PREDICTING & ANALYZING BUS SERVICE QUALITY IN DHAKA CITY

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A thesis submitted to the Department of Civil Engineering in partial fulfillment for the degree of Bachelor of Science in Civil Engineering



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Section: 13B
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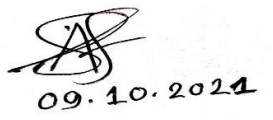
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DEDICATION

Dedicated

to

"Our Parents

&

Respectable Supervisor"

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ABSTRACT

Bus as a means of transport plays a vital role in Dhaka City. For being the cheapest means of transport, people rely heavily on bus service as most of the city dwellers are middle class & lower-class people. Although people rely hugely on bus service but they are not satisfied with the service provided. But still people have to use bus service as they don't have any other option yet. So, considering the present and future condition of bus service, it is very important to assess the existing bus service & improve bus service quality. This study aims to investigate the key service factors affecting bus service quality and explore overall passenger satisfaction on bus service quality. For this study, one simple methodology was taken where to collect data by questionnaire survey & analyze the data. For this study, an interview questionnaire survey was done at 15 major locations of Dhaka City. The questionnaire included a total of 46 service attributes. The questionnaire was well structured where people were asked to give their opinion on different aspects of bus service quality. It also included demographic data about the respondents. After scrutinizing, data having a total of 956 respondents were taken for analysis. The overall passenger satisfaction on bus service was unsatisfactory as 64% of total respondents rated the quality of service as poor & very poor. The result from the study will be of great help to the service providers as it will let them know where they do need modification to improve bus service quality so they can retain current users of the service and attract further users toward the service.

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LIST OF ABBREVIATION

Acronym	Definition
PTS	Public Transportation System
PT	Public Transport
SQ	Service Quality
BSQ	Bus Service Quality
OPS	Overall Passenger Satisfaction
OSQ	Overall Service Quality

Chapter 1

Introduction

1.1 General

Public Transportation System (PTS) is one the most important component for improving the living condition in a city as well as in a country. PTS is a common feature of every developing and developed country. Actually, effective PTS contributes to the development of a country by providing better accessibility to markets, employment and other sectors and thus enhances economic & social opportunities. It is notable that, the countries and cities which have more efficient PTS becomes more developed. For example, cities like London, New York, Tokyo, Berlin, Singapore, Hong Kong etc. possess a very efficient PTS and their development is visible to the whole world.

Service Quality (SQ) is a comparison usually done by customer between expected service and perceived service. According to Parasuraman et al. (1988) service quality is the ability of an organization to meet or exceed customer expectations. Also, Zeithaml et al. (1990) stated it as the difference between customer expectations of service and perceived service. Service quality is a very important aspect as it has a strong relation with customer satisfaction. According to Kumar et al. (2010) service quality leads to customer satisfaction. It is very important to measure SQ as an increase or decrease in SQ largely effects customer satisfaction. Although the rating on SQ varies from person to person as everyone does not have the same requirement for achieving satisfaction. According to Cats et al. (2015), providing better public transportation services quality has been found to enhance satisfaction. From the research of Eboli and Mazzulla (2008) it has been found that service quality is a matter of the greatest importance because an improvement in quality levels can attract further users. Due to all these correlations of SQ with other parameters which affect bus service quality, have made SQ one of the most important parameter to be considered regarding assessment of bus service quality.

There are different modes of public transport which includes bus, tram, passenger train, rapid transit etc. According to region, different types of modes are popular on different cities. As Dhaka's transportation system is mainly road based, bus service as a medium of transport is very popular here.

1.2 Present Condition of Dhaka

Megacity Dhaka is the capital of Bangladesh having a population of approximately 21.7 million with respect to an area of 306.4- k i l o m e t e r square (worldpopulationreview.com, 2021). So, Dhaka is a densely populated city. In search of better life and improving financial condition, people especially who are poor tends to migrate to Dhaka in search of work from all around the country. So, the population of Dhaka is increasing day by day. In this population, majority of the people are middle class and poor. To these middle class and poor people, bus is a popular means of transport.

Although bus is a popular means of transport in Dhaka but the service provided by public bus is very poor. Moreover, the existing bus service is not adequate for passengers. So, people who can afford are getting attracted towards private vehicle. As a result, the number of private vehicle is increasing day by day.

Table 1.1 Number of Registered Motor Vehicles in Dhaka City (Year Wise)

NUMBER OF REGISTERED MOTOR VEHICLES IN BANGLADESH (YEARWISE)

Sl. No	Type of Vehicles	Upto-2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Up to Feb/2021	Grand Total
1	Ambulance	2486	218	181	240	337	472	374	493	563	665	788	121	**6938**
2	Auto Rickshaw	110623	20406	23528	15633	19828	18700	10656	8852	21593	29807	16724	3860	**300210**
3	Auto Tempo	9446	175	626	393	472	1081	1313	1592	609	224	77	7	**16015**
4	Bus	23385	1753	1438	1104	1486	2378	3832	3757	2755	3558	2395	285	**48126**
5	Cargo Van	3363	489	282	686	605	398	1015	1413	1280	4	2	3	**9540**
6	Covered Van	6022	2480	1511	2347	2950	2442	3399	5201	5728	3070	2023	448	**37621**
7	Delivery Van	15391	1037	802	941	1235	1779	2220	2420	2105	1523	1170	218	**30841**
8	Human Hauler	4827	1151	714	385	225	1129	3443	3393	1418	509	122	19	**17335**
9	Jeep(Hard/Soft)	28131	2141	1575	1303	1849	3564	4869	5419	5547	5627	4911	1137	**66073**
10	Microbus	62399	4037	3031	2530	4302	5177	5789	5571	4131	3682	2779	747	**104175**
11	Minibus	23070	271	246	148	257	320	459	491	436	835	620	69	**27222**
12	Motor Cycle	755514	116534	101895	85321	90401	229010	315089	325876	393545	401452	311016	66858	**3192511**
13	Pick Up (Double/Single Cabin)	29103	10314	7530	6443	9424	9992	11220	13454	13060	11918	10498	1789	**134745**
14	Private Passenger Car	207989	12942	9220	10456	14681	21029	20268	21952	18222	16779	12403	2890	**368831**
15	Special Purpose Vehicle	5022	391	225	228	174	298	613	994	1334	1179	703	106	**11267**
16	Tanker	2606	309	188	218	350	319	380	317	527	417	304	68	**6003**
17	Taxicab	35122	75	170	50	372	83	43	14	159	11	8	0	**36107**
18	Tractor	14648	5195	3494	1885	1521	1689	2535	2777	3553	2561	2498	578	**42934**
19	Truck	65889	6853	4043	4838	7939	6022	6605	10329	12644	8318	4719	938	**139137**
20	Others	22332	1265	1062	1064	1580	2059	3842	5018	5973	5293	3900	867	**54255**
TOTAL		**1427368**	**188036**	**161761**	**136213**	**159988**	**307941**	**397964**	**419333**	**495182**	**497432**	**377660**	**81008**	**4649886**

From Table 1.1, it is found that only **3.49%** of total registered motor vehicle is bus & minibus which plays a vital role as a means of commuting for majority of the population in Dhaka City. On the contrary, **25.22%** of total registered motor vehicle is private passenger car & jeep which can be counted as private vehicle is used by the minority of the population for commuting and private purposes. So, it is visible that the number of private vehicles is more than 7 times the number of bus and minibus together. The number of private vehicles is continuously increasing day by day. But, continuous increasing number of private vehicles is not a good sign for a megacity like Dhaka. Due to the limitation of space, it is resulting in a reason for traffic congestion. Even without the significant presence of bus on road, only the private vehicles are causing traffic jam.



Figure 1.1 Uttara, Dhaka

[Date: July 28, 2021]



Figure 1.2 Shyamoli, Dhaka

[Date: July 28, 2021]

(On June 20, 2021 there was no passenger bus commuting countrywide except the buses of BRTC. But still there was traffic congestion.) Figure 1.1 and 1.2 describes well that private vehicles alone can cause traffic congestion. These figures also mean that the transportation system in Dhaka is yet inefficient. From the report of a reliable online news portal (bdnews24.com; published on May 19, 2021) it has been found that Dhaka's traffic jam causes Tk 370 billion annual losses. So, traffic congestion is a big barrier to economic growth and overall development of Bangladesh. Therefore, efficient transportation system is required to overcome this barrier and ensure overall development of Bangladesh.

1.3 Space Efficiency of Bus

To make transportation system efficient it is necessary to use the road efficiently. An example have been given here regarding the space efficiency of bus compared to bicycle and private vehicle.

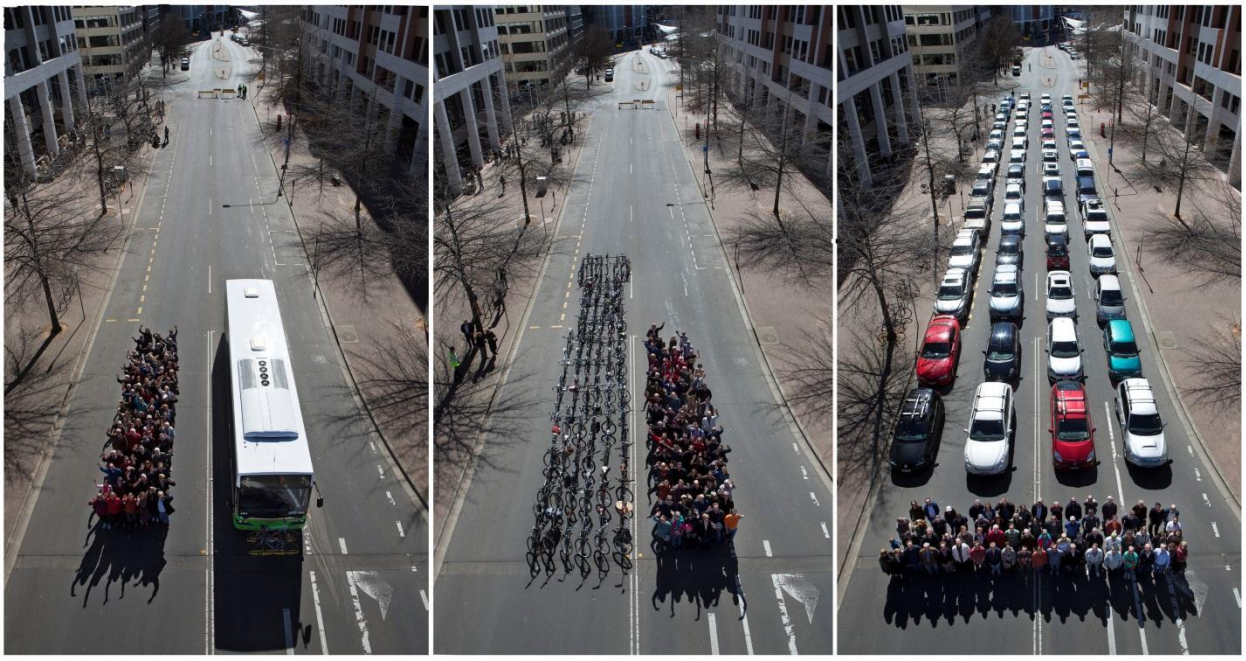


Figure 1.3 Space efficiency of bus

A world-famous transport photo was re-created in Canberra, Australia in September 2012 were 69 volunteers participated in the photo shoot. This picture shows that for same number of passengers, the space required by bus, bicycle and car. From Fig 1.3, it is clear that bus as a means of transport is the most efficient mode among these three modes. In addition, the most inefficient mode is private vehicle which requires a huge space and results in traffic congestion.

1.4 Dependency on Bus Service

Dhaka is one of the most densely populated cities in the world. Earlier it has been mentioned that, among the population, majority of people are middle class and poor. For these middle class and poor people, public bus service has become the first choice for commuting as it is one of the cheapest means of commuting. So, there is a great demand of public bus as a means of commuting.



Figure 1.4 Abdullahpur, Dhaka

[Date: June 18, 2021]



Figure 1.5 Airport, Dhaka

[Date: June 18, 2021]

Figure 1.4 & Figure 1.5 clearly shows that the people of Dhaka are hugely dependent on public bus service for commuting. (Two photos collected from online portal on June 18, 2021to

better view of the dependency of people on bus service. Due to unavoidable circumstances, there was no passenger bus commuting countrywide except the buses of BRTC on July 28 & 29, 2021).

So, from Dhaka's perspective where people are heavily dependent on public bus service, it is important to improve bus service quality. For improving bus service quality assessment is required.

1.5 Objectives

The objectives of this study are -

- To investigate the key service factors affecting bus service quality.
- To explore the overall passenger satisfaction on bus service quality.

1.6 Thesis Outline

Outline of the thesis paper is as followings:

1.6.1 **Chapter 1** outlines the background, present condition of Dhaka city, space efficiency of bus service and dependency of city dwellers on bus service. Also, the objectives of the study and finally the outline of the whole thesis work

1.6.2 **Chapter 2** discusses on the previous studies which includes public transport, service quality, customer satisfaction, PT on other countries, OPM and so on.

1.6.3 **Chapter 3** outlines the discussion about research methodology which includes list of variables, schedule of questionnaire survey and user information.

1.6.4 **Chapter 4** shows data analysis where the data stored in Microsoft Excel has been statistically analyzed to determine user opinion on different service attributes.

1.6.5 **Chapter 5** finally draws a conclusion of the study by providing some recommendations for improvement of public transport. It also includes the limitations of this study and recommendations for future study.

Chapter 2
Literature Review

Public transportation system is a vital component of any developing or developed country. Movement from one place to another through public transport is a part of daily activities of most individuals in a developing or developed country. Public transport performs many functions such as providing easy access, safe, efficient and cost-effective transport services to passengers (Ismail et al., 2013; Ojo et al., 2014). It plays a vital role in commuting to activities areas such as work, school, shops, sporting and recreation centers (Kamaruddin et al., 2012). Efficient use of public transport services can lead towards overall development of a country. Due to this reason, increasing the use of public transportation services has been a key agenda all over the world (Cats et al., 2015). But increasing the use of public transport seems difficult due to its inability to attract new user especially private car users. The reasons for this can be ascribed to lateness, dirty and unattractive stations, lack of safety and security, long waiting time, poor travel information, poor personnel behavior and inadequate facilities for disabled persons (Ali, 2010; Banister, 2007; Bunting, 2004). Present day transit users demand fast, comfortable, cheaper, reliable, safe and secure services. Public transportation must have high service quality to satisfy and fulfill customer's needs (Anable, 2005).

Parasuraman et al. (1988) have defined service quality as the ability of the organization to meet or exceed customer expectations. It is the difference between customer expectations of service and perceived service (Zeithaml et al., 1990). Perceived service quality results from comparisons by customers of expectations with their perceptions of service delivered by the suppliers (Zeithaml et al., 1990). If expectations are greater than performance, then perceived quality is less than satisfactory and hence customer dissatisfaction occurs (Parasuraman et al., 1985; Lewis and Mitchell, 1990).

Service quality has been proven as determinant of customer loyalty (Abdullah & Hilmi, 2014). According to a research by Borhan et al. (2014), service quality of a public transport operator positively influences the attitude and behavioral intention of its user. Providing better public transportation services quality has been found to enhance satisfaction (Cats et al., 2015).

satisfaction is the customers' evaluation of a product or service in terms of whether that product or service has met their needs and expectations. Failure to meet needs and expectations is

assumed to result in dissatisfaction with the product or service (Zeithaml and Bitner, 2000). According to Kottler and Keller (2006), customer satisfaction is a person's feeling of pleasure or disappointment resulting from comparing a product's perceived performance (or outcome) in relation to his or her expectations. If the performance falls short of expectations, the customer is dissatisfied. If the performance matches the expectations, the customer is satisfied. If the performance exceeds expectations, the customer is highly satisfied or delighted.

Satisfaction of users is the best way to measure service quality in public transport. The quality of services provided can be evaluated by the expectations and perceptions or experience of customers (Eboli and Mazzulla, 2007; Ojo et al., 2014). The users are in the best position to judge the quality of service provided by the transit agency. Parasuraman et al. (1998) developed the SERVQUAL scale also known as gap model to measure service quality and determine the relative importance of different dimensions influencing customers' overall quality perceptions on a five-seven-point Likert scale. They developed five service quality dimensions which include reliability, responsiveness, competence, security, access and communication. This model was adapted in the work of Ojo et al. (2014), Ismail et al. (2013) and Eboli and Mazzulla (2007) to evaluate passengers' satisfaction with public transport in different cities across the world.

Although service quality and customer satisfaction look similar indicators of performance, many researchers have questioned if they are identical (Dabholkar, 1993; Iacobucci et al., 1994). Studies show that the two constructs are conceptually distinct (Bitner et al., 1990; Boulding et al., 1993). The differences between service quality and customer satisfaction can be summarized as follows:

i. Service quality is related to cognitive judgment (rational) and customer satisfaction is to affective (emotional) judgment (Iacobucci et al., 1994)

ii. Service quality judgments are more specific with focus on key attributes, whereas customer satisfaction judgments are more holistic (Oliver, 1997)

iii. Satisfaction depends on price, which is generally not true in case of service quality (Anderson et al., 1994)

iv. A customer has to buy to determine satisfaction, though buying is not necessary to judge quality (Oliver, 1997)

v. Expectation is the base in defining service quality and the predictor in defining satisfaction (Parasuraman et al., 1988).

Both service quality and customer satisfaction are highly linked. Both have positive influence on repurchase intention and positive word-of-mouth (Beeho and Prentice, 1997). Satisfaction positively influences post-purchase behavior (Oliver, 1980); and service quality directly and indirectly influences repurchase intention through satisfaction (Boulding et al., 1993; Keaveney, 1995). High service quality results in customer satisfaction and repeat purchase intention, in which perceived service quality functions as an antecedent to satisfaction and the resulting satisfaction leads to repurchase and loyalty over time (Bojanic, 1996).

As mentioned earlier, according to Anable (2005) public transportation must have high service quality to satisfy and fulfill customer's needs. But to ensure high service quality it requires assessment of public transport. In many countries of the world, researchers have studied upon public transport (majorly bus), user satisfaction and attributes affecting service quality; and obtained different result. Tyrinopoulos and Antoniou (2008) studied level of satisfaction from public transport in Greece. The results demonstrated that a well-coordinated and well-structured transportation environment should be the primary aim of the policy makers in Athens, followed by other quality attributes such as service frequency, waiting time, accessibility, and vehicle cleanliness. Shaabana and Khalilb (2013) found that public bus users do not regard the existing public bus transportation services in Qatar satisfactory. The passengers noted that the bus service was not reliable; nonetheless, affordable and clean. In Nigeria, Ali (2014) assesses passenger satisfaction of public bus transport services in Abuja. The study found that passengers were not satisfied with the quality of bus services rendered as only two attributes safety of passengers on board and drivers and conductors behavior fulfill passenger's expectation. Principal component analysis result reveals that four underlying factors comfort, accessibility, bus stop facilities and bus capacity adequacy influence user's satisfaction with public transport service. Ojo et al. (2014) investigate customer satisfaction with intercity bus services on Cape Coast – Accra route in Ghana using SERVQUAL model. The study found that passengers perceived service quality to be poor as they were not satisfied with 15 out of 26 attributes rated. The study reiterates need for bus companies to improve their services so as to enjoy mor

A World Bank Press (2005) released on the Dhaka Urban Transportation Project stated that Dhaka was perhaps the only city of its size without a well-organized bus system or mass transportation system. An efficient and effective urban transportation system can promote urban development and renewal while providing adequate access and mobility. In fact, cities of developing countries are often the major engines for economic growth and improvements in Dhaka city transportation can make them much more efficient and productive. Due to this, many studies have been done on bus service in Dhaka City. A study by Rahman et al. (2015) found that the main transport of Dhaka City is public bus as the users are low and middle-income people. If the conditions of buses are improved, then it's a matter of time that the high-income people will prefer buses as their transport, not their private cars. This will reduce traffic congestion. But Dhaka is a city without well organized and properly scheduled bus system. The present bus service is not enough to cope with the growing demand. The service is inefficient, unproductive (due to traffic jam) and unsafe (due to inexperienced driver). In another research by Rahman et al. (2017), a survey was conducted in five locations of Dhaka city. The survey results were analyzed by discrete choice logit model. From the analysis it was found that space consumption per passenger is lowest in buses rather than private cars. So, public buses play an important role in reducing traffic jam. The research indicated that more than half of the respondent wasn't satisfied about the present conditions of public bus service. So, the transit system should be upgraded to handle the traffic volume. The transportation structure should be reliable and the suitability of public transport should be enhanced.

Nowadays, to perceive service quality of mass transit different types of models are used like ordered profit model, multinomial discrete model, least square regression model or multinomial logit model and so on. But in this study, ordered probity model has been adopted for analysis due to its certain advantage over the other types of models mentioned here. The ordered probity model is adopted here because the dependent variable takes more than two values with a natural ordering (Abdel-Aty, 2001). Also, the model can account for the unequal difference among the ordinal categories in the dependent variable (Sadri et al., 2013). Although unordered probability models such as standard multinomial discrete models were possible but efficiency would be lost because the ordered nature of the variable would be ignored and treated as nominal data (Amimia, 1985). As the same, other methods such as multinomial logit model or ordinary least square regression would fail to account for the ordinal nature of the dependent variable. Due to

these reasons, Nkurunziza et al. (2012) stated that the ordered probity model among other analysis technics has been proven useful in studying the (perceived) service quality of mass transit and the factors affecting transit ridership.

Due to ordered probity model's advantage over the other models mentioned here, it is widely used for different research purposes. Ordered probit model has been used in many studies which investigated the service quality in relation to transit & service attributes and passengers' characteristics (e.g., Abdel-Aty, 2001; Choocharukul, 2004; Dell'Olio et al., 2010; Antoniou and Tyrinopoulos, 2013). Not only for investigating service quality but also for other studies like analyzing seismic intensity data (Cameletti et al., 2017), predicting fragility in banking sector (Mahshid Sherafati, 2016) etc. the ordered probit model has been used. Also, in Bangladesh for analyzing accident severity on highways (Siddique, 2018), ordered probit model has been adopted.

Chapter 3

Research Methodology

3.1 Introduction:

The purpose of this research is to predict & analyze the bus service quality in Dhaka City. To achieve this, two step methodologies has been taken. The first part includes collection of data by questionnaire survey having certain variables. The variables included in the survey have been selected from literature review & expert opinion. The second part is developing the model and analyzing the data. Collected data has been scrutinized prior to analysis. The model will be developed to understand the relationship between the overall satisfaction on bus service and the service attributes.

For the questionnaire survey, opinion was taken of passengers using bus service. A total of 40 variables out of 46 variables highlight user's perspective about bus service. The questionnaire survey was carried out face to face at fifteen locations in Dhaka city. The name of the survey locations is:

- Farmgate
- Karwan Bazar
- Green Road & Panthapath
- Labaid & Dhanmondi 6,7 & 8
- Mirpur road
- Dhanmondi 15 & Zigatola
- Mohammadpur
- Kallyanpur
- Mirpur-10
- Bijoy Saroni & Jahangir Gate
- Mohakhali
- Banani
- Shahabagh

3.2 Details of Questionnaire Survey & Survey Schedule:

Excluding user information, the questionnaire survey had seven main parts. They were:

- Part A was about "Trip Characteristics". It included question on convenience of service, trip purpose, time needed for reaching bus stop etc.

- Part B was about "Quality of Service". It included questions on frequency of service, punctuality of transport, on road movement flexibility, sitting arrangement, speed of bus, availability of information, ticketing system, transportation cost, reason of using bus etc.

- Part C was about "Quality of Bus". It included questions about fitness of buses, physical condition of bus, cleanliness of bus, seat comfort level, noise level, movement flexibility inside bus, lighting facility during evening and night etc.

- Part D was about "Quality of Bus Stop". It included question about safety, cleanliness, condition, accessibility of bus stop.

- Part E was about "Safety and Security of Bus". It included questions about personal safety of passengers, easily accessible entry and exit, security of passengers during off peak period, driving safety (driver's skills) etc.

- Part F was about "Staff Behavior". It included questions about demeanor & courtesy of drivers & helpers.

- Part G was about "Reliability and Accessibility of Bus". It included question about reliability of local bus service, waiting time of the service, travel time during office days and holidays etc.

Table 3.1 shows the list of variables included in the questionnaire survey.

Table 3.1 List of Variables

1	Often to Travel by Local Bus	21	Seat Comfort Level
2	Convenience of Service	22	Physical Condition
3	Time for reach Bus Stop	23	Rate the Quality of Bus Services
4	Trip Purpose	24	Safety at Bus Stop
5	Frequency of Service	25	Cleanliness
6	Punctuality of Transport	26	Condition
7	Movement Flexibility (On Road)	27	Accessibility of Bus Stop
8	Sitting Arrangement	28	Mode to Get Bus Stop
9	Speed of Bus	29	Security in Bus stops (Others)
10	Availability of Information	30	Levels of Personal Safety
11	Paying Fare/Ticketing System	31	Entry and Exit Facilities
12	Transport Cost	32	Security of Passengers (Off Peak)
13	Reason of Using Bus	33	Driving Safety (Driver's Skill)
14	Fitness of The Bus	34	Behavior of Driver
15	Seat Condition	35	Courtesy of Helpers/Contactors
16	Cleanness of Bus	36	Reliability of Local Bus Services
17	Buses are always crowed (Load Factor)	37	Waiting Time of the Service
18	Lighting Facility	38	Accessibility of Bus
19	Noise level of the Bus	39	Travel Time (Office Days)
20	Movement Flexibility (Inside)	40	Travel Time (Holidays)

After selecting the locations of survey, a survey schedule was prepared to finish the survey properly. Table 3.3 shows the schedule of the questionnaire survey done in Dhaka city.

Table 3.2 Questionnaire Survey Schedule in Dhaka City

Serial	Name of the location	Date	Time (Start)
01	Farmgate & Karwan Bazar	03/07/2021	10.00 am
02	Green Road & Panthapath	03/07/2021	02.00 pm
03	Labaid & Dhanmondi 6,7,8	04/07/2021	10.30 am
04	Mirpur Road & Mohammadpur	04/07/2021	02.30 pm
05	Dhanmondi-15 & Zigatola	05/07/2021	10.00 am
06	Kallyanpur & Mirpur-10	05/07/2021	04.00 pm
07	Bijoy Saroni & Jahangir Gate	06/07/2021	10.30 am
08	Mohakhali & Banani	06/07/2021	03.00 pm
09	Shahabagh	07/07/2021	11.00 am
10	Motijheel	07/07/2021	04.00 pm

3.3 Details of Selected Field Survey Locations in Dhaka City:

3.3.1. Farmgate:

This is one of the busiest and crowded areas of Dhaka city. It is also one of the majors transportation hubs of Dhaka city. From Farmgate, anyone can travel to all other parts of the city. Figure 3.1 shows the survey location Farmgate.



Figure 3.1 Survey location of Farmgate

3.3.2 Kawran Bazar:

It is one of the largest whole sale market places in Dhaka city. This place is always crowded because of the wholesale market. Also, a large number of corporate offices are located here. Hotel Pan Pacific Sonargaon, one of the oldest 5-star hotels in Bangladesh is located here. Figure 3.2 shows the survey location Kawran Bazar.



Figure 3.2 Survey location of Kawran Bazar

3.3.3 Panthapath:

Pantapath is an important east west road in Kawran Bazar. It connects Old Airport Road and Mirpur Road. Large number of shops, hospitals, malls are located here including Bashundhara City, South Asia's one of the largest shopping center. For this, it is one of the crowded places of Dhaka City. Figure 3.3 shows the survey location Panthapath.

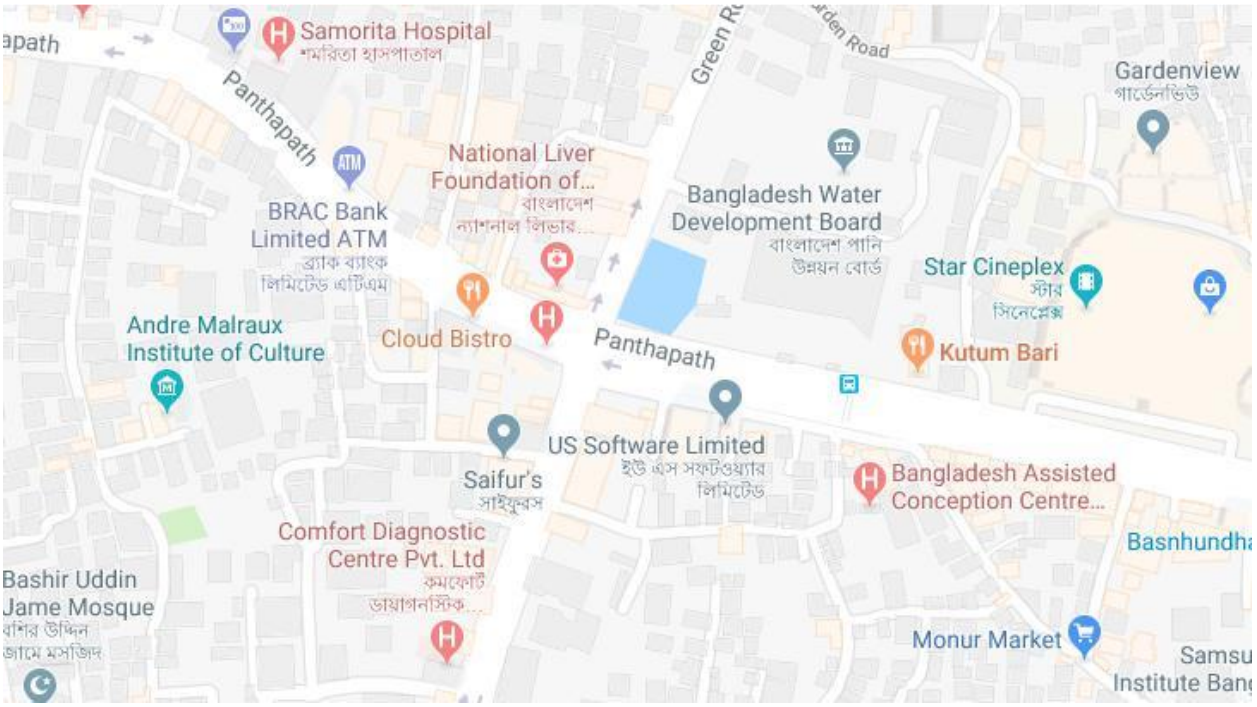


Figure 3.3 Survey location of Panthapath

3.3.4 Dhanmondi 6-7-8:

Dhanmondi is a residential area in Dhaka City. It is a residential area with common social services with school, university. Figure 3.4 shows the survey location of Dhanmondi.



Figure 3.4 Survey location of Dhanmondi 6-7-8

3.3.5 Mirpur Road:

Mirpur Road is a long north-south road connecting the northern part of Mirpur. It is one of the major roads in Dhaka which runs through Shyamoli, Mohammadpur, Dhanmondi. The road is one of the busiest roads of Dhaka city. “Lab aid Specialized Hospital” which is one of the popular hospitals in Bangladesh is located in this road. Figure 3.5 shows the survey location of Mirpur Road.

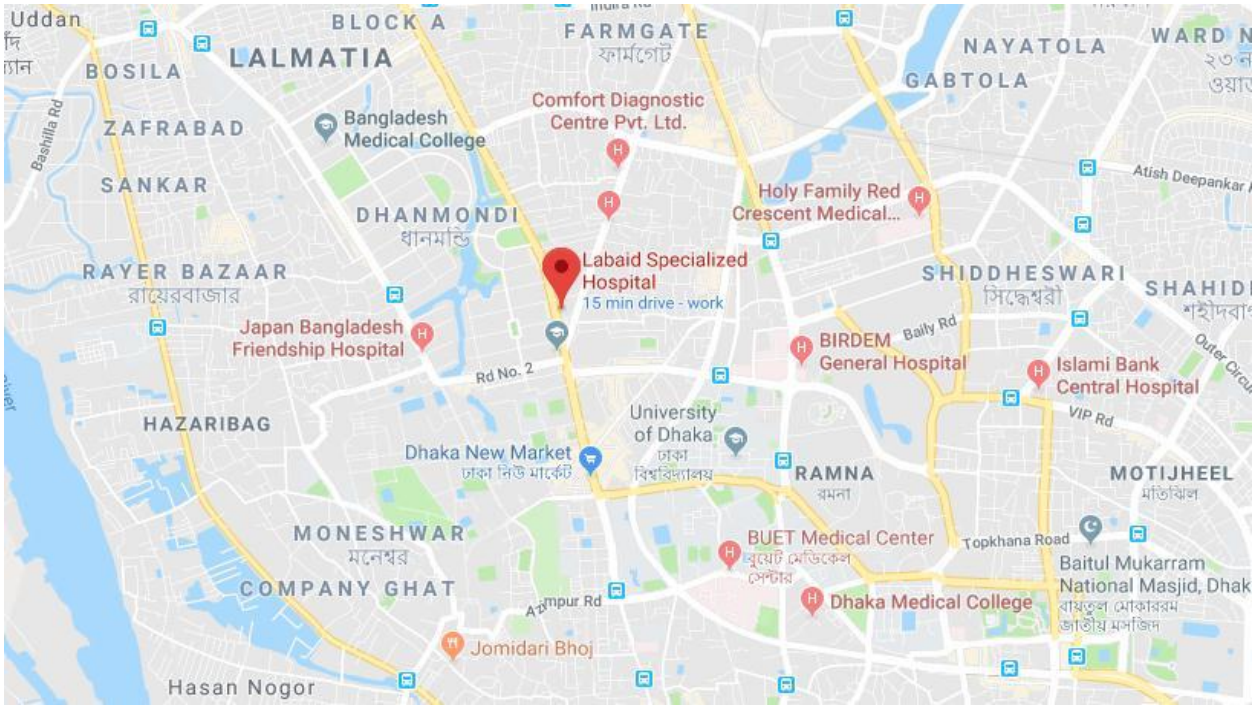


Figure 3.5 Survey location of Lab aid-Mirpur Road

3.3.6 Mohammadpur:

Mohammadpur is a thana of Dhaka District in the division of Dhaka, Bangladesh. It is one of the main residential areas of Dhaka city. Although initially Mohammadpur had grown as a residential area, subsequently commercial places also developed. Figure 3.6 shows the survey location of Mohammadpur.



Figure 3.6 Survey location of Mohammadpur

3.3.7 Dhanmondi 15 & Zigatola:

Zigatola is area located in Dhanmondi. It is very busy and crowded place. Many institutions like school, collage, private university & hospitals are located in here. Numerous shops and shaping malls are situated in this area. Figure 3.7 shows the survey location of Zigatola.



Figure 3.7 Survey location of Zigatola

3.3.8 Kallyanpur:

Kallyanpur is an area under Mirpur Thana in Dhaka City It is the neighbor area of Shyamoli. Kallyanpur Girls' School and College located in this area that was established in 1972. Although initially it has been grown as a residential area, subsequently commercial places have also developed Figure 3.8 shows the survey location of Kallyanpur.

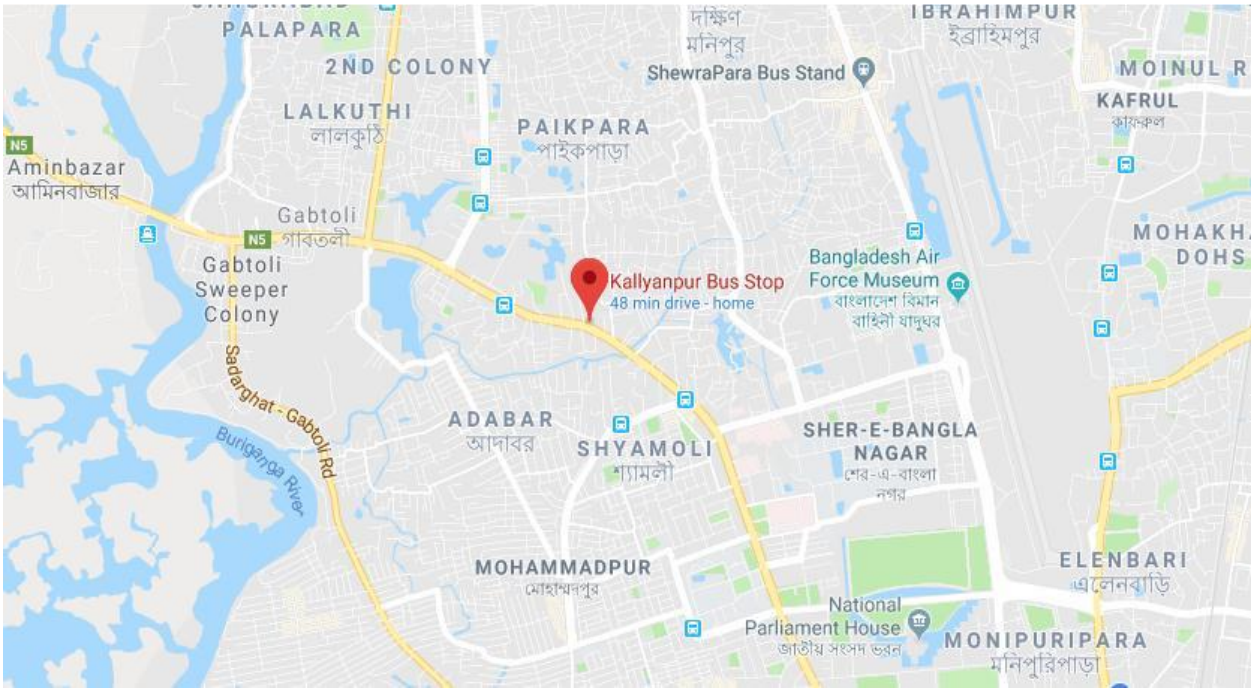


Figure 3.8 Survey location of Kallyanpur

3.3.9 Mirpur-10:

Mirpur is one of the largest thana of Dhaka City. It is surrounded by different thanas. Kafrul thana from the East, Savar upazila from the West, Pallabi thana from North and Mohammadpur thana from South. Mirpur-10 circle is one of the main roundabouts of Dhaka city. It connects major roads of Mirpur. Buses of all routes can be found here. Figure 3.9 shows the survey location of Mirpur-10.

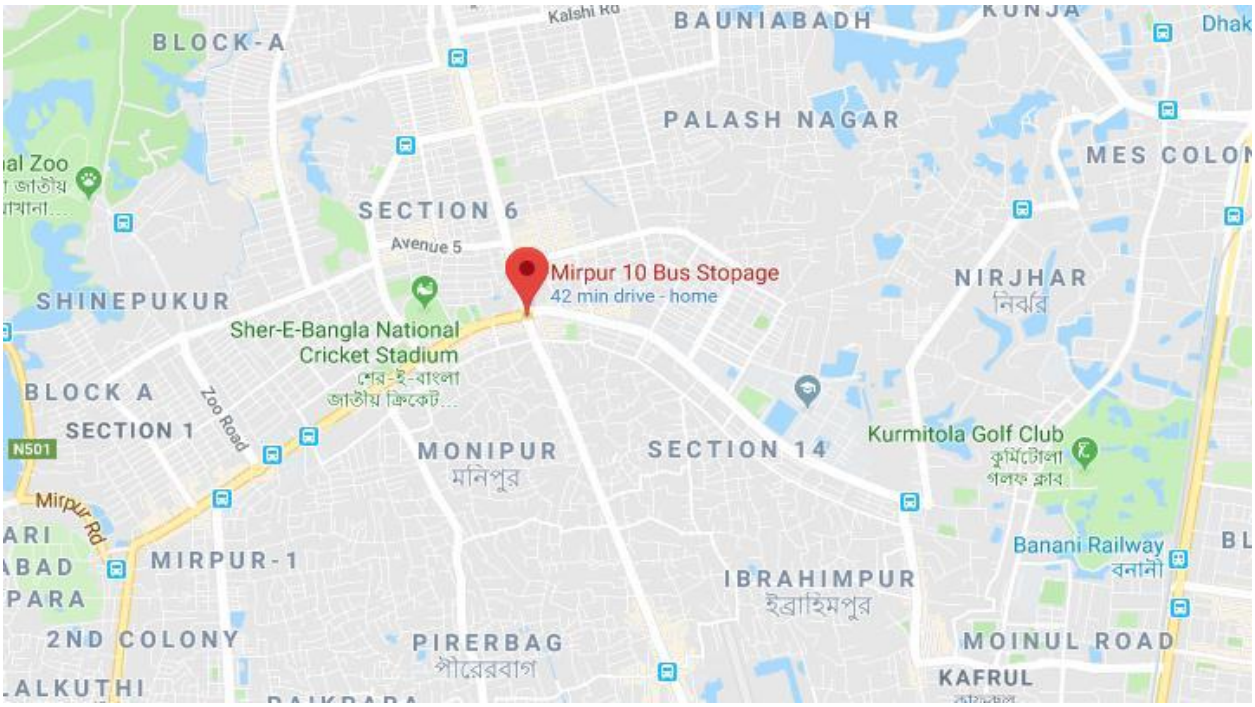


Figure 3.9 Survey location of Mirpur-10

3.3.10 Mohakhali:

Mohakhali is an important area of Dhaka city. Many important offices and institutions are based in here. Mohakhali Bus terminal is one of the most important terminals of Dhaka city. Every day thousands of people, particularly from greater Mymensingh region, travel by this bus terminal. On its north there is Banani, Moghbazaar on its south and Gulshan on East. Figure 3.10 shows the survey location of Mohakhali.



Figure 3.10 Survey location of Mohakhali

3.3.11 Banani:

Banani is located in the northern side of Mohakhali. It has some of the busiest roads in Dhaka city. These roads are used by the pedestrian to reach important areas like Hazrat Shahajalal International Airport, Uttara, Gazipur. Figure 3.11 shows the survey location of Banani.



Figure 3.11 Survey location of Banani

3.3.12 Shahbagh:

Shahbagh is a major neighborhood. It is a junction between two contrasting sections of the city Old Dhaka and New Dhaka. It is also a major public transport hub. Many leading educational and public institutions including the University of Dhaka, Dhaka Medical College, Bangabandhu Sheikh Mujib Medical University, Bangladesh University of Engineering and Technology are located in here. Figure 3.12 shows the survey location of Shahbagh.



Figure 3.12 Survey location of Shahbagh

3.3.13 Motijheel:

Motijheel is a thana which is located at the heart of the Dhaka. It is the major business and commercial hub of Dhaka city and has more offices and business institutions than any other part of the city. Largest number of corporate headquarters along with news, magazines, print and other media publishers are located here. It is close to Kamlapur Railway Station, Dhaka's main railway station. Head office of most of the bank of Bangladesh, are located in here. Figure 3.13 shows the survey location of Motijheel.



Figure 3.13 Survey location of Motijheel

3.4 User Information

3.4.1 Demographic Information about Bus Service Users

For this study, 10 surveyors collected data from 15 locations of Dhaka City. After scrutinizing a total of 956 data was selected for this study. Demographic information about the respondents have been provided in Table 3.4

Table 3.3 Demographic Information about Bus Service Users

Characteristics	Statistics	No. of the Respondent (Total: 956)	Percentage
Gender	Male	641	65%
	Female	341	35%
Age	10y -20y	67	7%
	20y -30y	478	50%
	30y -40y	278	29%
	40y -50y	100	10%
	50y -60y	26	3%
	>60	7	1%
Occupation	Students	323	34%
	Private Service	323	34%
	Public Service	106	11%
	Housewife	78	8%
	Labor	18	2%
	Businessman	108	11%
Salary Range (BDT)	<10000	306	32%
	10000-30000	437	46%
	30000-50000	168	17%
	50000-70000	29	3%
	>100000	16	20%

Main Mode of Travel	Bus	830	87%
	Rickshaw	30	3%
	Para-transit	15	1%
	Motor/Bi-Cycle	35	4%
	Car	46	5%
Allocation for Monthly Travel Expenditure	1%~10%	455	48%
	11%~20%	381	40%
	21%~30%	88	9%
	>30%	16	3%

[1 USD = 85.23 BDT (Updated on September 24, 2021)]

3.4.2 Analysis of Demographic Information of Bus Service Users

Figure 3.14 shows the percentage of male and female users of bus service. According to the gender classification, result shows that about 65% of the respondents are male and 35% are female.

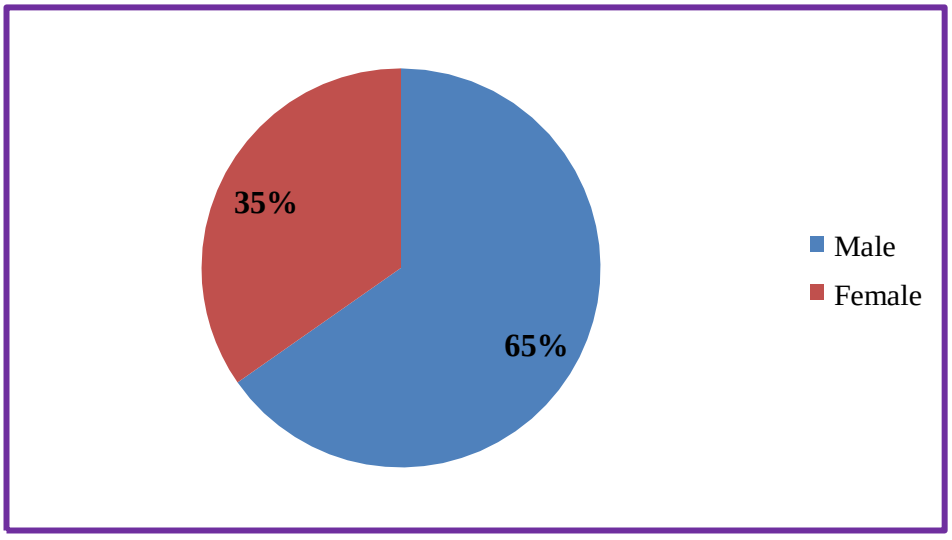


Figure 3.14 Users classification according to gender

Figure 3.15 shows the users classification according to main mode of travel. Majority (87%) of the respondents use bus as their main mode of travel. Least 1% use Para-transit as their mode of travel.

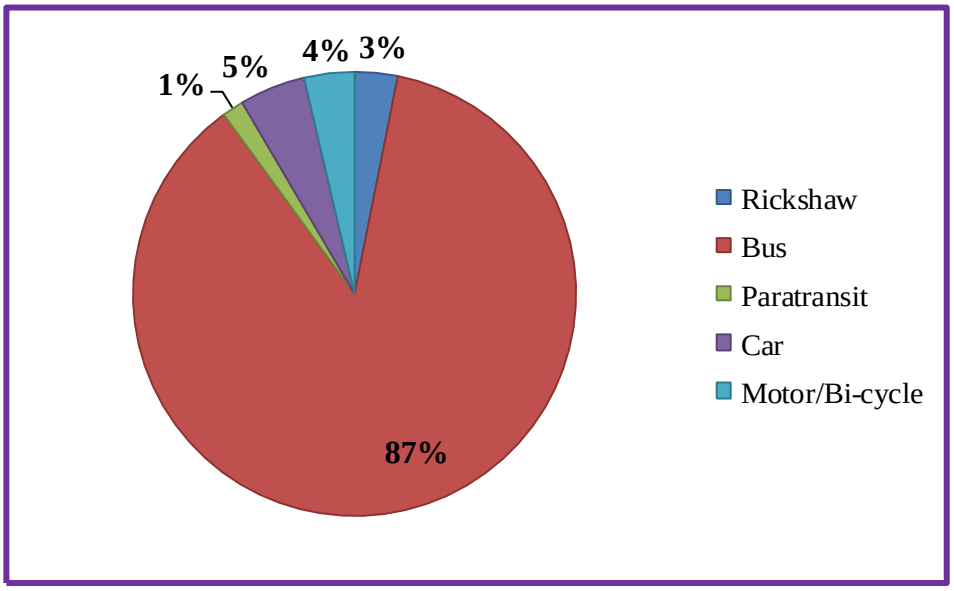


Figure 3.18 Users classification according to main mode of travel

Figure 3.16 shows the group of users according to their age. 50% of the users are 20-30 years old, and 29 % of the users are 30-40 years old. The senior citizens over 60 years old are the least number of users about 1% as they don't often come out of their home for work purpose.

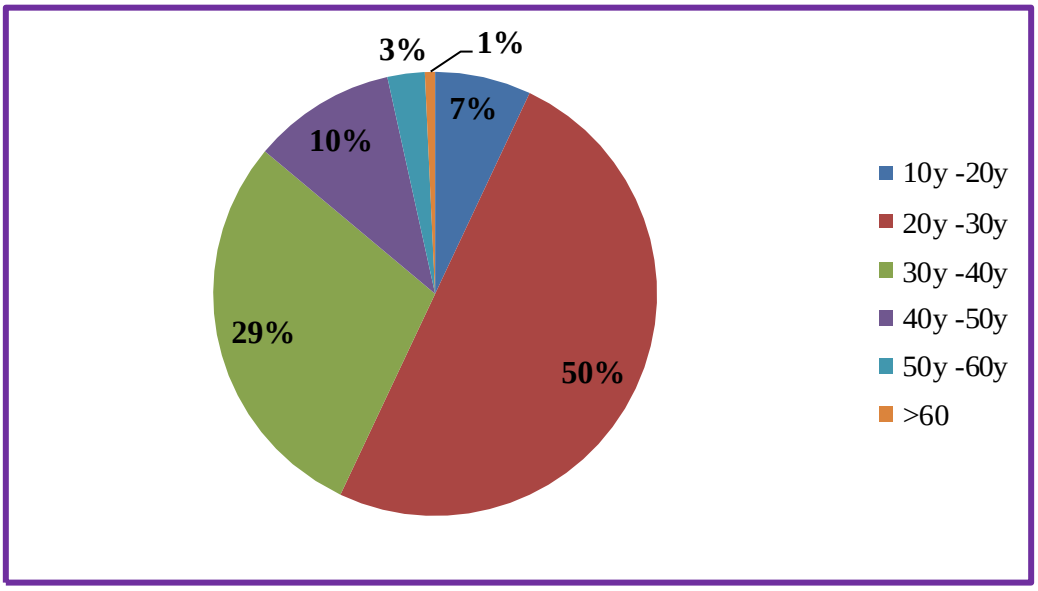


Figure 3.15 Users classification according to age

Figure 3.17 shows the classification according to occupation. The majority of bus users are students (34%) and private service holders (34%). Least 2% of the users are labor.

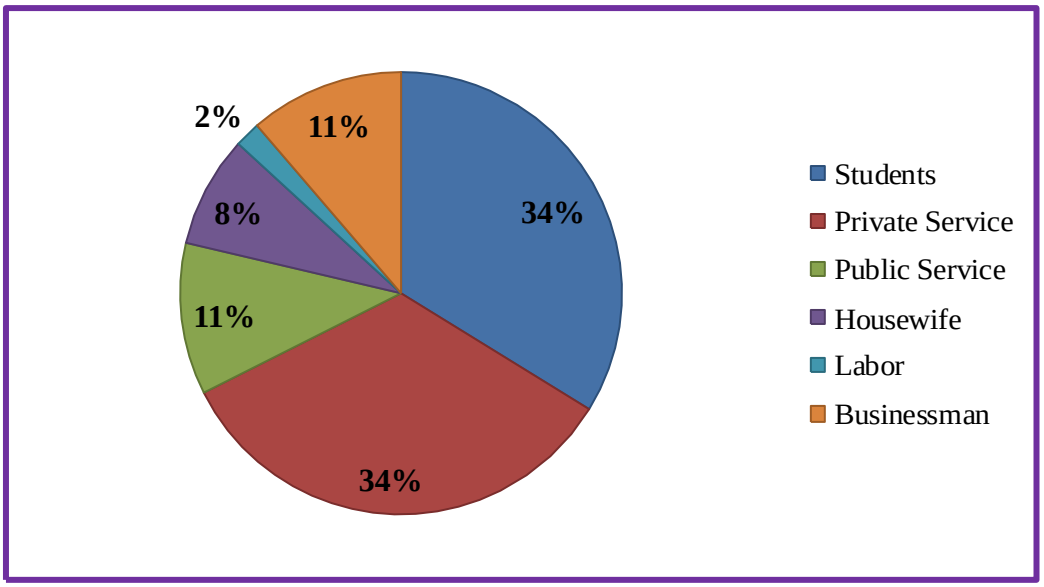


Figure 3.16 Users classification according to occupation

Figure 3.18 shows the classification according to salary range. The majority (46%) of the users earn between BDT10000-BDT30000. Only 2% of the users earn more than BDT100000.

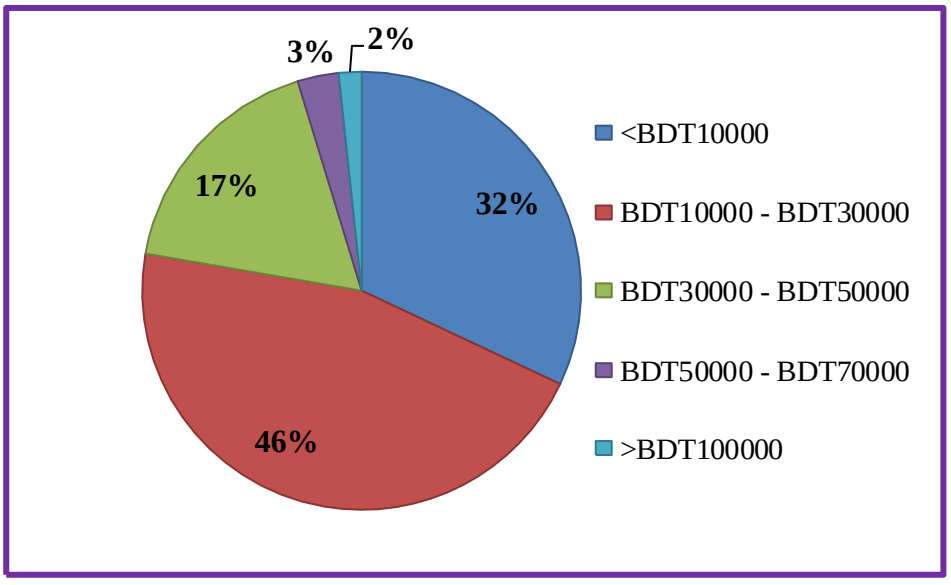


Figure 3.17 Users classification according to Salary Range

Figure 3.19 shows the users classification according to monthly expenditure. Almost 48% and 40% of the user's monthly travel expenditure is 1-10% and 11-20% respectively. Least 3% of the user's monthly travel expenditure is beyond 30%

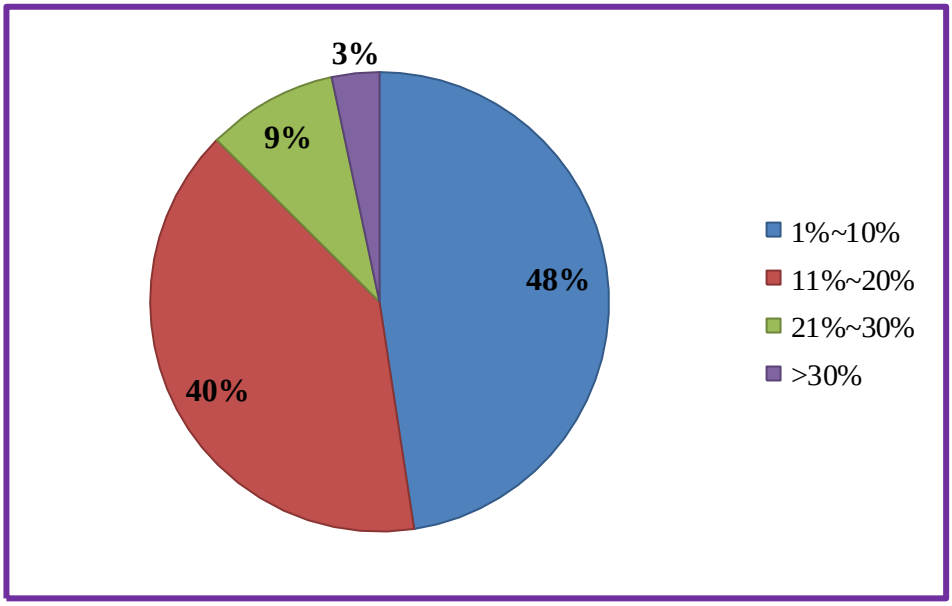


Figure 3.19 Users classification according to monthly travel expenditure

3.5 Conclusion

In this chapter, name of the survey locations, details of the survey location, survey schedule, total number of respondents and their demographic information have been discussed. Only the demographic information has been analyzed in this chapter and the results have been represented by pie chart.

Chapter 4

Data Analysis

4.1 General

The main objective of this chapter is to analyze the collected data. This chapter contains the response of bus users, data analysis of the questionnaire survey.

4.2 Process of Data Analysis

Respondents were selected randomly from fifteen different locations of all-around Dhaka City for survey. After scrutinizing, data of 956 respondents were selected and stored in Microsoft Excel. These data were analyzed to find out the general perception of bus service quality in Dhaka city. By using these data, estimation of choice model parameters is done to produce the best fit solution to input data.

4.3 Users Rating About Bus Service in Dhaka City:

Question 1: **How often do you travel by local bus?**

In this question the users were asked about how often they do travel by local bus. 59% of the respondents said they travel by bus every day while 17% of them said they travel by bus more than twice a week but not every day. Only 4% of the respondents said they travel less often by bus which was the lowest response. Figure 4.1 shows users opinion about frequency of travelling by bus.

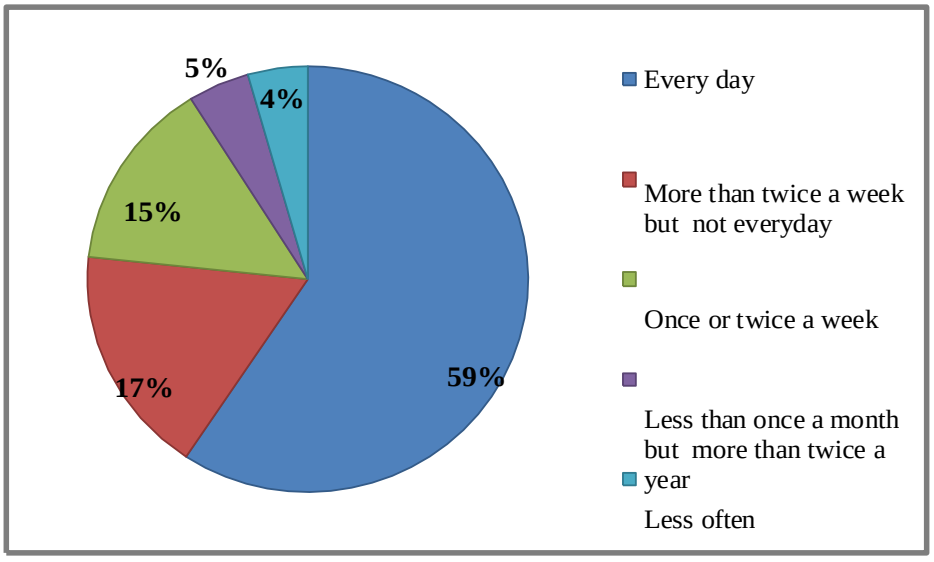


Figure 4.1 Users opinion about frequency of travelling by bus

Question 2: **How was the convenience of service?**

In this question the users were asked about the convenience of service. 39% of the respondents said the convenience of service was poor while 30% said it was satisfactory. Only 2% of the respondents rated the convenience of service as excellent. Figure 4.2 shows users opinion about convenience of service.

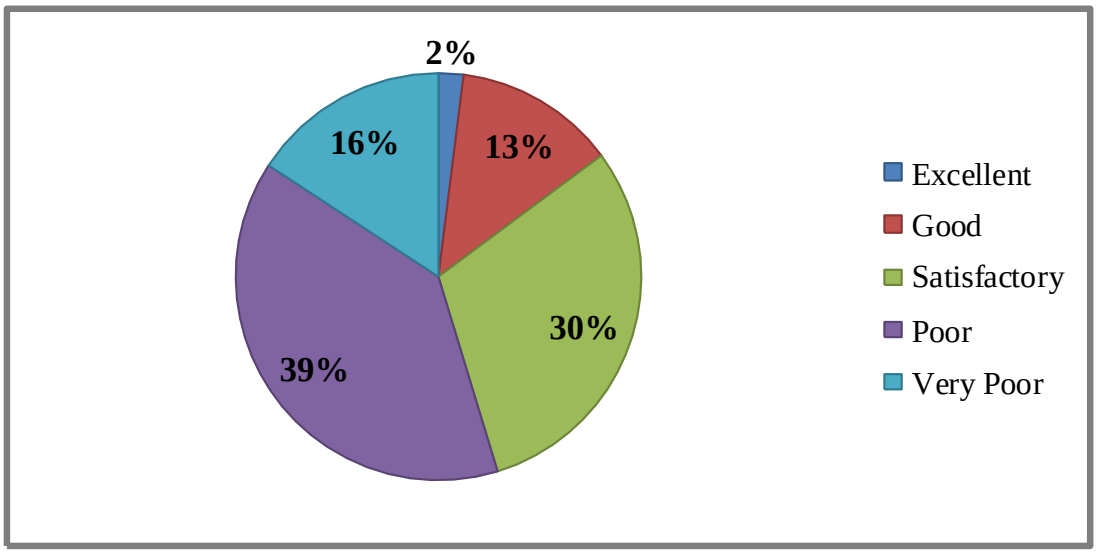


Figure 4.2 Users opinion about convenience of service

Question 3: **How long it takes to reach bus stop?**

In this question the users were asked about the time they need to reach bus stop. 31% of the respondents said it takes them 10 min to reach bus stop while 27% of them said it takes them 15 min to reach bus stop. Yet 2% of them responded 25 min as the required time to reach the bus stop. Figure 4.3 shows user's opinion about time to reach bus stop.

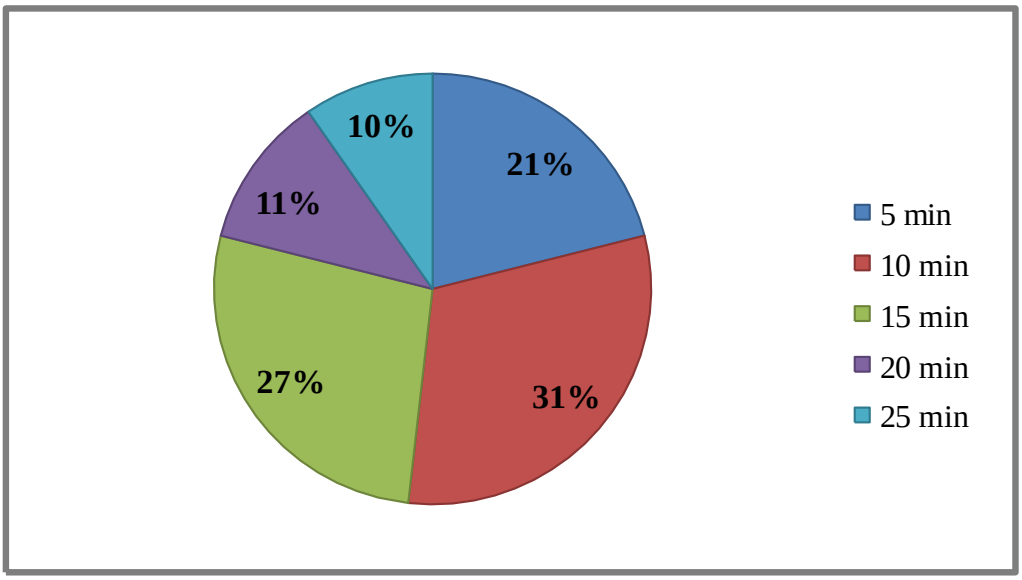


Figure 4.3 Users opinion about time to reach bus stop

Question 4: **What is the trip purpose?**

In this question the users were asked about the trip purpose. Maximum 49% of the total respondents said their purpose of the trip was to reach office while 31% said their purpose of using bus was to reach school/ college/ polytechnic/ University. Figure 4.4 shows user's opinion about trip purpose.

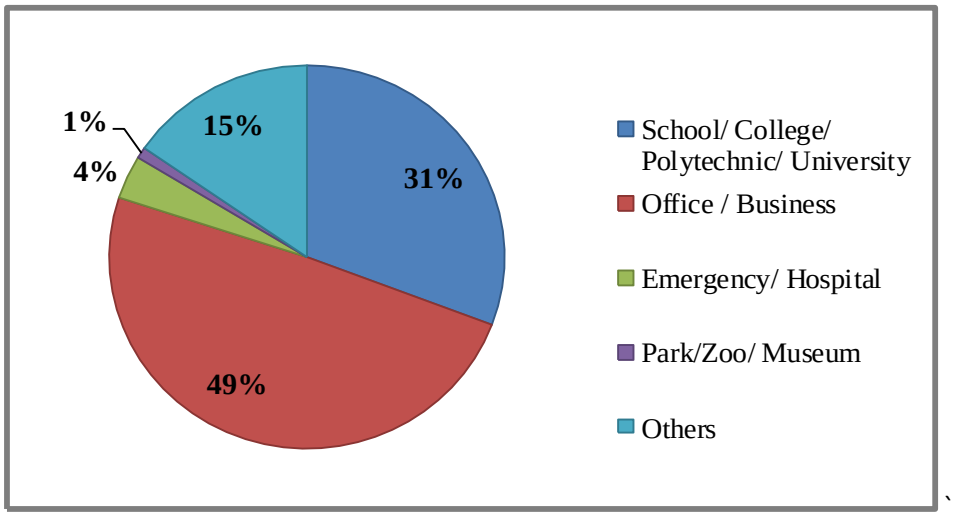


Figure 4.4 Users opinion about trip purpose

Question 5: **How was the frequency of service?**

In this question the users were asked about the frequency of the bus service. 36% of the respondents rated the frequency of service as poor while 35% of them rated it as satisfactory. Least 1% of the respondents rated the frequency of service as excellent. Figure 4.5 shows user's opinion about frequency of service.

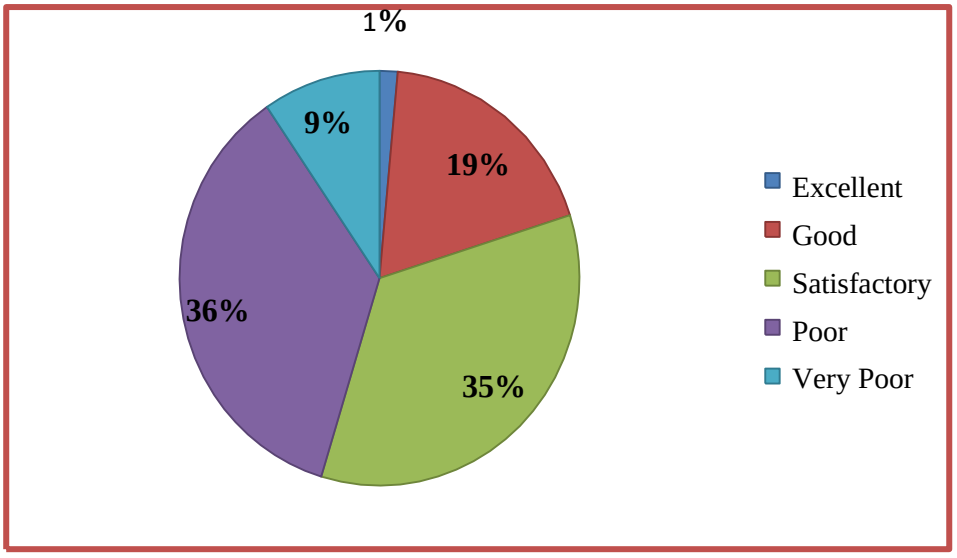


Figure 4.5 Users opinion about frequency of service

Question 6: **How is the punctuality of the transport?**

In this question the users were asked about the punctuality of transport which refers how efficient is the service when it comes to maintain the time schedule. 42% of the total respondents rated the punctuality of the transport as poor while 28% of them rated it as satisfactory. Almost none of them rated the punctuality of the transport as excellent. Figure 4.6 shows user's opinion about punctuality of transport.

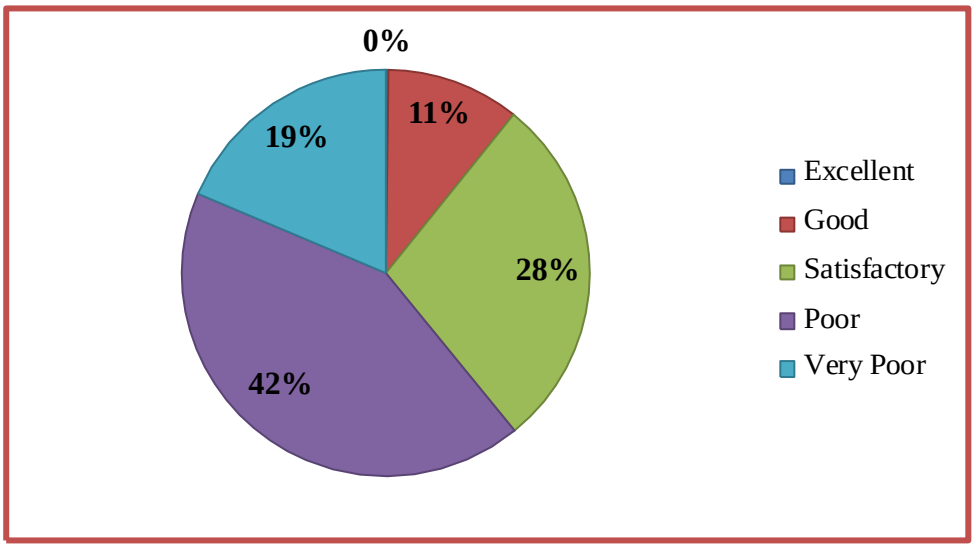


Figure 4.6 Users opinion about punctuality of transport

Question 7: **How was the movement flexibility (On Road)?**

In this question the users were asked about the movement flexibility of bus on road. 45% of the respondents rated movement flexibility as poor while 28% rated the movement flexibility as satisfactory. Almost no one was found to rate the movement flexibility as excellent. Figure 4.7 shows user's opinion about movement flexibility on road.

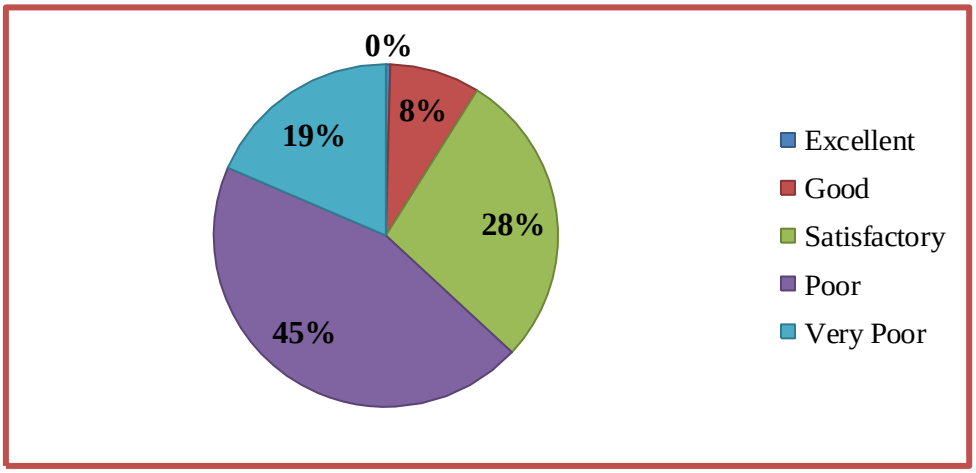


Figure 4.7 Users opinion about movement flexibility on road

Question 8: How was the sitting arrangement?

In this question the users were asked about the sitting arrangements inside the bus. 40% of the respondents rated the sitting arrangements as poor while 27% of them rated the sitting arrangements as satisfactory. Almost no one was found to be satisfied with the sitting arrangement. Figure 4.8 shows user's opinion about sitting arrangements.

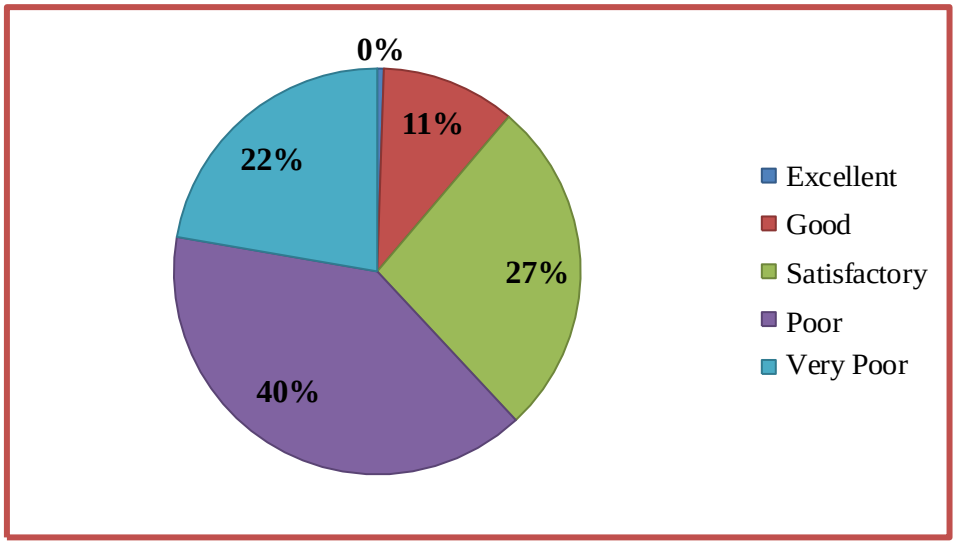


Figure 4.8 Users opinion about sitting arrangements

Question 9: How was the speed of the bus?

In this question the users were asked about the speed of the bus.35% of the respondents rated the speed of the bus as poor while 38% of them rated the speed of the bus as satisfactory. Only 2% of the respondents was found to rate the speed of the bus as excellent. Figure 4.9 shows user's opinion about speed of the bus.

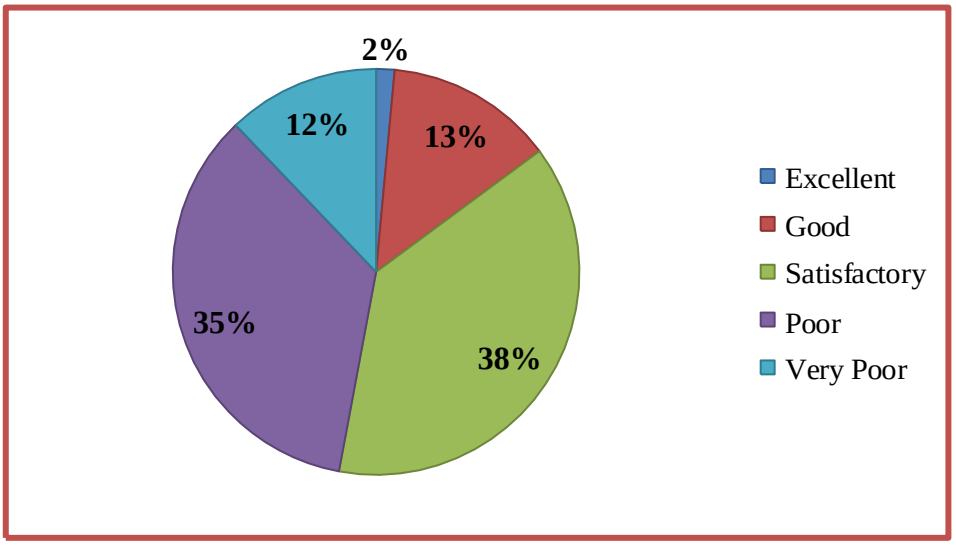


Figure 4.9 Users opinion about speed of the bus

Question 10: Is the information of the bus service available?

In this question the users were asked about the availability of information of the bus service. 42% of the respondents rated the availability of information of the bus service as poor while 24% rated it as satisfactory. Due to unavailability of information of the bus service, almost none of them rated it as excellent. Figure 4.10 shows user's opinion about availability of information of the bus service.

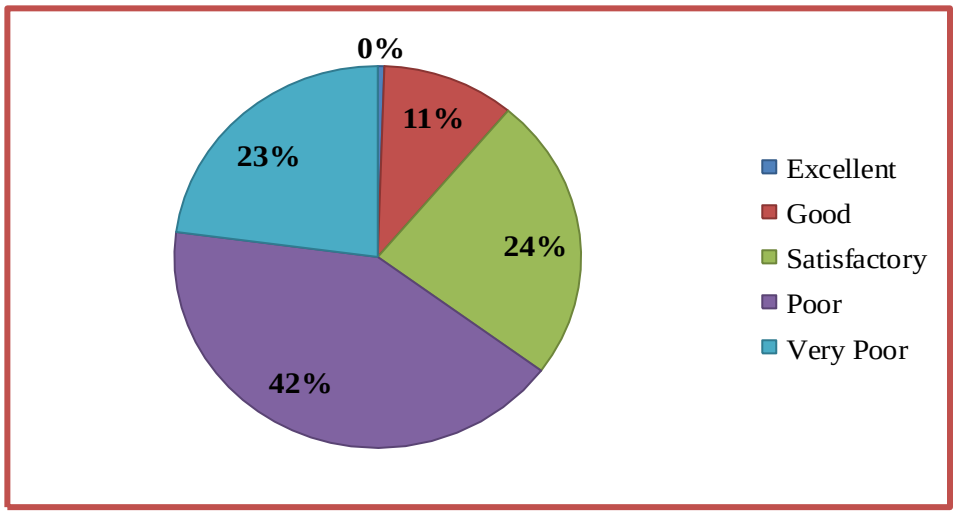


Figure 4.10 Users opinion about availability of information of the bus service

Question 11: What was the ticketing system of transport?

In this question the users were asked about the ticketing system of transport. 40% of the respondent rated ticketing system as poor while 28% rated the ticketing system as satisfactory. Least 1% of the respondent rated the ticketing system as excellent. Figure 4.11 shows user's opinion about ticketing system of transport.

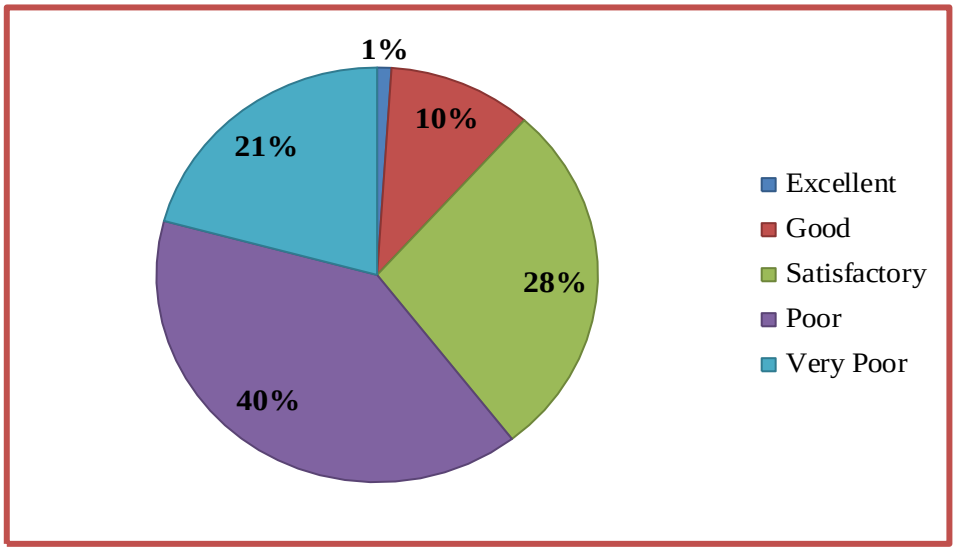


Figure 4.11 Users opinion about paying fare/ticketing system

Question 12: How was the transport cost?

In this question the users were asked to provide their opinion about the transport cost. According to 37% of the respondents the transport cost was fair so they rated it as satisfactory. But according to a total of 48% of the respondents the cost was higher than it should be. So, among those 48 % of the respondents, 31% rated it as poor and 17% rated it as very poor. Least 1% of the respondents rated the cost as excellent. Figure 4.12 shows user's opinion about transport cost.

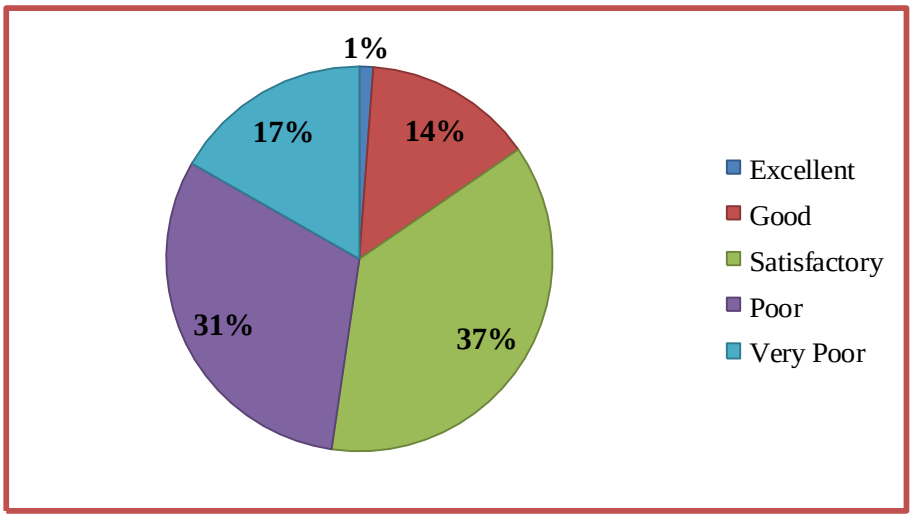


Figure 4.12 Users opinion about transport cost

Question 13: What was the reason of using local bus?

In this question the users were asked about the reason why they use local bus. 31% of the respondents replied they use local bus due to its low cost whereas another 31% showed the reason of having no own transport. 23% of the respondents were bound to use the local bus service as they had no other option than bus. Figure 4.13 shows user's opinion about reason of using local bus.

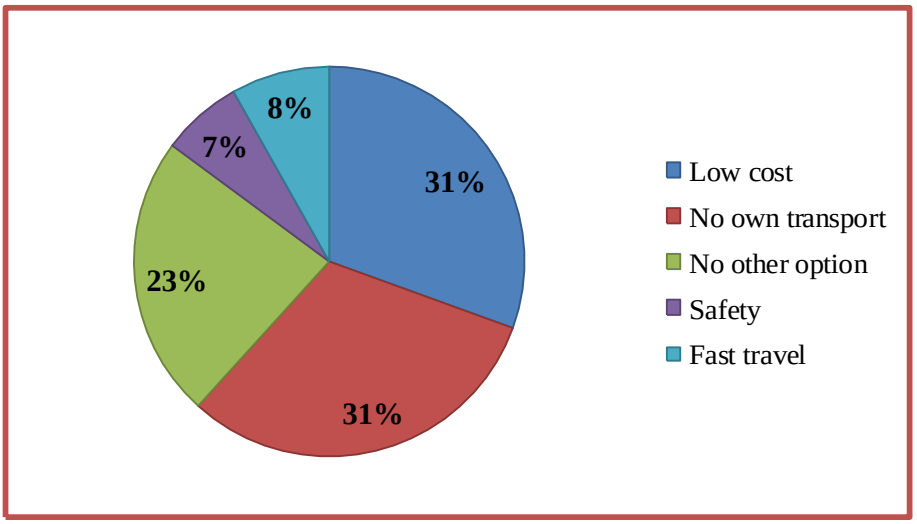


Figure 4.13 Users opinion about reason of using local bus

Question 14: How was the fitness of the bus?

In this question the users were asked about fitness of the bus. 42% of the respondents rated the fitness of the bus as poor while 23% of them rated the fitness of the bus as satisfactory Least 1% of the respondents rated the fitness of the bus as excellent. Figure 4.14 shows user's opinion about fitness of the bus.

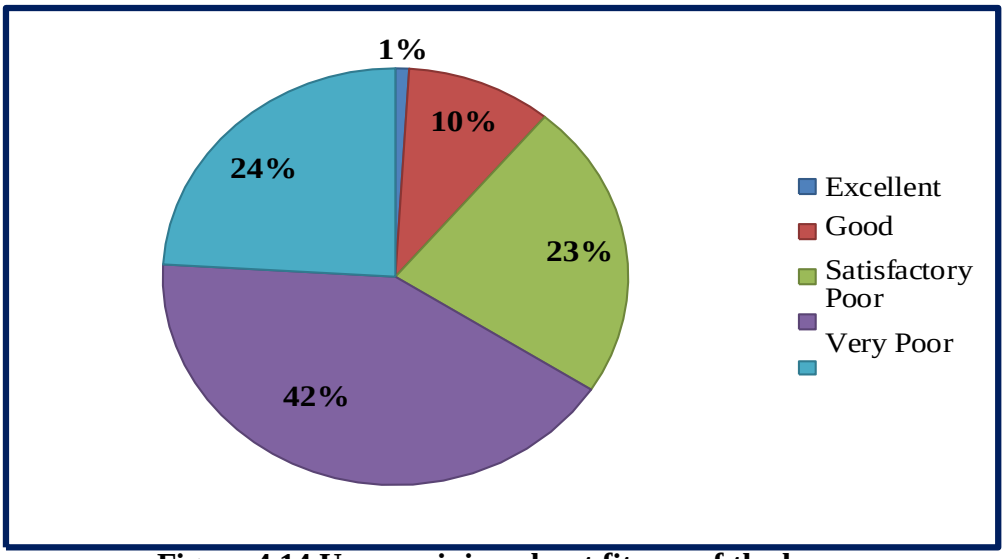


Figure 4.14 Users opinion about fitness of the bus

Question 15: What about the seat condition of bus?

In this question the users were asked about seat condition of bus. 42% of the respondents rated the seat condition of the bus as poor while 26% of them rated the seat condition of the bus as satisfactory. Only 1% of the respondents rated the seat condition of the bus as excellent. Figure 4.15 shows users opinion about seat condition of the bus.

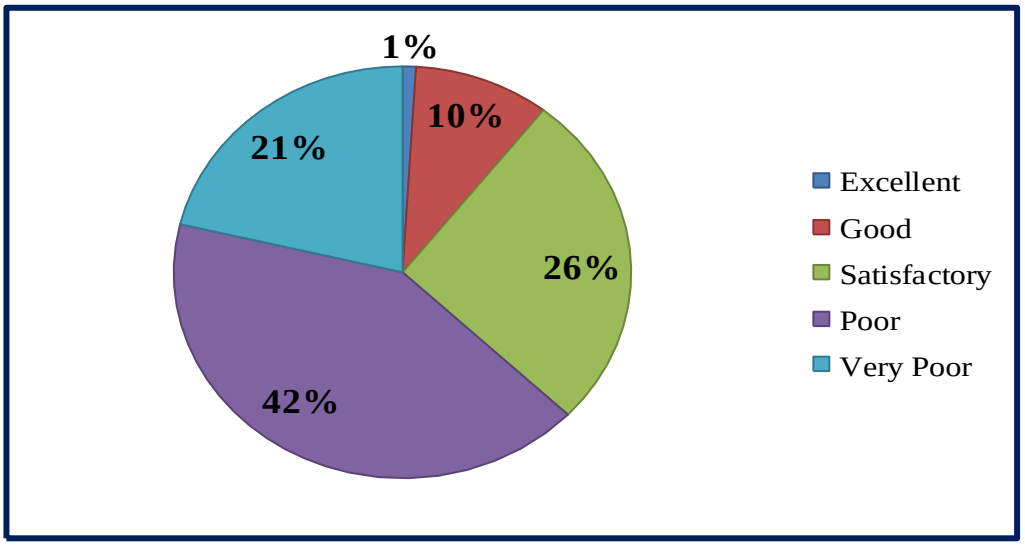


Figure 4.15 Users opinion about seat condition of bus

Question 16: What about the cleanliness of bus?

In this question the users were asked about cleanliness of bus. 41% of the respondents rated the cleanliness of the bus as poor while 25% of them rated the cleanliness of the bus as satisfactory. Only 2% of the respondents rated the cleanliness of bus as excellent. Figure 4.16 shows user's opinion about cleanliness of bus.

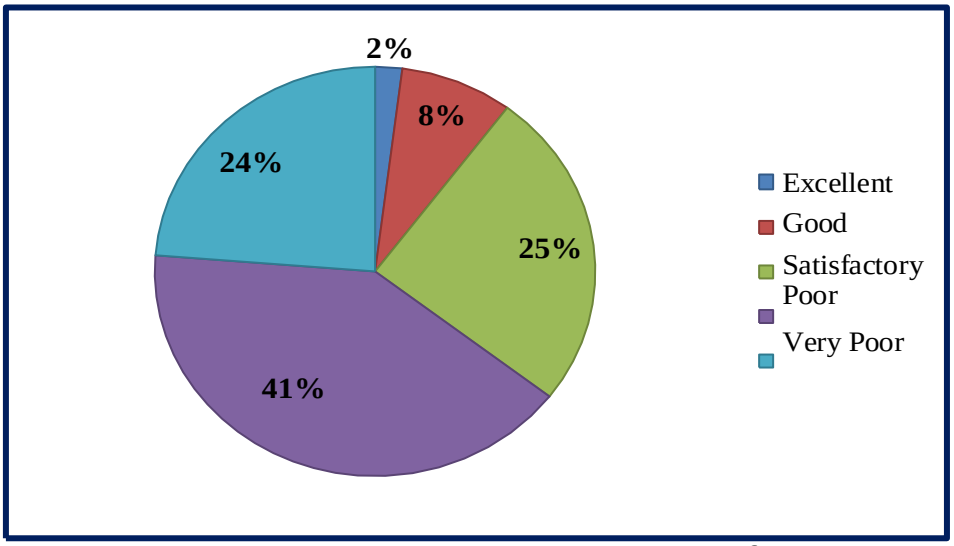


Figure 4.16 Users opinion about cleanliness of bus

Question 17: Is the bus always crowded?

In this question the users were asked whether the buses are always crowded or not. 37% respondent strongly agreed about the gathering in bus. Another 37% of the respondent agreed that buses are always crowded. Yet, 1% of the respondent strongly disagreed as their opinion was - the buses are not always crowded; it is only crowded during the peak period. Figure 4.17 shows user's opinion about the overcrowding of bus.

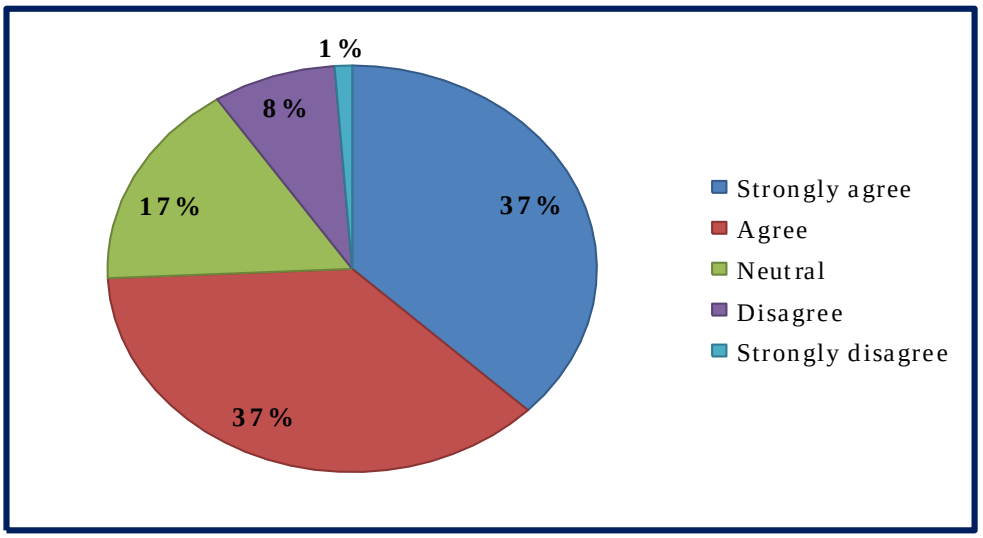


Figure 4.17 Users opinion about the overcrowding of bus

Question 18: How was the lighting facility of the bus?

In this question the users were asked about lighting facility of the bus. 41% of the respondents rated the lighting facility of the bus as satisfactory while 34% of them rated the lighting facility of the bus as poor. Only 2% of the respondents rated the lighting facility of the bus as excellent. Figure 4.18 shows user's opinion about lighting facility of bus.

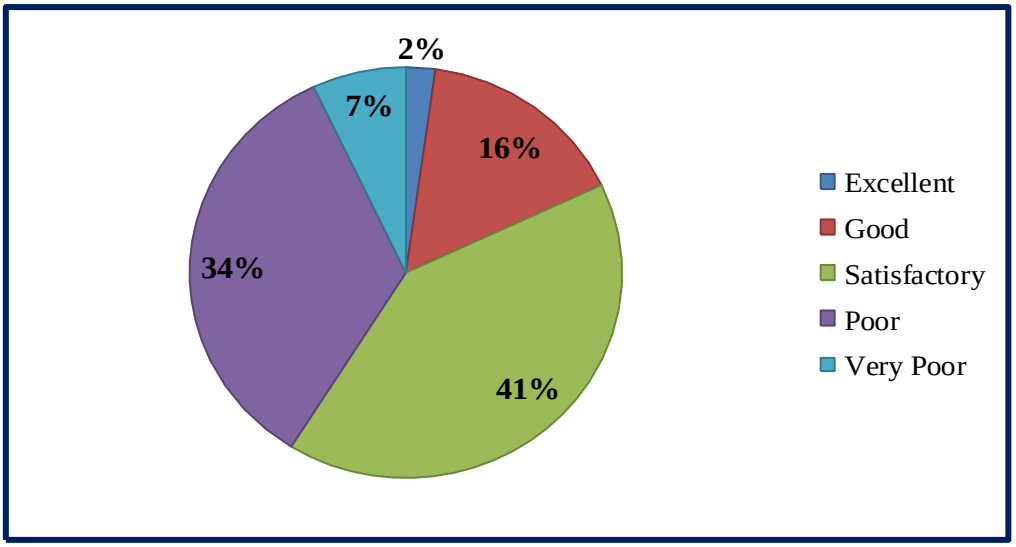


Figure 4.18 Users opinion about lighting facility

Question 19: How was the level of noise of the bus?

In this question the users were asked about noise level of the bus. 40% of the respondents rated the noise level of the bus as poor while 27% of them rated the noise level of the bus as satisfactory. Least 1% of the respondents rated the noise level of bus as excellent which means there was almost no noise in the bus. Figure 4.19 shows user's opinion about noise level of the bus.

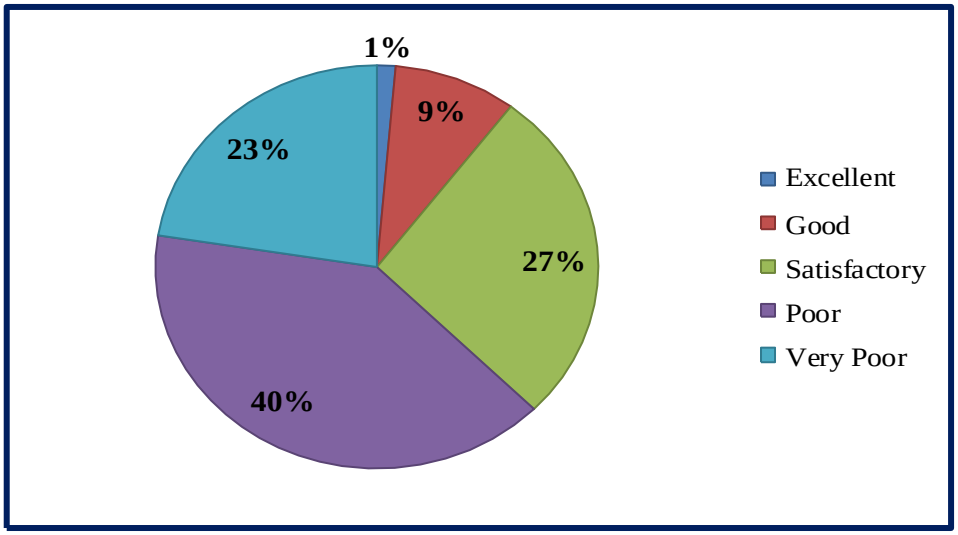


Figure 4.19 Users opinion about noise level of the bus

Question 20: How was the movement flexibility (Inside)?

In this question the users were asked about the movement flexibility inside of the bus. 37% of the respondents said the inside movement flexibility was poor while 26% said it was very poor. Least 1% of the respondents rated the inside movement flexibility as excellent. Figure 4.20 shows user's opinion about movement flexibility (Inside).

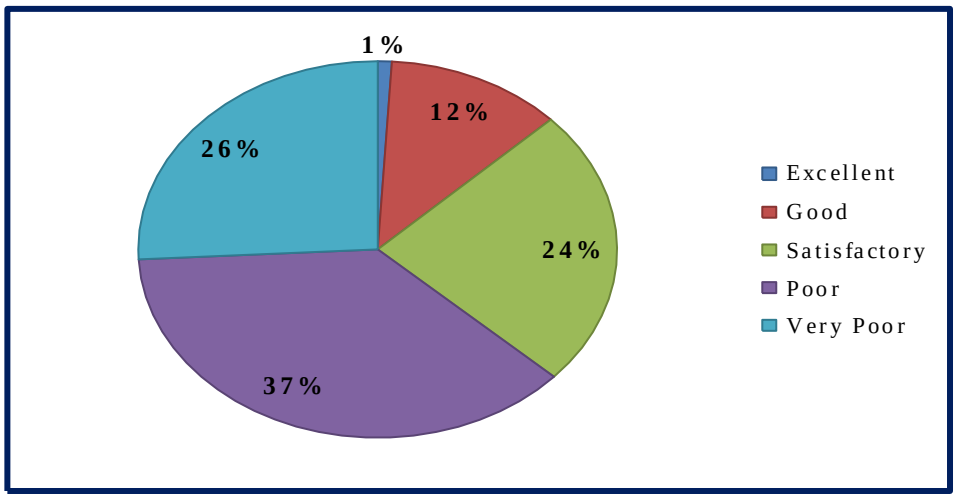


Figure 4.20 Users opinion about movement flexibility (Inside)

Question 21: How was the seat comfort level of bus?

In this question the users were asked about the seat comfort level of bus. 44% of the respondents rated the comfort level of bus as poor while 26% of them rated the comfort level of bus as satisfactory. Least 1% of the respondents rated the comfort level of bus as excellent. Figure 4.21 shows user's opinion about comfort level.

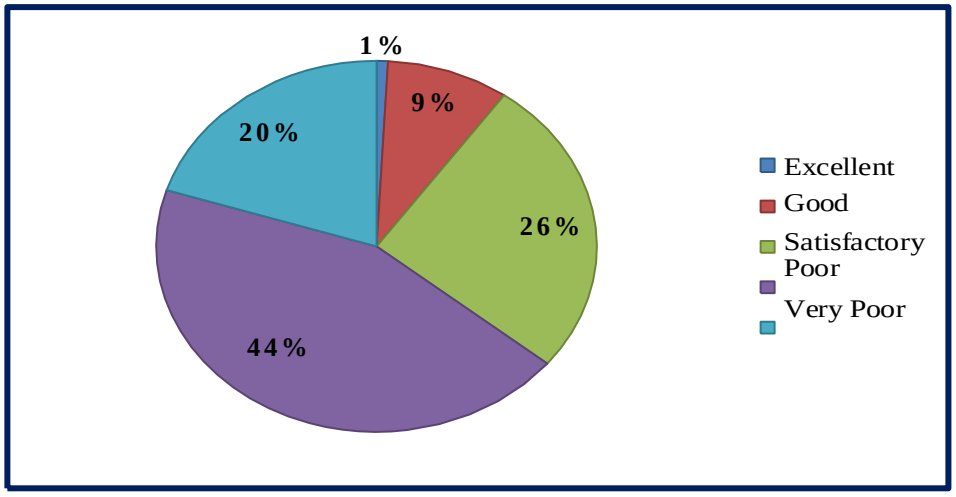


Figure 4.21 Users opinion about comfort level

Question 22: How was the physical condition of bus?

In this question the users were asked about the physical condition of bus. 42% of the respondents rated the physical condition of bus as poor while 27% of them rated the physical condition of bus as satisfactory. Least 1% of the respondents rated the physical condition of bus as excellent. Figure 4.22 shows user's opinion about physical condition.

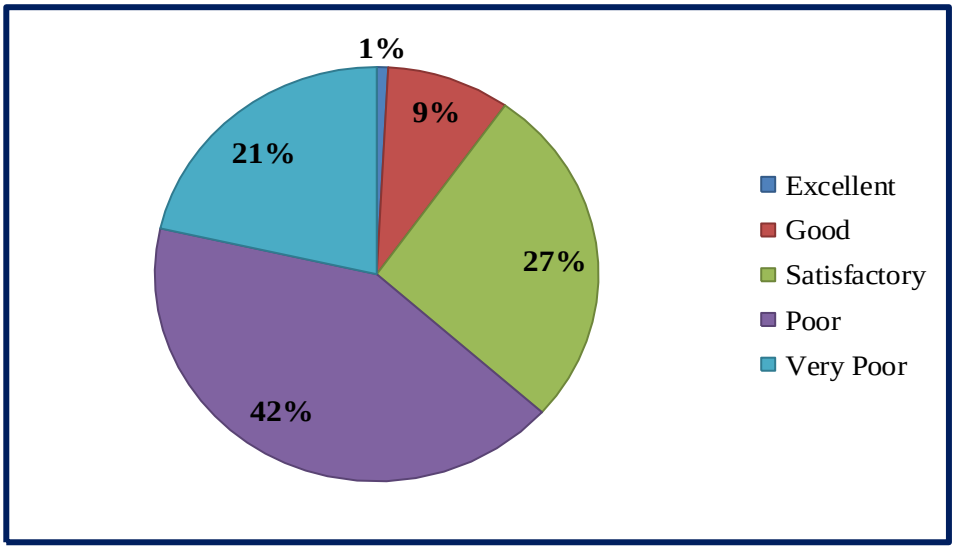


Figure 4.22 Users opinion about physical condition

Question 23: Rate of bus service?

In this question the users were asked to rate the quality of bus service. 41% of the respondents rated quality of bus service as poor while 26% of them rated quality of bus service as satisfactory. Only 1% of the respondents rated the quality of bus service as excellent. Figure 4.23 shows user's opinion about the quality of bus service.

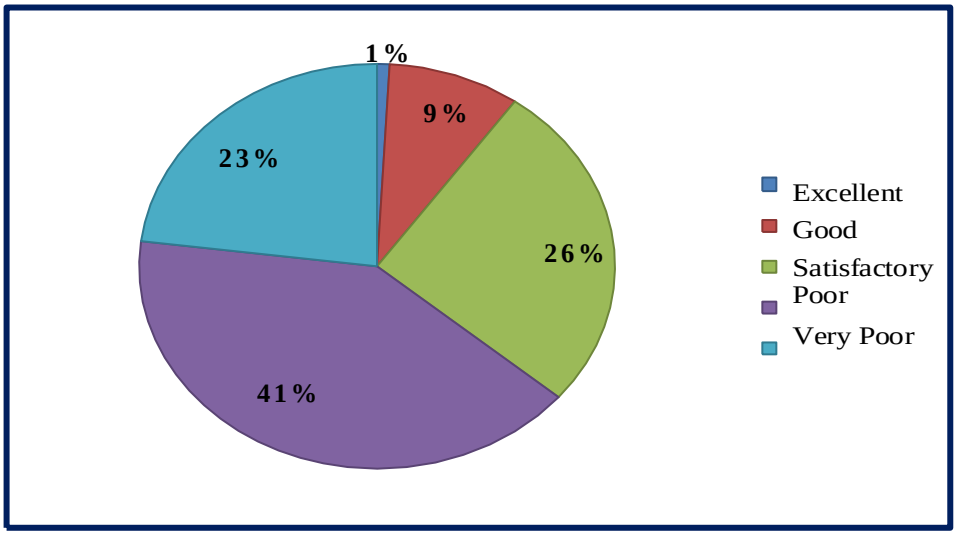


Figure 4.23 Users opinion about rating the quality of bus service

Question 24: What about the safety of bus stop?

In this question the users were asked about the safety of bus stop. 45% of the respondents rated the safety of bus stop as poor while 23% rated it as satisfactory. Only 1% of the respondents rated the safety of bus stop as excellent. Figure 4.24 shows user's opinion about safety of bus stop.

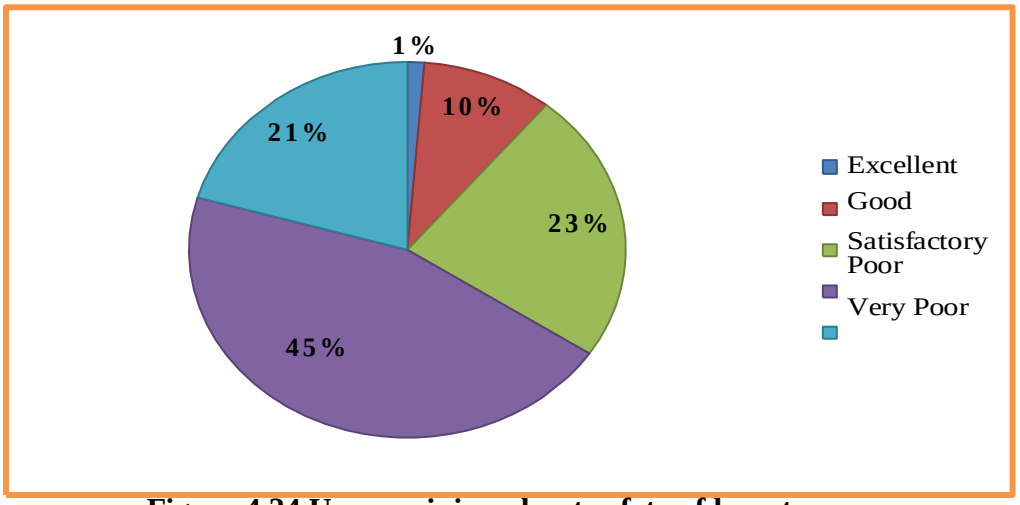


Figure 4.24 Users opinion about safety of bus stop

Question 25: What about the cleanliness of bus stop?

In this question the users were asked about the cleanliness of bus stop. 50% of the respondents rated the cleanliness of bus stop as poor while other 23% rated it as satisfactory. Only 2% of the respondents rated the cleanliness of bus stop as excellent. Figure 4.25 shows user's opinion about cleanliness of bus stop.

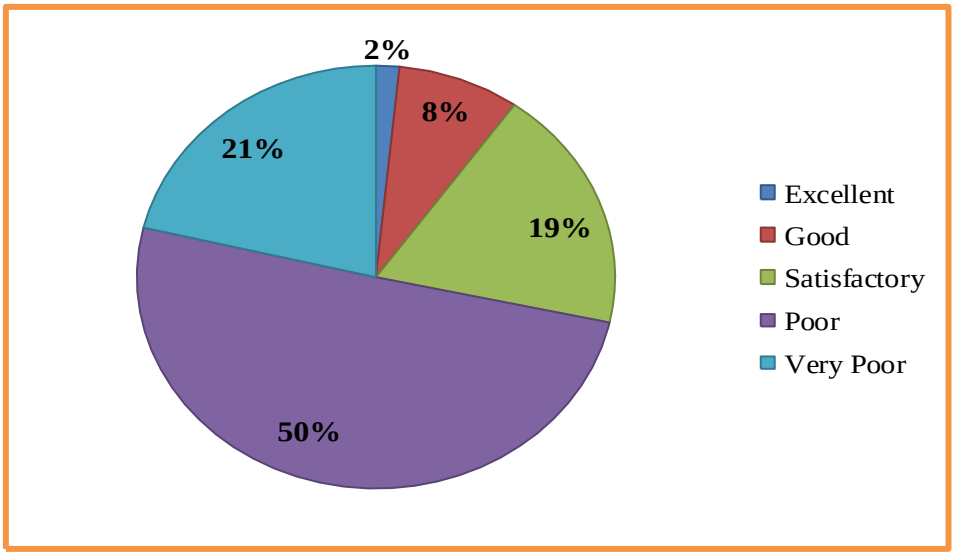


Figure 4.25 Users opinion about cleanliness of bus stop

Question 26: How was the condition of bus stop?

In this question the users were asked about the condition of bus stop. 50% of the respondents rated the condition of bus stop as poor while 22% rated it as satisfactory. Almost no respondent rated the condition of bus stop as excellent. Figure 4.26 shows user's opinion about condition of bus stop.

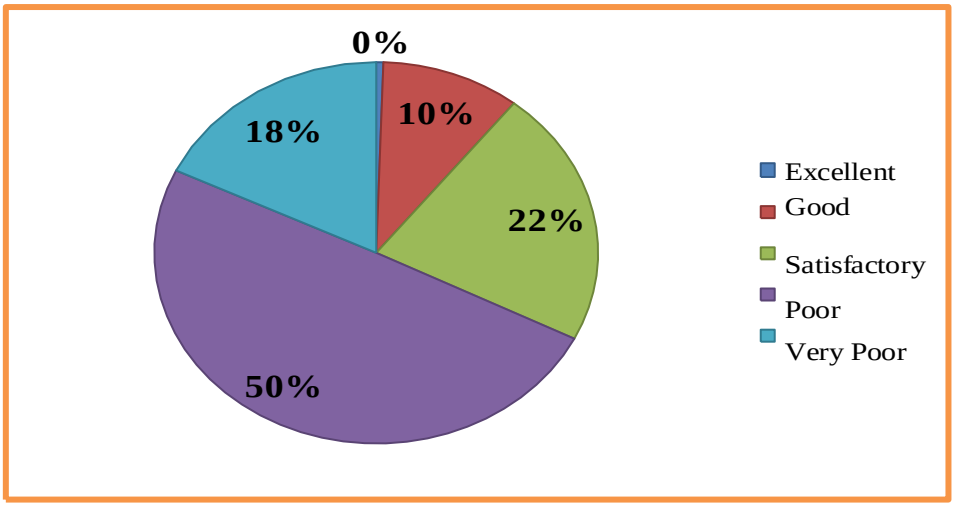


Figure 4.26 Users opinion about condition of bus stop

Question 27: What about the accessibility of bus stop?

In this question the users were asked about the accessibility of bus stop. 39% of the respondents rated the accessibility of bus stop as poor while 34% rated it as satisfactory. Only 1% of the respondents rated the accessibility of bus stop as excellent. Figure 4.27 shows user's opinion about accessibility of bus stop.

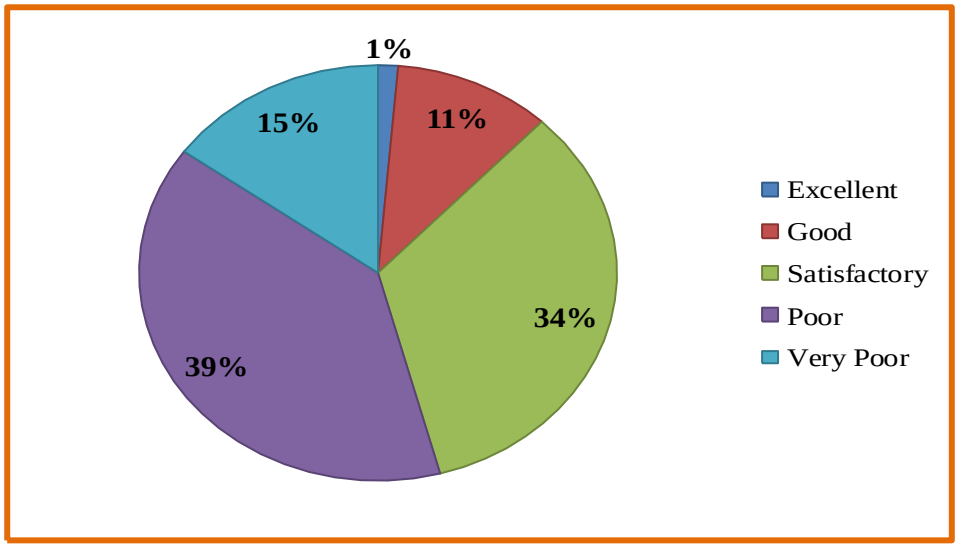


Figure 4.27 Users opinion about accessibility of bus stop

Question 28: Which mode are used to reach bus stop?

In this question the users were asked about the mode to get bus stop. 54% of the respondents reach bus stop by walking while 39% use rickshaw to reach bus stop. Figure 4.28 shows user's opinion about mode to get bus stop.

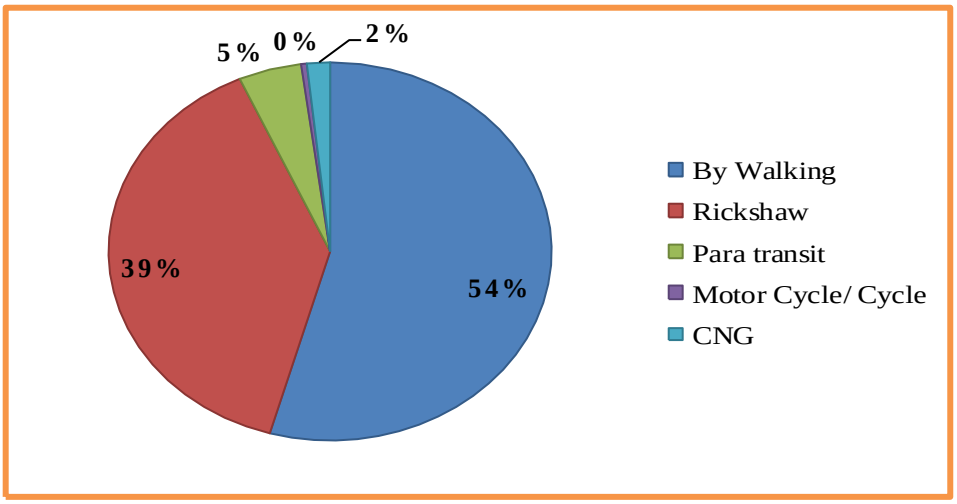


Figure 4.28 Users opinion about mode to get to bus stop

Question 29: How was the security in bus stop (others)?

In this question the users were asked about the safety of their belongings in bus stop. 45% of the respondents rated it as poor while 23% rated it as satisfactory. Only 1% of the respondents rated it as excellent. Figure 4.29 shows user's opinion about the security of their stuffs in bus stop.

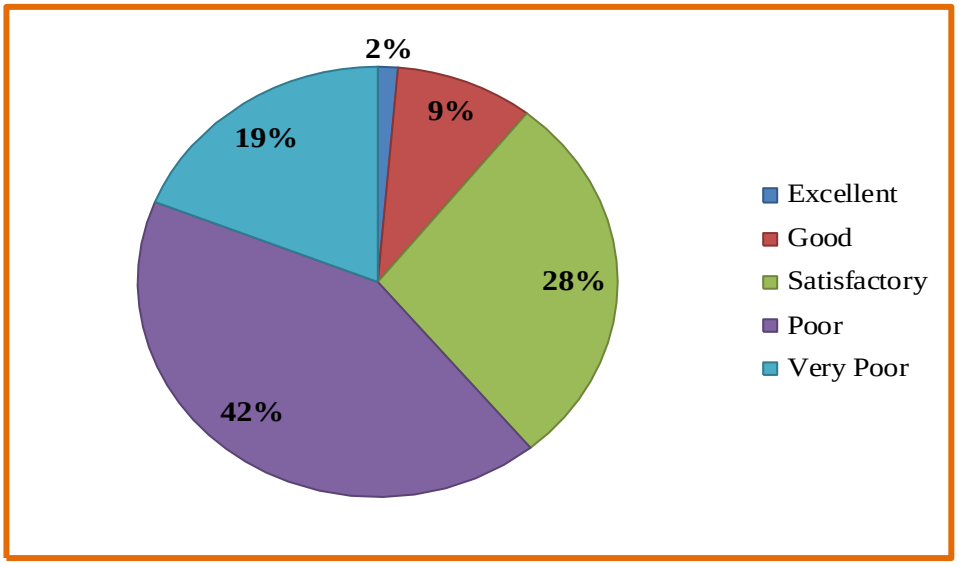


Figure 4.29 Users opinion about security in bus stop (others)

Question 30: What are the levels of personal safety in bus?

In this question the users were asked about the levels of personal safety. 35% of the respondents rated the level of personal safety as fairly poor while 30% rated it as neither good nor poor which means satisfactory. Only 3% of the respondents rated it as excellent. Figure 4.30 shows user's opinion about levels of personal safety.

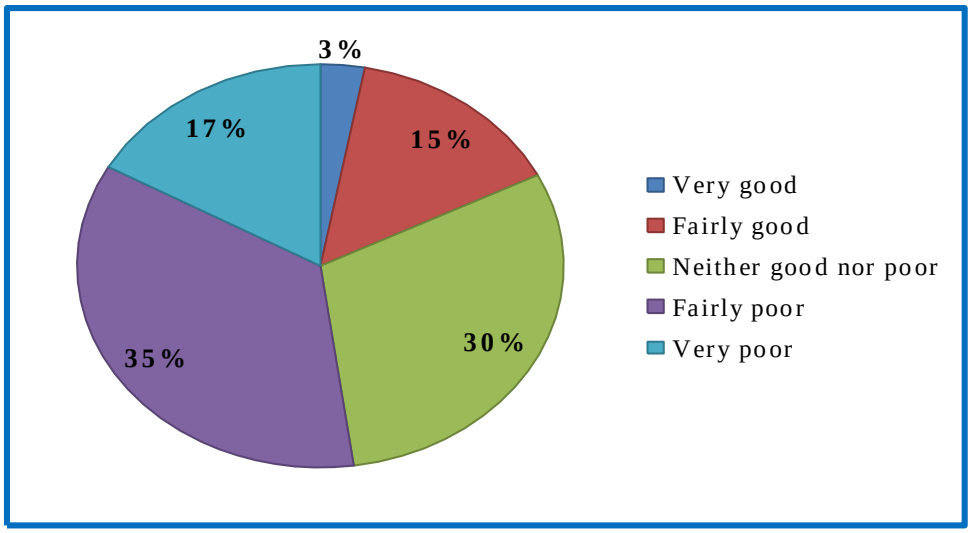


Figure 4.30 Users opinion about levels of personal safety

Question 31: How was the entry and exit facility?

In this question the users were asked about the entry and exit facility of bus. 38% of the respondents rated entry and exit facility as poor while 26% rated it as satisfactory. Only 2% of the respondents rated the entry and exit facility as excellent. Figure 4.31 shows user's opinion about entry and exit facilities.

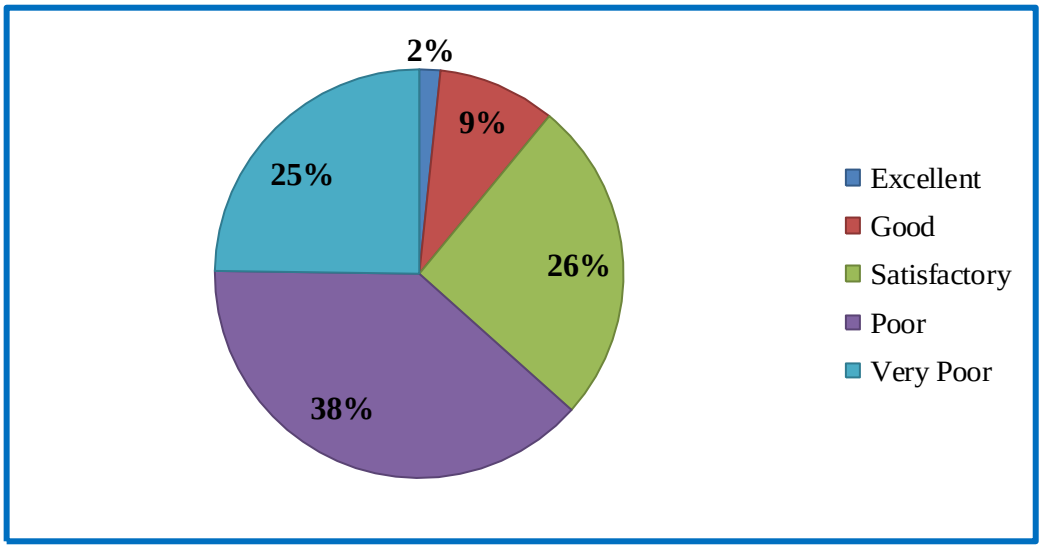


Figure 4.31 Users opinion about entry and exit facilities

Question 32: What about the security of passengers (off peak)?

In this question the users were asked about the security of passengers during off peak period. 34% of the respondents rated the security of passengers during off peak period as very poor while 33% rated it as neither good nor poor. Only 2% rated it as very good. Figure 4.32 shows user's opinion about security of passengers during off peak period.

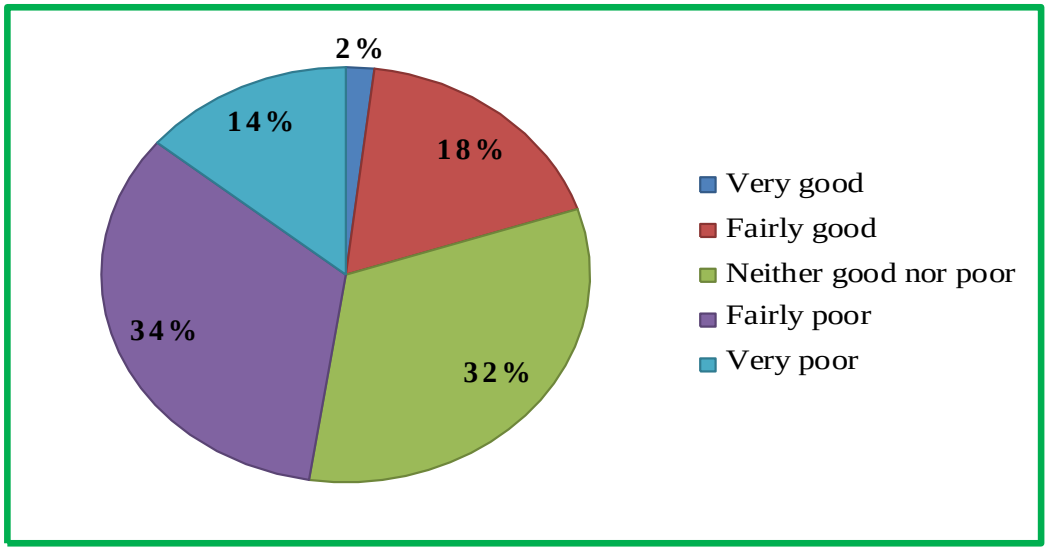


Figure 4.32 Users opinion about security of passengers (off peak)

Question 33: How was the driving safety (driver's skill)?

In this question the users were asked about the safety of driving. 37% of the respondents rated it as poor while 31% rated it as satisfactory. Only 1% of the respondents rated the safety of driving as excellent which means majority of the drivers are unskilled. Figure 4.33 shows user's opinion about the driving safety.

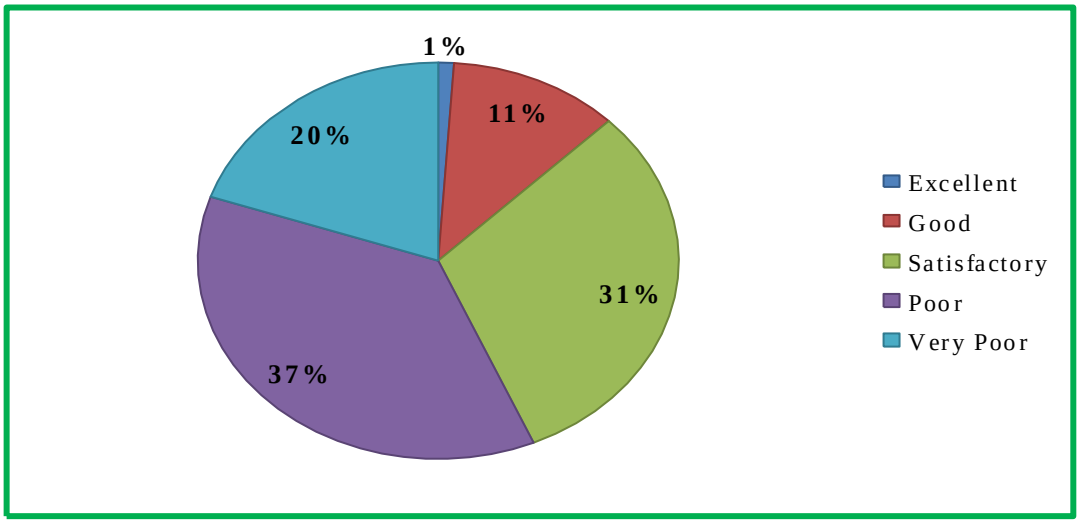


Figure 4.33 Users opinion about the driving safety (driver's skill)

Question 34: How was the behavior of driver?

In this question the users were asked about the behavior of driver. 31 % of the respondents replied that behavior of driver was fairly poor while 34% had neutral opinion as they rated the behavior of driver as neither good nor poor. Figure 4.34 shows user's opinion about the behavior of driver.

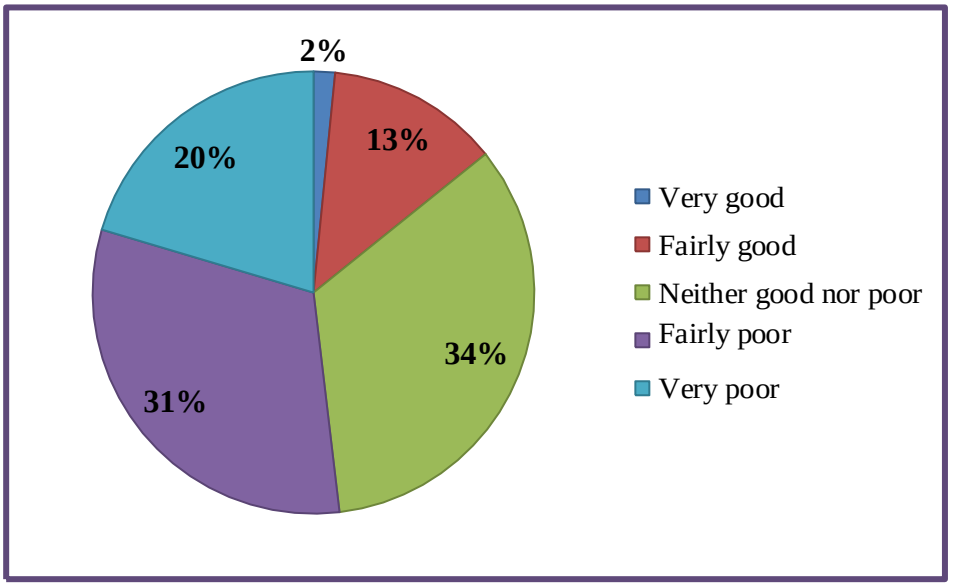


Figure 4.34 Users opinion about the behavior of driver

Question 35: How was the courtesy of helpers/contractors?

In this question the users were asked about courtesy of helpers/contractors. 40% of the respondents replied that the courtesy of helpers/contractors was poor whereas 28% of them replied courtesy of helpers/contractors was very poor. Almost none of them rated courtesy of helpers/contractors as excellent. Figure 4.35 shows user's opinion about courtesy of helpers/contractors.

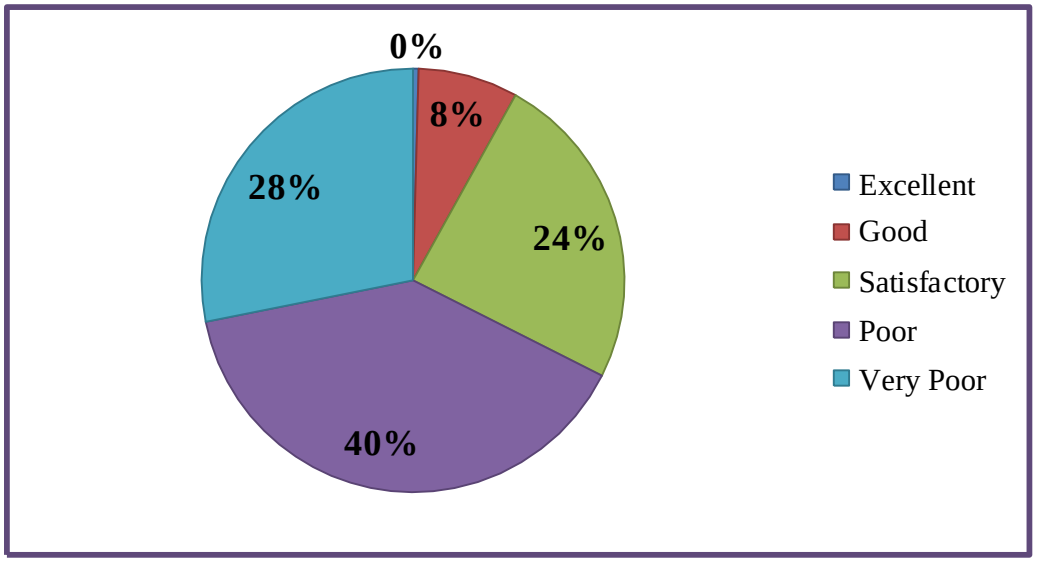


Figure 4.35 Users opinion about courtesy of helpers/contractors

Question 36: How was the reliability of local bus service?

In this question the users were asked about the reliability of local bus service. 34% of the respondents rated the reliability of local bus service as fairly poor while 32% rated it as neither good nor poor which means satisfactory. Only 2% of the respondents found the local bus service as reliable. Figure 4.36 shows user's opinion about reliability of local bus service.

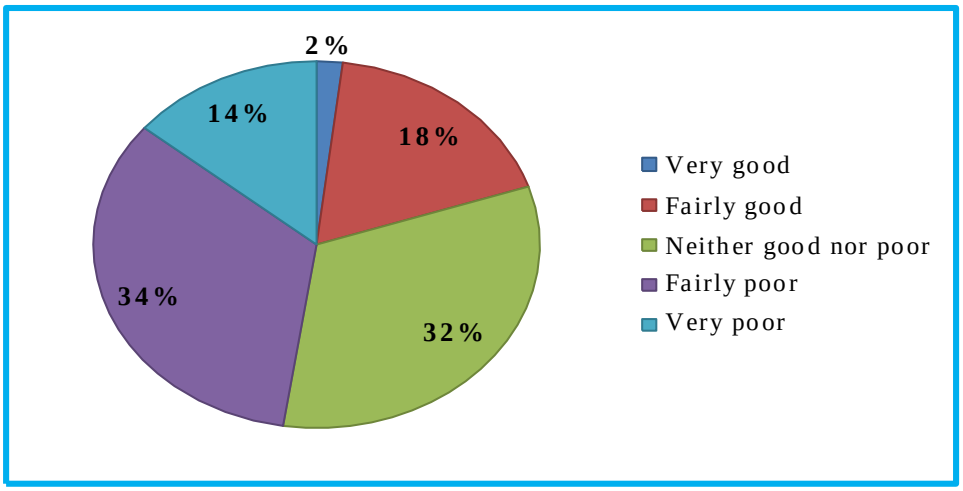


Figure 4.36 Users opinion about reliability of local bus service

Question 37: How much was the waiting time of the service?

In this question the users were asked about the waiting time of the service. 30% of the respondents replied the waiting time of the service was 10 min - 15 min while another 30% replied 15 min - 20 min was the waiting time of the service. Figure 4.37 shows user's opinion about waiting time of the service

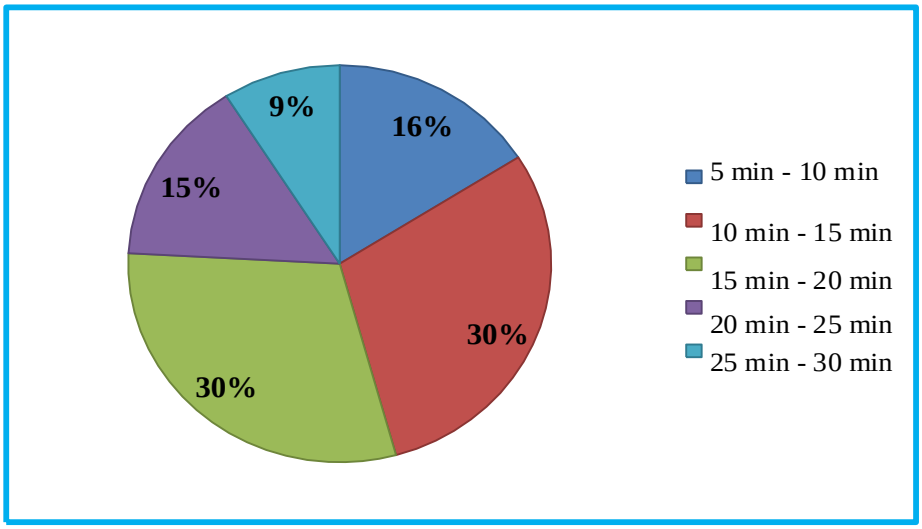


Figure 4.37 Users opinion about waiting time of the service

Question 38: **How was the accessibility of bus?**

In this question the users were asked about the accessibility of bus. 40% of the respondents rated accessibility of bus as poor while 40% rated the accessibility of bus as satisfactory. Almost no one was found to rate the accessibility of bus as excellent. Figure 4.38 shows user's opinion about accessibility of bus.

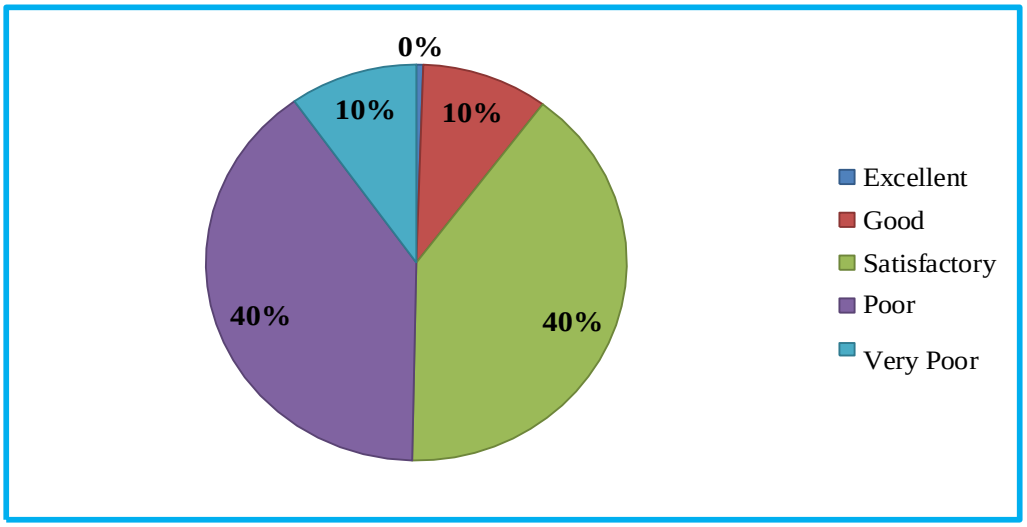


Figure 4.38 Users opinion about accessibility of bus

Question 39: **How was the travel time during office days?**

In this question the users were asked about travel time of bus during office days. 41% of the respondents replied that the travel time of bus during office days was poor while 33% said it was very poor. Almost none of the respondents rated the travel time during office days as excellent as it takes more time to reach same distance compared with the travel time on holidays. Figure 4.39 shows user's opinion about travel time of bus during office days.

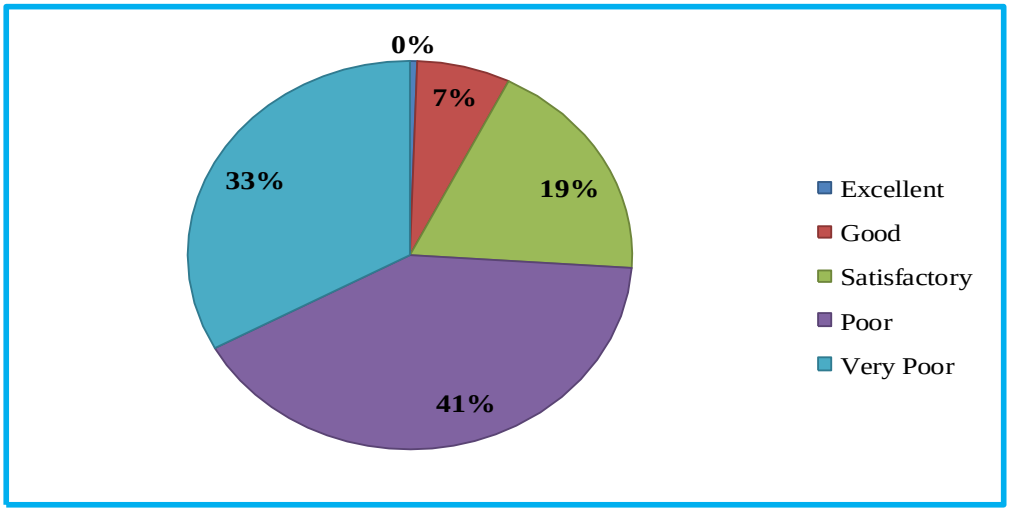


Figure 4.39 Users opinion about travel time of bus during office days

Question 40: **How was the travel time during holidays?**

In this question the users were asked about travel time of bus during holidays. 38% of the respondents replied that the travel time during holidays was satisfactory. On holidays the roads are often found to be free of traffics. So, it takes less time to reach the same distance compared to office days. Due to this, 34% of the respondents rated the travel time during holidays as good. Figure 4.40 shows user's opinion about travel time of bus during holidays.

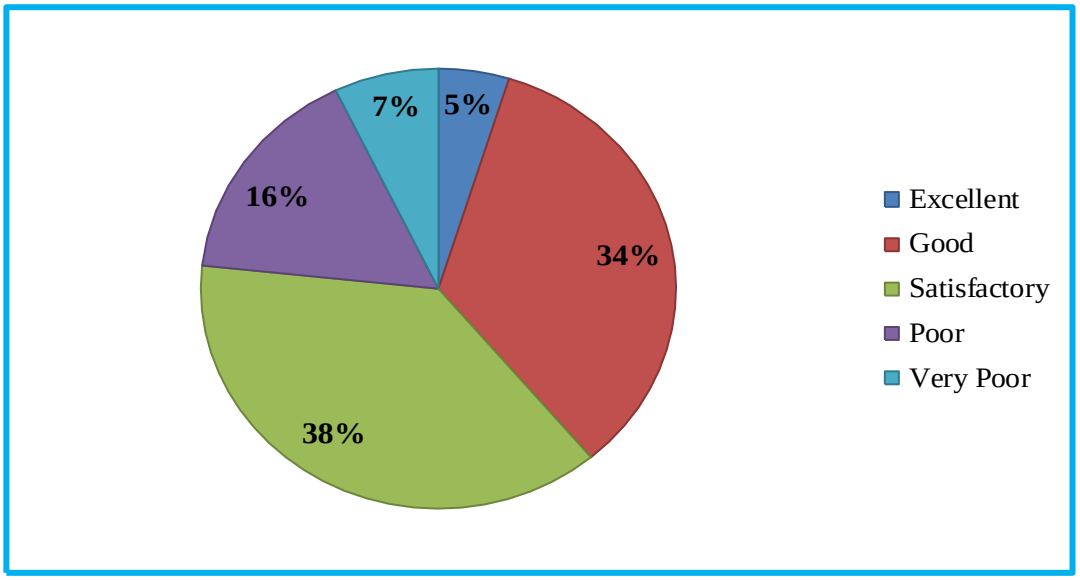


Figure 4.40 Users opinion about travel time of bus during holidays

Chapter 5

Conclusion & Recommendation

5.1 General

The study was performed to analyze and predict bus service quality in Dhaka City. Precisely, to investigate the key service factors affecting the bus service quality and explore overall passenger satisfaction. Major findings from this study have been summarized in the below section. Also, in this chapter, some recommendations have been provided to improve bus service quality and future study.

- Respondents rated convenience, frequency, punctuality, movement flexibility, sitting arrangements, availability of information, paying fare/ticketing system, fitness, seat condition, cleanliness of bus, noise level, movement flexibility (inside), Comfort level, physical condition of bus, safety at bus stop, cleanliness of bus stop, condition of bus stop, accessibility of bus stop, security in bus stop, level of personal safety, entry and exit, travel time (office days), security of passengers (off peak), driver safety (driver's skill), courtesy of helpers/contractors, reliability of local bus service, accessibility of bus as poor.

- Result shows that, speed of bus, transport Cost, lighting facility of bus, behavior of driver, accessibility of bus, travel time during holidays were rated as satisfactory.

- A total of 64% of the respondents have rated the bus service quality as unsatisfactory.

5.2 Recommendation for Improving Bus Service Quality

From this study, the key factors affecting bus service quality have been identified. So, to improve bus service quality the things that can be done are –

- The seat comfort level needs to be improved. As people really do care about the seat comfort level, the increase in seat comfort level will improve bus service quality.

- Safety at bus stop should be ensured. Besides men, there are women who use bus service. For women safety is a major concern. So, the safety at bus stop needs to be increased to improve bus service quality.
- Seat condition of bus needs to be improved as it is directly linked to the seat comfort level. Most often it is found that the seat conditions are poor and not comfortable. So, it is required to improve seat condition.

- Other improvements like physical condition of bus, fitness of bus, convenience of the service, accessibility needs to be improved so that the bus service quality improves.

- Most of bus users are students (34%) and private service holders (34%). Always they have the rush to reach their destination on time. So, they are concerned about the movement flexibility of the bus. So, the movement flexibility needs to be improved in a city like Dhaka where traffic jam is a major concern. If the movement flexibility can be increased, the overall service quality will improve

- Also, the requirement for other variable needs to be fulfilled to improve bus service quality.

At the end, one thing that can be predicted that, improved bus service quality will retain current user of the service and attract further users.
If the improved bus service can satisfy users in all aspect, people will tend to use bus service rather than any other service.
If people find the bus service more efficient than using private vehicle in future, they will use bus service instead of private vehicle.
So, the reduced number of private vehicles will reduce a certain portion of traffic jam.
So, in this way, improved bus service quality will indirectly play a role in reducing traffic jam.
Therefore, it is so important to improve bus service quality

5.3 Limitation of the Study & Recommendation for Future Study

Although the study was done thoroughly but there were some limitations. The limitations were as follows:

- The data has a gender bias. Only one-third of the participants were female. So more participation from women needs to be ensured.

- The number of total variables was 46. For better result the number of variables should be increased in future.

- The number of data taken for analysis was 956. To achieve better result the number of respondents should be increased in future.

- The number of survey location was 15. For better result, the number of locations should be increased.

- Sometimes, the respondents were not enthusiastic and sincere.

The findings from this study can be used by the city transportation officials of Bangladesh for improving the overall service quality of bus and hence attract further users. Also, this analysis will let service providers know what improvements are needed to be done to satisfy users and attract further users. So, this result would be of great help to them.

References

[1] Abdel-Aty, M.A. (2001). Using Ordered Probit Model to Study the Effect of ATIS on Transit Ridership. Transportation Research C, 9, pp. 265-277.

[2] Abdullah, H. N., & Hilmi, M. F. (2014). Service Quality as Determinant of Customer Loyalty. International Journal of Business and Innovation, 1(4), 1-11.

[3] Amemiya, T. (1985). Advanced Econometric. Harvard University Press, Cambridge, MA.

[4] Anderson, E. W., Fornell, C., & Lehmann, D. R. (1994). Customer Satisfaction and Word of Mouth. Journal of Service Marketing, 1(1), 5-17.

[5] Anable, J. (2005). "Complacent Car Addicts" or "Aspiring Environmentalist"? Identifying Travel Behavior Segments Using Attitude Theory. Transport Policy, 12(1): 65-78.

[6] Antoniou, C., Tyrinopoulos, Y. (2013). Factors Affecting Public Transport Use in Touristic Areas. International Journal of Transportation, 1(1), pp. 91-112.

[7] Ali, A. N. (2010). An Assessment of the Quality of Intra-Urban Bus Services in the City of Enugu, Enugu State, Nigeria. Theoretical and Empirical Researches in Urban Management, 6(15): 74-91.

[8] Ali, A. N. (2014). Assessment of Passenger Satisfaction with Intra-City Public Bus Transport Services in Abuja, Nigeria. Journal of Public Transportation, 17(1): 91-119.

[9] Banister, D. (2007). Unsustainable Transport. Routledge: London.

[10] Beeho, A.J. and R.C. Prentice (1997) Conceptualizing the Experiences of Heritage Tourists: A Case Study of New Lanark World Heritage Village. Tourism Management. Vol. 18(2): 75-87

[11] Bitner, M. J. (1990). Evaluating service encounters: The Effects of Physical Surroundings and Employee Responses. Journal of Marketing, 54(2), 69-82.

[12] Bojanic, D. C. (1996). Consumer Perceptions of Price, Value and Satisfaction in the Hotel Industry: An Exploratory Study. Journal of Hospitality and Leisure Marketing, 4(1), 5-22.

[13] Borhan, M. N., Syamsunur, D., Akhir, N. M., Yazid, M. R., Ismail, A., & Rahmat, R. A. (2014). Predicting the Use of Public Transportation: A Case Study from Putrajaya, Malaysia. Scientific World Journal, 2014, 784145.

[14] Boulding, W., Kalra, A., Staelin, R., Zeithaml, V. A. (1993). A Dynamic Process Model 0f Service Quality: From Expectations to Behavioral Intentions. Journal of Marketing Research,30(1), 7-27.

[15] Bunting, M. (2004). Making Public Transport Work. McGill- Queen's University Press: Canada.

Appendix 1

List of Existing Bus Routes in Dhaka City

Sl.	Name of the Buses	Routes
01	Akik Poribohon	Gabtoli ⇄ Mirpur 1 ⇄ Mirpur 10 ⇄ Kalshi ⇄ Jamuna Future Park ⇄ Natun Bazar, ⇄ Badda
02	Trust Line	Mirpur 10 ⇄ Cantonment ⇄ Banani ⇄ Notun Bazar
03	Tetulia Poribphon	Shiya Masjid ⇄ Shyamoli ⇄ Agargaon ⇄ Mirpur 10 ⇄ Kalshi ⇄ Bisshoroad ⇄ Airport ⇄ Uttara ⇄ Abdullahpur
04	Jabale Noor Poribohon, Ovijat Poribohon	Agargaon ⇄ Mirpur 10 ⇄ Kalshi ⇄ Bisshoroad ⇄ Airport ⇄ Uttara ⇄ Abdullahpur
05	Alif Poribohon, Rois Poribohon	Mirpur Sony Cinema Hall ⇄ Mirpur 10 ⇄ Kazipara ⇄ Shewrapara ⇄ Mohakhali ⇄ Gulshan 1 ⇄ Badda ⇄ Rampura ⇄ Bonoshri
06	Himachol Poribohon	Mirpur Sony Cinema Hall ⇄ Mirpur 10 ⇄ Kazipara ⇄ Shewrapara ⇄ Mohakhali ⇄ Gulshan 1 ⇄ Badda ⇄ Rampura ⇄ Khilgaon Khidma Hospital
07	Projapoti Poribohon, New Pallabi Express, Konok Poribohon	Gabtoli ⇄ Mirpur 1 ⇄ Mirpur 10 ⇄ Kalshi ⇄ Bisshoroad ⇄ Airport ⇄ Uttara ⇄ Abdullahpur
08	Bosumoti Poribohon, BRTC	Gabtoli ⇄ Mirpur 1 ⇄ Mirpur 10 ⇄ Kalshi ⇄ Bisshoroad ⇄ Airport ⇄ Uttara ⇄ Abdullahpur ⇄ Tongi ⇄ Gazipur
09	Robrob Poribohon	Gabtoli ⇄ Mirpur 1 ⇄ Mirpur 10 ⇄ Kalshi ⇄ Banani ⇄ Gulshan 2 ⇄ Gulshan 1 ⇄ Badda Link Road
10	Jabale Noor Poribohon 2	Gabtoli ⇄ Mirpur 1 ⇄ Mirpur 10 ⇄ Kalshi ⇄ Kuril Flyover ⇄ Natun Bazar
11	BRTC	Gabtoli ⇄ Mirpur 1 ⇄ Mirpur 10 ⇄ Kazipara ⇄ Shewrapara ⇄ Mohakhali ⇄ Kakoli ⇄ Banani ⇄ Gulshan 2 ⇄ Natun Bazar ⇄ Badda ⇄ Rampura
12	Everest Poribohon	Roopnagar Abasik ⇄ Mirpur 2 ⇄ Mirpur 1 ⇄ Khamarbari ⇄ Farmgate ⇄ Gulistan ⇄ Keraniganj
13	Mirpur Mission Poribohon Limited	Chiriyakhana ⇄ Mirpur 1 ⇄ Khamarbari ⇄ Farmgate ⇄ Press Club ⇄ Motijhil

14	Itihas Poribohon	Mirpur 10 ⇄ Mirpur 2 ⇄ Mirpur 1 ⇄ Gabtoli ⇄ Savar ⇄ Nobinogor ⇄ Chondra
15	Bihongo Poribohon	Mirpur 12 ⇄ Mirpur 11 ⇄ Mirpur 10 ⇄ Kazipara ⇄ Shewrapara ⇄ Mohakhali ⇄ Gushan 1 ⇄ Badda ⇄ Natun Bazar
16	Dhaka Metro Service	Mirpur 1 ⇄ Kolyanpur ⇄ Shyamoli ⇄ Asadgate ⇄ Shukrabad ⇄ Kolabagan ⇄ Science Lab ⇄ New Market ⇄ Nilkhet ⇄ Azimpur
17	Ashirbad Poribohon, Bihongo Poribohon	Roopnagar Abasik ⇄ Mirpur 2 ⇄ Mirpur 1 ⇄ Kolyanpur ⇄ Shyamoli ⇄ Asadgate ⇄ Shukrabad ⇄ Kolabagan ⇄ Science Lab ⇄ New Market ⇄ Nilkhet ⇄ Azimpur
18	New Vision	Chiriyakhana ⇄ Mirpur 1 ⇄ Khamarbari ⇄ Farmgate ⇄ Press Club ⇄ Motijhil
19	Dishari Poribohon	Chiriyakhana ⇄ Mirpur 1 ⇄ Gulistan ⇄ Keraniganj ⇄ Babubazar Bridge
20	Trans Silva Limited	Mirpur 1 ⇄ Technical ⇄ Kolyanpur ⇄ Asadgate ⇄ Kolabagan ⇄ Science Lab ⇄ Shahbag ⇄ Press Club ⇄ Gulistan ⇄ Motijhil ⇄ Jatrabari
21	Bikolpo Service 1/E	Mirpur 14 ⇄ Mirpur 1 ⇄ Technical ⇄ Kolyanpur ⇄ Asadgate ⇄Kolabagan ⇄ Science Lab ⇄ New Market ⇄ Nilkhet ⇄ Azimpur ⇄ TSC ⇄ Shahbag ⇄ Press Club ⇄ Gulistan ⇄ Tikatuli ⇄ Jatrabari
22	Alif (Bengal) Poribohon	Mirpur 10 ⇄ Mirpur 1 ⇄ Mazar Road ⇄ Beri Badh ⇄ Ashuliya ⇄ Fantasy Kingdom ⇄ Nondon Park
23	Pollobi Local Service	Asadgate ⇄ Shyamoli ⇄ Kolyanpur ⇄ Technical ⇄ Mirpur 1 ⇄ Mirpur 2 ⇄ Mirpur 6 ⇄ Cholontika Mor ⇄ Mirpur 7 ⇄ Mirpur 11 ⇄ Mirpur 12
24	Brihottor Mirpur, Titas Poribohon	Chiriyakhana, ⇄ Mirpur 1 ⇄ Gabtoli ⇄ Savar ⇄ Nobinogor ⇄ Chondra
25	Etc Poribohon	Kalshi ⇄ Mirpur Sare 11 ⇄ Mirpur 10 ⇄ Kazipara ⇄ Shewrapara ⇄ IDB ⇄ Khamarbari ⇄ Farmgate ⇄ Karwanbazar ⇄ Shahbag ⇄ Gulistan ⇄ Sadarghat
26	Shokolpo Poribohon	Chiriyakhana ⇄ Mirpur 1 ⇄ Mirpur 10 ⇄ Agargaon ⇄

		Bijoy Sarani ⇄ Farmgate ⇄ Bangla Motor ⇄ Mogbazar ⇄ Malibag ⇄ Komlapur
27	Nobokoli Poribohon	Mirpur 1 ⇄ Kolyanpur ⇄ Shyamoli ⇄ Agargaon ⇄ Notun Rasta ⇄ Mohakhali Flyover ⇄ Banani ⇄ Gulshan 2 ⇄ Notun Bazar
28	Boishakhi Poribohon	Savar ⇄ Gabtoli ⇄ Kolyanpur ⇄ Shyamoli ⇄ Agargaon ⇄ Notun Rasta ⇄ Mohakhali ⇄ Gulshan 1 ⇄ Badda Link Road ⇄ Notun Bazar
29	Desh Bangla Poribohon, Rupkotha Poribohon	Gabtoli ⇄ Abdullahpur
30	Konok Poribohon	Mirpur 12 ⇄ Mirpur 10 ⇄ Kakoli ⇄ Airport ⇄ Uttara ⇄ Abdullahpur
31	Provati Bonoshri Poribohon Limited	Gulistan ⇄ Polton ⇄ Malibag ⇄ Mogbazar ⇄ Saatrasta ⇄ Nabisko ⇄ Mohakhali ⇄ Bonani ⇄ Airport ⇄ Uttara ⇄ Abdullahpur ⇄ Tongi ⇄ Gazipur ⇄ Kaliyakoir
32	6 Number Motijhil Banani Transport Limited (Local)	1.Motijhil ⇄ Gulistan ⇄ Polton ⇄ Malibag ⇄ Mogbazar ⇄ Karwanbazar ⇄ Farmgate ⇄Bijoy Sarani ⇄ Mohakhali ⇄ Gulshan 1 ⇄ Gulshan 2 ⇄ Notun Bazar 2. Motijhil ⇄ Gulistan ⇄ Polton ⇄ Malibag ⇄ Mogbazar ⇄ Saatrasta ⇄ Nabisko ⇄ Mohakhali ⇄ Gulshan 1 ⇄ Badda Link Road ⇄ Notun Bazar
33	4 Number Alike Transport & BRTC Articulated (Wi-Fi Bus)	Balughat ⇄ Cantonment ⇄ Bijoy Sarani ⇄ Farmgate ⇄ Banglamotor ⇄ Shahbag ⇄ Polton ⇄ Gulistan ⇄ Motijhil
34	3 Number Airport – Bangabandhu Avenue Poribohon (Local)	Bongo Bazar ⇄ High Court ⇄ Shahbag ⇄ Farmgate ⇄ Mohakhali ⇄ Banani ⇄ Bisso Road ⇄ Airport ⇄ Uttara ⇄ Abdullahpur
35	9 Number Bus	College Gate ⇄ Shyamoli ⇄ Technical ⇄ Mirpur 1 ⇄ Mirpur 1
36	Torongo Bus Company, BRTC	Mohammadpur ⇄ Asadgate ⇄ Farmgate ⇄ Mohakhali ⇄ Titumir College ⇄ Gulshan 1 ⇄ Badda ⇄ Notun Bazar
37	Torongo Plus Transport Limited	Mohammadpur Bus Stand ⇄ Shankar ⇄ Dhanmondi 15 ⇄ Jhigatola ⇄ Science Lab ⇄ Shahbag ⇄ Kakrail ⇄ Malibag

		Railgate ⇄ Rampura Bazar ⇄ South Banashri
38	Projapoti Poribohon	Gabtoli ⇄ Mohammadpur ⇄ Asadgate ⇄ Mirpur 1 ⇄ Mirpur 10 ⇄ Kalshi ⇄ Bisshoroad ⇄ Airport ⇄ Uttara ⇄ Abdullahpur
39	Bahon Poribohon Limited	Mirpur 14 ⇄ Mirpur 10 ⇄ Mirpur 1 ⇄ Technical ⇄ Kolyanpur ⇄ Asadgate ⇄ Science Lab ⇄ Shahbag ⇄ Press Club ⇄ Motijhil ⇄ Komlapur ⇄ Mugda ⇄ Khilgaon
40	Nisorgo Poribohon Limited	Mirpur 14 Bus Stand ⇄ Mirpur 10 ⇄ Kazipara ⇄ Agargaon ⇄ Shyamoli ⇄ Asadgate ⇄ Mohammadpur ⇄ Dhakmondi 15 ⇄ Jhigatola ⇄ Science Lab ⇄ Dhaka College ⇄ New Market ⇄ Nilkhet ⇄ Eden College ⇄ Azimpur
41	Shotabdi Poribohon Limited	Mirpur 14 Bus Stand ⇄ Mirpur 14 ⇄ Mirpur 1 ⇄ Shyamoli ⇄ Asadgate ⇄ Mohammadpur ⇄ Shankar ⇄ Dhanmondi 15 ⇄ Jhigatola ⇄ Katabon ⇄ Shahbag ⇄ Gulistan ⇄ Motijhil ⇄ Notre Dame College
42	Cantonment Mini Service	Mirpur 14 ⇄ Kochukhet ⇄ Soinik Club ⇄ Kakoli ⇄ Banani
43	Rongdhonu Express	Adabor ⇄ Shiya Masjid ⇄ Shyamoli ⇄ College Gate ⇄ Asadgate ⇄ Kolabagan ⇄ Science Lab ⇄ Shahbag ⇄ Kakrail ⇄ Fokirapul ⇄ Motijhil ⇄ Doyaganj
44	Borak Poribohon	Polashi ⇄ Meghna Ghat
45	Rajdhani Express	Shaymoli ⇄ Asadgate ⇄ Kolabagan ⇄ Science Lab ⇄ Katabon ⇄ Shahbag ⇄ Gulistan
46	Super Bus	Gulistan ⇄ Shahbag ⇄ Farmgate ⇄ Shyamoli ⇄ Gabtoli ⇄ Savar ⇄ Nobinogor ⇄ Nandan Park
47	Dhaka Poribohon	Gulistan ⇄ Shahbag ⇄ Farmgate ⇄ Banani ⇄ Uttara ⇄ Gazipur ⇄ Shib Bari
48	Bolaka Poribohon	Motijhil ⇄ Komlapur ⇄ Malibag ⇄ Mogbazar ⇄ Nabisko ⇄ Mohakhali ⇄ Banani ⇄ Khilkhet ⇄ Airport ⇄ Uttara ⇄ Tongi ⇄ Board Bazar ⇄ Gazipur ⇄ Shib Bari
49	Himaloy Transport	Modonpur (Narayanganj) ⇄ Jatrabari ⇄ Bangladesh Bank ⇄ Mogbazar ⇄ Mohakhali ⇄ Tongi Bridge

50	Labbayek Poribohon	Jatrabari ⇄ Sayedabad ⇄ Mugda ⇄ Khilgaon ⇄ Malibag ⇄ Mogbazar ⇄ Karwan Bazar ⇄ Farmgate ⇄ Asadgate ⇄Shyamoli ⇄ Gabtoli ⇄ Savar
51	Mirpur Poribohon Service Limited	Mirpur 12 ⇄ Shewrapara ⇄ Gulistan Golap Shah Mazar
52	Mirpur United Service Limited, Bihongo Poribohon Limited	Mirpur 12 ⇄ Sadarghat Victoria Park
53	BRTC	Mirpur 12 ⇄ Mirpur 10 ⇄ Agargaon ⇄ Farmgate ⇄ Shahbag ⇄ Motijhil
54	Bikolpo Auto Service	Mirpur 12 ⇄ Mirpur 10 ⇄ Agargaon ⇄ Farmgate ⇄ Shahbag ⇄ Motijhil
55	Hazi Transport	Mirpur 12 ⇄ Mirpur 10 ⇄ Agargaon ⇄ Farmgate ⇄ Shahbag ⇄ Motijhil ⇄ Notre Dame College
56	Winner Transport Co Ltd	Eden College (Azimpur) ⇄ Kolabagan ⇄ Karwan Bazar ⇄ Nabisko ⇄ Mohakhali ⇄ Gulshan 1 ⇄ Badda Link Road ⇄ Kuril Bissho Road
57	Dip Bangla Poribohon Ltd	Azimpur ⇄ City College ⇄ Kolabagan ⇄ Panthopoth ⇄ Karwan Bazar ⇄ Nabisko ⇄ Gulshan Link Road ⇄ Gulshan 1 ⇄ Kuril Bissho Road
58	Suchona Brf	Azimpur Etimkhana Mor ⇄ Kolabagan ⇄ Asadgate ⇄ Farmgate ⇄ Mohakhali ⇄ Banani ⇄ Uttara House Building
59	Falgun Art Transport Private Limited	Azimpur Girls School & College ⇄ Science Lab ⇄ Shahbag ⇄ Kakrail ⇄ Mouchak ⇄ Malibag ⇄ Rampura ⇄ Badda ⇄ Kuril Bissho Road ⇄ Uttara House Building
60	BRTC	Eden College ⇄ Science Lab ⇄ Kolabagan ⇄ Asadgate ⇄ Khamarbari ⇄ Kakoli ⇄ Bonani ⇄ Abdullahpur
61	Suprovat Poribohon	Sadarghat Victoria Park ⇄ Kakrail ⇄ Mouchak ⇄ Malibag Railgate ⇄ Badda ⇄ Notun Bazar ⇄ Basundhara ⇄ Kuril ⇄ Uttara ⇄ Tongi ⇄ Gazipur
62	Azmery Glory Limited, Skyline Express Limited	Sadarghat Victorial Park ⇄ Gulistan ⇄ Kakrail ⇄ Malibag ⇄ Mogbazar ⇄ Mohakhali ⇄ Airport ⇄ Abdullahpur ⇄ Gazipur Bypass ⇄ Chondra

63	Raja City Poribohon Limited, FTCL Moitri Poribohon Limited	Mohammadpur ⇄ Shankar ⇄ Star Kabab ⇄ Jhigatola ⇄ City College ⇄ Science Lab ⇄ Shahbag ⇄ Press Club ⇄ Gulistan ⇄ Arambag ⇄ Notre Dame College
64	ATCL	Mohammadpur ⇄ Asadgate ⇄ Shukrabad ⇄ Kolabagan ⇄ City College ⇄ Science Lab ⇄ Katabon ⇄ Shahbag ⇄ Press Club ⇄ Gulistan ⇄ Arambag ⇄ Notre Dame College
65	Swapno	Mohammadpur ⇄ Farmgate ⇄ Mohakhali ⇄ Gulshan ⇄ Damra staff ⇄ Quarter
66	Shadin	Mohammadpur ⇄ Asadgate ⇄ Kawranbazar ⇄ Banglamotor ⇄ Eskaton
67	Welcome	Motijheel ⇄ Science Lab ⇄ Shahabagh ⇄ Gabtoli ⇄ Savar ⇄ Nobinogor ⇄ Chondra

END