

Original Article

# Passenger Satisfaction towards Services of Public Transportation: Butwal – Bhairahawa

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**Abstract** - This study aims to evaluate passenger satisfaction towards services of public transportation, which is one major issue in the present public transportation system. The research design used in this study is descriptive and inferential statistics. This study is based on a primary source of data. The structured questionnaire was carried out during August and September 2019. The population of this study includes the entire passenger using public transportation. A purposive convenient sampling method was adopted to collect the sample data. 105 structured questionnaires were distributed to the respondent. Among them, only 92 were returned with an 87.6% response rate. The satisfaction level of services is evaluated with 11 parameters viz. comfort, cleanliness, access for various disabled people, access for children and old aged people, availability of timetable and route information, seating arrangement and space for standing, fare, the behaviour of conductor, driver and passenger, and speed. Data processing is done with the help of an SPSS. Frequency tables and paired samples test is used to make the comparison of different groups of the respondents and mode of transportation. The result shows that the service provided by microbus is better than that of a/c bus, but the passenger was more satisfied by the service of a/c bus.

**Keywords** - Consumer Satisfaction, Public Transportation, Likert Scale, Paired Sample Statistics.

## I. INTRODUCTION

The increase in population and derived demand for transportation has added the load in the public transportation system. The present public transportation system prevalent in the Butwal to Bhairahawa and Bhairahawa to Butwal is unsystematic and uncomfortable. With more frequent problems in Butwal and Bhairahawa route, good regional level policy and good quality service have become essential to improve the public transportation sector in the area of the Butwal and Bhairahawa route. Over crowdedness, long and inconsistent travel time, poor and unreliable services have also become part of the public transportation system. Not to mention their own internal problems, the need to improve the operational performance and standard of

the public transport is urgently required. The level of service technique and performance indicator analysis technique can be applied as diagnostic tools to identify operational dissatisfaction levels at the route level and network level. However, no attempts have been made so far to utilize these analyses in Nepal. Now, more than ever, public transport operators should emphasize the monitoring and improvement of the services provided, or else shall more worsen the present traffic condition with the increased car and bike ownership. Quality of service in public transit reflects the passengers' perception of transit performance.

### History of Public Transportation in Nepal

The Department of Roads was established in Nepal in 1960. From this year, the road network has been expanding according to the priority of our country among all the modes of transport. The development of the Strategic Road Network (SRN) has been rapidly increasing in the country. By using both external and internal resources, it has expanded from 376 km in 1951 to 8,323 km in 1997 and 9,400km in 2007 and going on. The strategic road network is managed under Public Road Act 1971, and development and maintenance are being developed as per National Transport Policy 2002. Before 2003, all types of roads were planned, constructed and maintained by DOR. In 2003, the Government decentralized management of roads keeping a strategic road network (highways, feeder roads and strategic urban roads) within DOR, district and rural roads within DDC and urban roads within municipalities (Local Self Government Act 1999 and National Transport Policy 2002). DOR has prepared a Priority Investment Plan (PIP 2007) for 10 years and 20 years Road Master Plan. The objective of this plan is to provide reliable and safe road access within 4 hours walking distance of settlements in hills and 2 hours in Terai. This is complemented by the Local Road Network (LRN) developed and managed by the DDCs and Municipalities. (PROJECT, 2010).

## II. LITERATURE REVIEW

The urbanization process increases significantly, and the demand for urban services should be increased in which the efficiency and the availability of transport depend. It has played a great role in the transformation of society and facilities modernization. By doing so, it has changed the lifestyle of society from traditional to modern. The



level of motorization and cost of its accommodation directly correlates with trends in per capita income. The demand for urban transport is affected by the city size and population. The urban transport system should be modified and structured to contribute and operate within the principles and limitations of urban development. (Jamet, 1998)

The public transport system was first introduced in the United States in 1920 AD. After that year, the United States upgraded public transport by studying and knowing its importance. They become more common afterwards. With the increase in the number of people in the world and their need for comfort, public transport facilities started to grow. However, with the increase in the number of buses and other modes of transportation, increasing congestion and pollution started inflicting cities. Thus, other modes of transportation such as; rails, metro trains, rapid trains, mass transit buses were introduced. (Albert, 2009)

The survey conducted by the World Bank in 2013 in Kathmandu valley found out some facts regarding the dissatisfaction of passengers towards public transportation services. Overcrowding (75%), personal insecurity (26%), reckless driving and fear of accidents (17%) were sought as major problems in the service. The study also found that 26% of women of age group 19-35 had to experience inappropriate touching on public transport.

Mounica (2014) conducted the research entitled 'Customer Satisfaction Level in Public Bus Service in Tirupati, Andhra'. The present study was carried out to evaluate the Customer Satisfaction Level in Public Bus Service in Tirupati, Chittoor District of Andhra Pradesh. Primary data was collected from 102 respondents of different economic strata by adopting a simple random sampling technique. Correlation analysis was performed on the data obtained, and it shows that certain attributes show a strong correlation with the overall satisfaction with the bus service, while certain quality attributes don't display a correlation with the overall satisfaction of the bus transport. The overall satisfaction of the customers on Tirupati public bus transport is below average.

Elobi and Mazzulla (2009) conducted research related to air passengers, and they found that customers want not only comfortability but also cleanliness, and it affects their satisfaction level. Aworemi et al. (2008) conducted research on the public and private transport system and suggested that socio-economic factors also play an important role. Further studies conducted by Zineldin (2005); Zheng and Jiaqing (2007) all concluded that customers want the best service, whether it would be given by private companies or public companies and by improving quality and responsiveness, customers could be satisfied, which would ultimately be helpful for the reputation and profit of the companies.

Bhattarai (2017) conducted the research entitled 'Study on Efficiency and Satisfaction level of Public Transportation within Kathmandu Inner Ring Road'. The average travel time, waiting time, running speed, and average passenger patronage in the study area have been accessed by using the moving observer method. Those parameters were used for the analysis of public transportation efficiency using the DEA model. Similarly, the satisfaction level of the various modes of public transportation has been assessed within the revealed questionnaire survey. SPSS has been used to check the statistical significance of the questionnaire. The result obtained from pair sample statistics shows that passengers were not satisfied with both bus and micro-bus services in overall aspects. From the two-tail pair t-test, the bus provides better performance with respect to six indicators, whereas there is no difference in the significance level for the remaining four indicators. Overall, the bus proves to be a better mode of public transportation in perspective of both efficiency and satisfaction level. This study identifies the major service indicator for the improvement of public transportation.

### III. METHODOLOGY

#### A. Research design

The research design used in this study is descriptive and inferential statistics. This design has been adopted for searching adequate information about passenger satisfaction towards services of public transportation. This design also has been used to analyze the satisfaction level based on personal factors like age, gender, the purpose of the journey, reason to ride public transportation etc.

#### B. Nature and sources of data

This study is fully based on a primary source of data. In order to visualize the people perception towards public transportation, a structured questionnaire survey has been carried out to the public transportation user during September and October 2019. The structured questionnaire survey has been collected from the passenger using the public transportation services within the route, either by collecting at the station or during the trip.

#### C. Population and sample

The population of this study includes the entire passenger using public transportation in this route. There is no verified source of the exact finding of the population. Therefore, a purposive convenient sampling method was adopted to collect the sample data. 105 structured questionnaires were distributed to the respondent. Among them, only 92 were returned with an 87.6% response rate.

#### D. Method of data analysis

The primary data analysis was carried out on the basis of responses derived from the structured

questionnaire survey. In the first section of the questionnaire, respondents were asked to provide background information on their age, gender, the purpose of the journey, reason to ride public transportation etc. The second section was designed to 5-point Likert Scale items, where respondents were asked to state their level of satisfaction and dissatisfaction indication 1 to 'strongly dissatisfied' and so on up to 5 to 'strongly satisfied'. Data processing is done with the help of an SPSS (Statistical Package for Social Science). Frequency tables and paired sample statistics are used to make a comparison of different groups of respondents.

#### IV. DATA ANALYSIS AND INTERPRETATION

##### A. Personal Information

The personal information for this study includes age, gender, the purpose of the journey, reason to ride public transportation etc. The following are some of the findings that were obtained with regard to personal information.

##### Classification of Respondent by Age

The study of respondents was classified according to age. The distribution of respondents by age is shown in the below table.

Table 3.1 Age of Respondent

Age of Respondent	Freq.	Percent	Valid Percent	Cumulative Percent
15-29	51	55.4	55.4	55.4
30-45	30	32.6	32.6	88.0
46-60	11	12.0	12.0	100.0
Total	92	100.0	100.0	

According to the table 3.1 above, respondents of age distribution was as follows: 15 to 29 were the majority at 55.4%, followed by those aged 30 to 45 years at 32.6%. The study also shows that 12% of the respondents were aged 46 to 60 years.

##### B. Classification of Respondent by Gender

The study of respondents was classified according to gender. The distribution of respondents by gender is shown in the below table.

Table 3.2 Gender of Respondent

Gender of Respondent	Freq.	Per cent	Valid Percent	Cumulative Percent
Male	31	33.7	33.7	33.7
Female	61	66.3	66.3	100.0
Total	92	100.0	100.0	

The gender of the respondents in demography was 33.7 % male, while female respondents were 66.3%. The study, therefore, indicates that the majority of respondents were female.

##### C. Classification of Respondent by Purpose of Journey

The study of respondents was classified according to the purpose of the journey. The distribution of respondents by the purpose of the journey is shown in the below table.

Table 3.3 Purpose of Journey

Purpose of Journey	Freq.	Per cent	Valid Percent	Cumulative Percent
Business	11	12.0	12.0	12.0
Refreshment	6	6.5	6.5	18.5
Education	40	43.5	43.5	62.0
Shopping	35	38.0	38.0	100.0
Total	92	100.0	100.0	

According to the table above, respondents purpose of the journey was as follows: The majority of respondents were using the public vehicles for education purposes at 43.5%, followed by respondents having shopping purposes at 38.0%. The study also shows that 12% of the respondents had a business purpose, and 6% were travelling for refreshment.

##### D. Classification of Respondent by Reason to Ride public vehicle

The study of respondents was classified according to the reason to ride public vehicles. The distribution of respondents by reason to ride public vehicles is shown in the below table.

Table 3.4 Reason to Ride Public Vehicle

Reason to ride public vehicle	Freq.	Per cent	Valid Percent	Cumulative Percent
Cheaper than driving car/bike	55	59.8	59.8	59.8
I do not drive	18	19.6	19.6	79.3
No taxi facilities	19	20.7	20.7	100.0
Total	92	100.0	100.0	

According to the table above, respondents reason to ride public vehicles was as follows: Majority of the respondent was using the public vehicle as it is cheaper than driving a car/bike at 59.8%, 20.7% ride as there are no taxi facilities and 19.6% use the public vehicle as they do not drive.

##### E. Satisfaction Level Assessment

92 data were collected for the satisfaction level assessment between a/c bus service provider and micro-bus service provider. Questionnaires were prepared, and passengers were asked to fill it during their ride in the respective public transport mode (a/c bus or micro-bus) or in the stop station. Thus, collected data obtained were checked for statistical significance with a 95 % level of confidence. SPSS model was used to analyze the satisfaction level based on the data collected on a/c bus and micro-bus service. For higher satisfaction levels, a value of 1

was given, whereas, for low satisfaction, a value of 5 was given.

A value of 2.5 is taken as the average mean. When the value obtained for the particular types of service

is lower than 2.5, the service provided is said to be satisfactory, whereas if the mean is greater than 2.5, the service provided is said to be unsatisfactory.

**Table 3.5 The Paired Samples Statistics table**

		Mean	Std. D	Std. Error Mean
Pair 1	Conductor behavior in micro bus	2.59	.974	.102
	the behavior of conductor in A/C bus	3.08	.855	.089
Pair 2	Driver behavior in micro bus	2.83	.859	.090
	Driver behaviour in A/C bus	3.14	.622	.065
Pair 3	Passenger behavior in micro bus	3.33	.665	.069
	Passenger behaviour in A/C bus	3.27	.853	.089
Pair 4	Comfort of the microbus	2.28	.599	.062
	The comfort of the a/c bus	3.53	.637	.066
Pair 5	Cleanliness of the micro bus	2.15	.710	.074
	Cleanliness of the A/C bus	3.70	.463	.048
Pair 6	Fare of micro bus	3.07	1.239	.129
	Fare of A/C bus	2.92	.997	.104
Pair 7	Speed of micro bus	2.99	1.032	.108
	Speed of A/C bus	3.34	.700	.073
Pair 8	Availability of timetable of micro bus	2.26	1.118	.117
	Route information of A/C bus	2.73	.772	.080
Pair 9	Access for disable people in micro bus	1.62	.488	.051
	Access for disabled people in A/C bus	3.29	.603	.063
Pair 10	Access for children and old aged people in a micro bus	2.66	1.072	.112
	Access for children and old people in A/C bus	3.00	1.204	.126
Pair 11	Seating/ standing arrangement in micro bus	2.25	.736	.077
	Seating/ standing arrangement in A/C bus	3.40	.493	.051

The satisfaction level of the bus and the micro bus has been compared based on a paired sample test, and

the summary has been tabulated in the form of a table. (Refer Table 3.6)

**Table 3.6 Paired Samples Test**

		Mean	Std. Dev.	Std. Error Mean	t	d.f	Sig.
Pair 1	Conductor behavior in micro bus - behavior of conductor in A/C bus	-.489	1.426	.149	-3.291	91	.001
Pair 2	Driver behavior in micro bus - Driver behavior in A/C bus	-.315	1.157	.121	-2.613	91	.011
Pair 3	Passenger behaviour in the micro bus- Passenger behaviour in A/C bus	.054	1.052	.110	.495	91	.621
Pair 4	comfort of the microbus - Comfort of the A/C bus	-1.250	1.034	.108	-11.598	91	.000
Pair 5	cleanliness of the microbus - cleanliness of the A/C bus	-1.543	.831	.087	-17.817	91	.000
Pair 6	Fare of the micro bus - fare of A/C bus	.141	1.552	.162	.873	91	.385
Pair 7	Speed of micro bus- speed of A/C bus	-.348	1.010	.105	-3.302	91	.001
Pair 8	Availability of timetable of micro bus - route information of A/C bus	-.467	1.143	.119	-3.922	91	.000
Pair 9	Access for disable people in micro bus - access for disable people in A/C bus	-1.674	.613	.064	-26.183	91	.000
Pair 10	Access for children and old aged people in the micro bus - Access for children and old people in A/C bus	-.337	1.295	.135	-2.496	91	.014
Pair 11	Seating/ standing arrangement in micro bus - seating/ standing arrangement in A/C bus	-1.152	.876	.091	-12.612	91	.000



As per Table 3.6, with respect to the criterion of passenger behaviour and fare, there is no significant difference in these parameters of both microbus and a/c bus in the assessment of p-value. The remaining nine criteria of satisfaction show there is a significant difference between the service provided by microbus and a/c bus. As the mean is negative, it shows that the service provided by the micro bus is better than that of the a/c bus. As the entire indicator has higher values for a/c bus, it can be said that users are a little more satisfied by the service of a/c bus.

## V. CONCLUSION

This study set out to investigate passenger satisfaction towards the services of public transportation within the Butwal-Bhairahawa route. From the above analysis, with respect to the criterion of passenger behaviour and fare, there is no significant difference in these parameters of both microbus and a/c bus in the assessment of p-value. The remaining nine criteria of satisfaction show there is a significant difference between the service provided by microbus and a/c bus. The result shows that the service provided by microbus is better than that of a/c bus, but as the entire indicator has higher values for a/c bus, it can be said that passengers were more satisfied by the service of a/c bus.

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