masses: Bus-rapid transit (BRT) policies in low income Asian cities*. Singapore: Springer.
26. Enright, T., & Rossi, U. (2017). Introduction: Locating the political in late neoliberalism. In *The urban political: Ambivalent spaces of late neoliberalism* (pp. 1-24). Cham: Springer International Publishing.
27. Enright, T., & Rossi, U. (2017). Desiring the common in the post-crisis metropolis: Insurgencies, contradictions, appropriations. In *The Urban Political: Ambivalent Spaces of Late Neoliberalism* (pp. 45-64). Cham: Springer International Publishing.
28. Thilakaratne, R. S., & Wirasinghe, S. C. (2016). Implementation of Bus Rapid Transit (BRT) on an optimal segment of a long regular bus route. *International Journal of Urban Sciences*, 20(1), 15-29.
29. Behrens, R., McCormick, D., & Mfinanga, D. (2016). Paratransit in African cities. *Operations, regulation and reform*.
30. Waugh, D. (1994). *Wider World*. Hong Kong: Thomas publishers company.
31. Jiang, H., Yin, J., Zhang, B., Wei, D., Luo, X., Ding, Y., & Xia, R. (2024). Industrial carbon emission distribution and regional joint emission reduction: a case study of cities in the pearl river Basin, China. *Chinese Geographical Science*, 34(2), 210-229.
32. Thilakaratne, R. S., & Wirasinghe, S. C. (2016). Implementation of Bus Rapid Transit (BRT) on an optimal segment of a long regular bus route. *International Journal of Urban Sciences*, 20(1), 15-29.