A Mini Research Report

On

SERVICE QUALITY AND CUSTOMER SATISFACTION TOWARDS PUBLIC TRANSPORTATION

BY

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SUBMITTED

to

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Baisakh, 2080

Certification of Authorship

We hereby corroborate that we have researched and submitted the final draft of Mini Research Project Report entitled "Service Quality and Customer Satisfaction towards Public Transportation". The work of Mini Research Report has not been submitted previously nor has been proposed and presented as part of requirements for any other academic purposes. The assistance and cooperation that we have received during this research work has been acknowledged. In addition, we declare that all information sources and literature used are cited in the reference section of the Mini Research Report.

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Report of Research Committee

Assoc. Prof. Pitambar Sapkota, Asst. Prof. Naba Raj Bhandari and Mr. Santosh Jung Kunwar have effectively defended the Mini Research proposal entitled " Service Quality and Customer Satisfaction towards Public Transportation". The research committee has officially approved the title for the Mini Research Report to proceed further. It is advised to adhere to the prescribed format and guidelines for the mini-research and submit the Mini Research Report for evaluation and viva voce examination.

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Abbreviations

ANOVA	:	Analysis of Variances
AVE	:	Average Variance Extracted
CBS	:	Central Bureau of Statistics
CR	:	Composite Reliability
DoTM	:	Department of Transport Management
HTMT	:	Heterotrait- Monotrait
JICA	:	Japan International Cooperation Agency
LBC	:	Lumbini Banijya Campus
MBA-BF	:	Master in Business Administration-Banking and Finance
MoPIT	:	Ministry of Physical Infrastructure and Transport
NFI	:	Normed Fit Index
RATER	:	Reliability, Assurance, Tangibles, Empathy, and Responsiveness
RECSA	:	Reliability, Extent of Service, Comfort, Safety and Affordability
SERVQUAL	:	Service Quality
SRMR	:	Standardized Root Mean Square Residual
S.D	:	Standard Deviation
TU	:	Tribhuvan University
VIF	:	Variance Inflation Factor
&	:	And

Abstract

This study attempts to examine the Service Quality and Customer Satisfaction of Public Transportation in Rupandehi district. For this purpose, SERVQUAL RECSA model was used to examine the level and influence of service quality on customer satisfaction of public transportation.

Descriptive and causal research designs were employed in the study. The respondents of the study were public transportation users from Butwal sub- metropolitan city. The data from 390 respondents were examined from the convenience sampling method. Pearson's correlation test revealed that all the factors i.e. safety, comfort, affordability, and reliability were positively correlated with customer satisfaction, whereas responsiveness is strongly correlated. Moreover, there is also the positive and significant effect of safety, comfort, affordability, reliability and responsiveness on passengers satisfaction. It means passenger of microbus of Rupandehi perceive that they get satisfaction, if there is provided safety, comfort, affordable fare of bus and responsiveness of bus staffs. However, it is found that the responsiveness of service is highly influencing factor in customer satisfaction among comfort, safety, affordability, and reliability.

Keywords: *SERVQUAL, RECSA, Customer Satisfaction*

Chapter I

Introduction

Background of the study

Public transportation is a shared passenger transport service that the general public can use to get from one place to another. It is not to be confused with other transportation options like sharing a car, taxis, or hired cars, which are not shared by other people if a private arrangement is reached. Therefore, public transportation options may comprise buses, trains, air carriers, and fast transits, depending on the needs of the person or country (Ranawana & Hewage, 2015). Tran and Kleiner (2005) define public transportation is any mode of transportation that offers the general public continuous general or specialized transit, such as trolleys, buses, subways, trains, and ferry boats. The authors also show how important public transit is, showing them that it improves up everyday life, reduces costs, and generates employment opportunities. Chee and Jacqueline (2013) stated that the mobility with which individuals can move around for their everyday tasks is greatly enhanced by public transportation.

An effective public transportation system maximizes the use of urban space, offers cost-effective, efficient mobility, and facilitates access to jobs, educational institutions, social and recreational activities, and business activities. Although a conventional bus can accommodate about forty times more passengers than a car, it takes up the same amount of available space. In the context of Kathmandu, where over the previous ten years, motorization has expanded by 12% annually and the population has increased by 4.32% annually (CBS, 2011; DoTM, 2013), while the modal share of public transportation has stayed constant (MoPIT/JICA, 2012). The first public transportation in Nepal was introduced by Nepal Transport Service in September 1959 with a local bus service between Kathmandu and Patan. It had a fleet of eleven buses at its peak, carrying over 10,000 people every day, before it closed in 1966. A cooperative called Sajha Yatayat began operating public transit in Nepal in 1961–1962, serving commuters traveling between districts as well as within the Kathmandu Valley. Electric trolley buses were first used in 1975 to travel the 13-kilometer distance between Tripureshwor and Suryabinayak. While Sajha Yatayat and the Trolleybuses both offered efficient public transportation for many years in Kathmandu, they lost their luster after 1990 due to negative management and political engaging at a time when the

private sector was beginning to make significant inroads into the transportation industry. More operators entered the market as public transportation was privatized, but as a result of the share system and ineffective government planning and oversight, services gradually declined (Clean Energy Nepal, 2014). A micro bus typically refers to a small passenger vehicle designed to carry a small number of passengers, usually up to 30 people. In the context of Rupandehi district, specially serving the area which travel by the distance of 30 km might imply a specific route that microbuses operate from Butwal sub- metropolitan city.

According to Girma and Woldetensae (2022), transportation is essential for the movement of people and things, and it's important to keeping the economy strong. The traditional bus is the most widely used form of public transportation in the majority of developing nations because to its low initial and ongoing expenses, adaptability as a route and connectivity into town and city centers. Moreover, the rapid increase in the utilization of public bus transportation may be related to its numerous advantages, which encompassed enhanced individual and financial opportunities, decreased traffic and fuel usage, and decreased quantities of carbon dioxide. In light of this, public transportation is seen as essential to addressing the nation's energy, economic, and environmental issues as well as a means of achieving enhancing the quality of life.

Quality is defined as fulfilling the requirements of the customer in an effort to satisfy their needs to make sure that clients keep coming back to the firm for repeat purchases, it's critical to measure the quality of the service. Similar concepts apply in the transport industry. In the event that the consumer is satisfied with the performance of bus, they will use it again. The SERVQUAL model of Parasuraman et al. (1988) proposed a five-dimensional construct of perceived service quality-tangibles, reliability, responsiveness, assurance, and empathy- with items reflecting both expectation and perceived performance. Additionally, it's likely that consumers will keep using the bus service since they believe it will meet their needs. Service quality can be defined as the degree to which the customer feels that the service they received meets or exceeds their expectations.

Customer satisfaction is considered to be the most crucial consideration Khurshid et al. (2012). When a business fails to satisfy the needs of its customers, they will be replaced by another, therefore businesses that provide a variety of services need to be particularly careful because certain behaviors are crucial to attracting in and maintaining customers.

Customer satisfaction can be defined as the whole of a customer's assessment of an offering's performance currently. Sigala (2004) experience of expected results being fulfilled might be characterized as satisfying. Anderson et al. (2009) state that service operational failures, including transportation delays, have an impact on consumers' pleasure. Customers get influenced as a result, which makes them dissatisfied. Customer satisfaction has been affected by employee friendliness, particularly bus drivers' actions in connection to service frequency.

Statement of the Problem

Public transportation is important for economic development and growth because it makes it easier for labor, raw materials, finished goods, and jobs to be created in the economy, businesses and individuals who have no private vehicles can carry their products with the help of public transportation facilities (Cavana et al., 2007). However, the increase in private vehicle ownership is an immediate result of public transportation's inefficiency. Evaluating how passengers feel about public transportation and suggesting ways to enhance it are essential phases. Furthermore, analyzing the effectiveness of micro bus is essential for improving the public transportation system as overall. To better serve passengers and reduce the increasing demand on private vehicles, there should be adopted different measures that can discourage the use of inefficient vehicles and provide more efficient public transportation services.

In recent years, the global transportation landscape has witnessed significant shifts in consumer preferences, technological advancements, and environmental concerns. Amidst these changes, public transportation systems play a pivotal role in providing efficient, sustainable, and accessible mobility solutions for millions of individuals worldwide. However, ensuring high service quality and customer satisfaction remains a persistent challenge faced by public transportation authorities across international contexts. Nepal faces significant challenges in its public transportation sector, hindering the provision of efficient, safe, and accessible mobility for its citizens.

Horsu and Yeboah (2015) employed the RECSA model in his study. This study looks at five important factors to determine how service quality and customer satisfaction relate to each other in Nepal's transportation industry i.e. affordability, comfort, safety, driver behavior, and continuous service. Customer satisfaction and the relationship are

positively and significantly correlated, underscoring the significance of service quality in influencing passengers' impressions. It was found that continuous service, comfort, affordability, and dependability have significant positive effects on consumer satisfaction, safety has a favorable but little impact. The research also indicates that driver behavior has a negative impact on customer satisfaction, indicating that addressing this issue could improve the perception of overall service quality. The importance of addressing various factors, including driver behavior, to improve passengers' overall experience and satisfaction levels is highlighted by these findings, which highlight the complex relationship between service quality and customer happiness in Nepal's public transportation system.

Very few studies have examined the quality of services in public transportation in Nepal, considering the reality that numerous studies have examined service quality in various sectors. Public transportation plays a vital role in both urban and rural parts of Nepal; yet, there is a significant gap between the quality of service that these systems offer and the requirements and expectations of those who use them. Insufficient service quality, poor route service, overcrowding safety issues, insufficient facilities, outdated ticketing systems, and inconsistent fare structure are some of the common issues that highlight this gap. Therefore, passengers frequently feel irritated, dissatisfied and satisfied with the public means of transportation that are available to them. In order to improve service quality as well as customer satisfaction with public transportation in Nepal focusing the Rupandehi District, it is important that these issues be identified and solved. On the basis of above issue following questions are raised;

- Is there any difference in perceptions of safety, comfort, affordability, reliability and responsiveness among distinct gender and age groups?
- Is there any relationship between safety, comfort, affordability, reliability and responsiveness and customer satisfaction towards public transportation?
- Are there any effects of safety, comfort, affordability, reliability and responsiveness on customer satisfaction towards public transportation?

Objectives of the study

The general objective of this study is to find out the service quality and customer satisfaction towards public transportation. The specific objectives are as follows:

- To determine the differences in perceptions of safety, comfort, affordability, reliability and responsiveness among distinct gender and age groups.
- To measure the relationship between safety, comfort, affordability, reliability, responsiveness and customer satisfaction.
- To examine the effects of safety, comfort, affordability, reliability and responsiveness on customer satisfaction.

Hypothesis

The hypothesis of the study is as mentioned below:

H_1: There is significant effect of safety on customer satisfaction.

H_2: There is significant effect of comfort on customer satisfaction.

H_3: There is significant effect of affordability on customer satisfaction.

H_4: There is significant effect of reliability on customer satisfaction.

H_5: There is significant effect of responsiveness on customer satisfaction.

Rationale of study

The researcher contends that the findings of this investigation will offer valuable insights for public transportation agencies, leading to actionable recommendations aimed at improving customer satisfaction. Moreover, this research assists policymakers in understanding the economic implications of the public urban transportation industry, facilitating informed strategic decisions regarding operational aspects.

Limitations of the study

During the research, the researcher faced some limitation while analyzing the service quality and customer satisfaction towards public transportation in Butwal Sub-metropolitan City. Some of the limitations are as follows:

- In this study, only two independent variables have been drawn from SERVQUAL dimensions, while only three independent variables have been selected from RESCA dimensions.
- The study area only takes the customers who travel by microbus from Butwal Sub- metropolitan city within the area of 30 km.
- The study has been based on primary data.

- It is purely quantitative.
- Questionnaire is utilized to gather data on various independent and dependent variables, employing five-point Likert scales in this study.

Chapter II

Review of Literature

A critical review of the literature helps us to know or develop through understanding and insight into previous research works that relates to our study. The literature survey also provides the foundation for developing a comprehensive theoretical framework. Designing a study involves several decisions as to what variables to include and how to measure them, what techniques to use and so on.

Theoretical review

SERVQUAL Model

Parasuraman et al. (1985 & 1988) developed SERVQUAL Model is one of the most commonly utilized scales for measuring service quality. Measuring the perception of service quality among consumers is a very complex process. Numerous research studies have been carried out in order to gauge the level of service quality. Still marketing practitioners have consistently utilized the service quality model known as SERVQUAL, which was developed by Parasuraman et al. (1985 and 1988). This model is based on the measurement of the discrepancy between the perceived service quality and the anticipated service quality. Originally, a total of ten dimensions of service quality were proposed, including reliability, responsiveness, competence, access, courtesy, communication, credibility, security, understanding the consumer, and tangibles.

However, these variables were ultimately reduced to five fundamental dimensions, which became the RATER model Parasuraman et al. (1991): responsiveness, tangibles, empathy, assurance, and reliability. Although the SERVQUAL model's dimensions are significant components of service quality, many academics question whether they can be used to assess service quality in other service-related businesses. As a result, researchers create additional models for evaluating the quality of services. The gap between a customer's expectations of a service offering and their impressions of the service they actually received is how the SERVQUAL model defines service quality.

The dimensions emphasized in the SERVQUAL model primarily center on the human aspects of service delivery such as responsiveness, reliability, assurance, and empathy, along with the tangibles of service. According to Ladhari (2009), while the SERVQUAL model serves as a robust scale for assessing service quality across diverse

industries, it is essential to tailor the selection of dimensions to the specific service being evaluated to ensure the credibility and validity of the results. Therefore, we will adopt this model because it considers both customer expectations and perceptions of the service, offering a comprehensive approach to measuring service quality within the service sector, as highlighted by Shahin (2004).

RECSA Model

The RECSA model was introduced by McKnight et al. (1986). The abbreviated form stands for reliability, extend of service, comfort, safety, and affordability. The RECSA model is a useful tool for assessing the quality of transportation services. however it excludes the contributions made by the driver, crew, ticketing service, and additional services provided by service providers. This is the reason why Horsu and Yeboah (2015) used an updated RECSA model in their study on the "influence of service quality on customer satisfaction on mini cab taxi service in Cape Coast." In order to update the model, they added a new dimension called "driver behavior." Although the RECSA model can be a useful instrument for assessing the quality of transportation services, it fails to consider the role played by the driver and staff, ticket services, and extra services provided by service providers. This study uses the RECSA model with few changes to investigate the link and impact of service quality on customer satisfaction. The nature of the investigation necessitates the introduction of new variables into the model. Seven factors include reliability, price, discounts and promotions, safety, comfort, and driver behavior were utilized in the research to evaluate service quality while looking at how it related to customer satisfaction.

Empirical review

Amponsah and Adams (2016) examine the relationship between customer happiness and service quality in the region's public transportation system in Vancouver, British Columbia, Canada. For the study, a judgment sample of 205 people was drawn from the Translink system's metropolitan population. For the research, the SERVQUAL model which is well-known for its reliability in measuring customer satisfaction was modified. In order to assess the system's service quality, the study's dimensions were classified as tangible and intangible for consumers of transportation. The study's primary conclusions found a strong correlation between customer satisfaction, bus overcrowding, and overall service satisfaction and service quality.

By utilizing the RECSA model in connection with driver behavior, (Gokhale, 2021) research aimed to determine the relationship between consumer satisfaction and the quality of service provided by taxi services in Bengaluru, India. A questionnaire was distributed to 212 respondents, and the method used included multiple regression analysis, descriptive statistics, and Pearson's correlation. Each of these characteristics and the dependent variable, or consumer satisfaction, were found to be positively and significantly correlated. The results of Pearson's correlation test indicated that there was a significant relationship between all the variables and customer satisfaction, with a strong correlation found between comfort and service quality. Six RECSA factors were shown to be responsible for 97% of the variation in customer satisfaction, depending to the results.

Khurshid et al. (2012) the research aimed to determine the relationship between these variables and the impact of service quality on customer satisfaction. A convenience sample was selected, comprising 120 respondents, evenly split between men and women. Data collection tools were employed to assess customer satisfaction and service quality perceptions. Two separate datasets were analyzed using regression coefficients. The empirical findings revealed a positive correlation between consumer satisfaction and service quality in Pakistan's public transportation sector.

Horsu and Yeboah (2015) used RESCA model (Service Quality) along with an additional variable to explore the relationship and effects of service quality on customer satisfaction. The study's main focus was on Cape Coast, Ghana's minicab and taxi services' client satisfaction. The relationship between each of the six variables reliability, continuous service, safety, comfort, affordability, and drive behavior and consumer satisfaction was investigated through testing. All the variables showed a positive and significant link with customer satisfaction, according to Pearson correlation analysis. Six hypotheses were explored to look at how these variables affected customer satisfaction. The results of the multiple regression analysis demonstrated that while safety had a positive but minor effect on customer satisfaction, continuous service, comfort, affordability, and reliability had a positive and large impact. Customer satisfaction was negatively impacted by the actions of the driver. However, there are further variables than service comfort, safety, reliability, and price that affect customer satisfaction with minicab taxi services. These factors include driver behavior and ongoing service. According to the data, these factors only account for 53%

of differences in customer satisfaction, meaning that other factors (47%) have a greater impact.

Fonseca et al. (2010) investigated the factors influencing service quality and its effects on the satisfaction of individuals utilizing public transportation. It explores the relationship between service quality and customer satisfaction, examining both internal and external perspectives. To analyze this correlation, the paper assesses the concepts of service quality, consumer satisfaction, and dissatisfaction. A model of analysis is developed with the goal of explaining this correlation and providing guidance for the empirical study. This model is based on an in-depth case study of a metro company in Europe. The study's results reveal two significant findings. The first finding pertains to the level of service quality in its primary dimensions. It is concluded that reliability, security, speed, comfort, and punctuality are the most important quality dimensions for public transportation services. Secondly, the study examines satisfaction and its determinants.

Randheer et al. (2011) expressed that the public transportation services must consider their sensitivity to the quality of services provided in the current globalized context. In this context, the study looked at how passengers in Hyderabad and Secunderabad, India, perceived the quality of the public transportation system. The commuter's perception of the quality of the services is gauged by administering the SERVQUAL scale. A survey was administered to commuters who frequently used public transportation to get about. For data collection, a random sample of 534 respondents was selected, and 512 of them were selected for further research. The study found that commuters' perceptions of service quality delivery are satisfied.

Moreover, Ojo et al. (2014) conducted research to identify the SERVQUAL model to examine customer satisfaction with public transportation in Ghana, specifically with reference to intercity buses that travel the Cape Coast to Accra route. The five dimensions that made up the SERVQUAL approach were tangibility, assurance, responsiveness, empathy, and reliability. There are twenty-six qualities in these five dimensions. Purposively, a systematic sample of passengers was given 162 copies of self-administered questionnaires on the Cape Coast–Accra route. The findings show that two of the five dimensions contain gaps, and it was determined that these gaps, together with 15 different characteristics, affected customers' perceptions of service quality and ultimately led to dissatisfaction. There have been suggestions made for

raising the level of services provided, which will increase the satisfaction of customers.

Islam et al. (2014) stated that the study aims to investigate the variables affecting customer satisfaction, particularly focusing on the impact of service quality in the public transportation sector in the university town of Sindok, located in the Malaysian province of Kedah. 300 customers on buses provided the data. Using Pearson correlations to account for the background factors of gender, marital status, ethnicity, and education, all hypotheses were examined. According to results, the theory 1 through 5 was supported. A model that looked at the impact of all five service quality factors on customer satisfaction was created using multiple regressions as the foundation for indirect routes. The dependent variable's variations are explained by the independent variables by 26.9% of the variance, as indicated by the model's explanation of 26.9% of the variance. Independent factors comprised 26.9% of the variances in total.

Sharma and Pradhananga (2021) conducted a comprehensive investigation into passenger's perception towards quality of public transportation services in Kathmandu valley. This study helps to utilize the SERVQUAL (Service Quality) model, which is predicated on the RECSA (Reliability, Extent of service, Comfort, Safety, and Affordability) quality aspects, is used to assess the quality of the present public transportation system. The approach finds significant gaps between passengers' expectations and perceptions across a range of quality domains. Passengers' expectations and defines of the five quality characteristics of the services differ significantly, according to an analysis of their responses. The reliability, amount of service, and comfort dimensions of the safety and affordability gap are significantly different, based on the results of the Kruskall-Wallis H test and the Mann-Witney U test.

Chapter III

Research Methodology

This chapter deals with the research methodology of the study. The study aims to examine the Service quality and customer satisfaction towards public transportation in Butwal sub-metropolitan city. This chapter looks at the various methods and procedures of researcher adopted in conducting the study in order to address and answer the research problem raised in the first problem. This chapter is organized in the following structure: research design, population, sample size, sampling techniques, sources of data collection, data collection methods, tools used for data analysis.

Research Design

In this study, researcher has been used descriptive research design and casual research design. A descriptive research design was utilized in order to summarize the data that was collected concerning specific characteristics including gender, age, marital status, occupation, education and various others. Causal-comparative research represents a methodology that is employed to determine cause-effect associations between independent and dependent variables. This design have been selected to examine data that is linked to the quality of service and the satisfaction of customers in the field of public transportation within the Butwal sub- metropolitan city.

Population and Sample

In this study, the population has been taken who travel by micro bus from the area of Butwal sub- metropolitan city. So, the number of population unknown. There is used continence sampling method to collect the data from respondent.

Sample size

The study has calculated the sample size by using given;

$$n = z^2 p (1-p)/e^2$$

So, the sample size of the study is 384.

Nature and Sources of Data & Instrument of data collection

Basically, there are two sources of obtaining data i.e. primary source and secondary source. Quantitative data has been collected through primary source in this study. Primary data refers to the original data which is collected by the researchers himself

through direct interaction with the person or events to get the information personally to meet the intended objective of the study. In this study, most of the data are primary in nature. Primary data have been collected by administering questionnaire to sample customers who travel by microbus from Butwal sub-metropolitan city.

Questionnaire has been used as a research instrument for data collection. The questionnaire has been designed to collection of information relating to demographic variable such as Age, Gender, Marital status, Education, Occupation, Monthly income, Own vehicle and Types of own vehicle. Similarly, the questionnaire have been used to collect data on different independent and dependent variables by using five point likert scale where 1= Strongly disagree, 2= Disagree, 3= Neutral, 4= Agree and 5= Strongly Agree.

Method of Analysis

The study has been used various statistical tools based on the appropriateness of the data. Mean and Standard deviation have been computed under descriptive statistic to analyze and identify the response of customers with regard to service quality and customer satisfaction towards public transportation within the area of Butwal sub-metropolitan city who travel by micro bus. Researcher has been done by reliability test to check whether the research instrument is reliable or not. Convergent and discriminant validity have been assessed to ensure the internal reliability and validity of the constructs. Additionally, Heterotrait-Monotrait Ratio of Correlations (HTMT) has been utilized to examine the correlations among all variables. Similarly, Normality test have been done by one sample Kolmogorov- Smirnov test (K-S) test. Also, independent samples t-test and one-way ANOVA have been utilized as parametric tests, while the Mann-Whitney U test and Kruskal-Wallis test have been employed as non-parametric tests in this study. Moreover, Pearson's correlation and Regression tools have been used to measure the relationship and effects of independent variables on dependent variables.

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \varepsilon$$

Whereas,

Y= Customer Satisfaction

X_1= Safety

X_2= Comfort

X_3= Affordability

X_4= Reliability

X_5= Responsiveness

ε= Error term

α= Constant

β= Beta coefficient

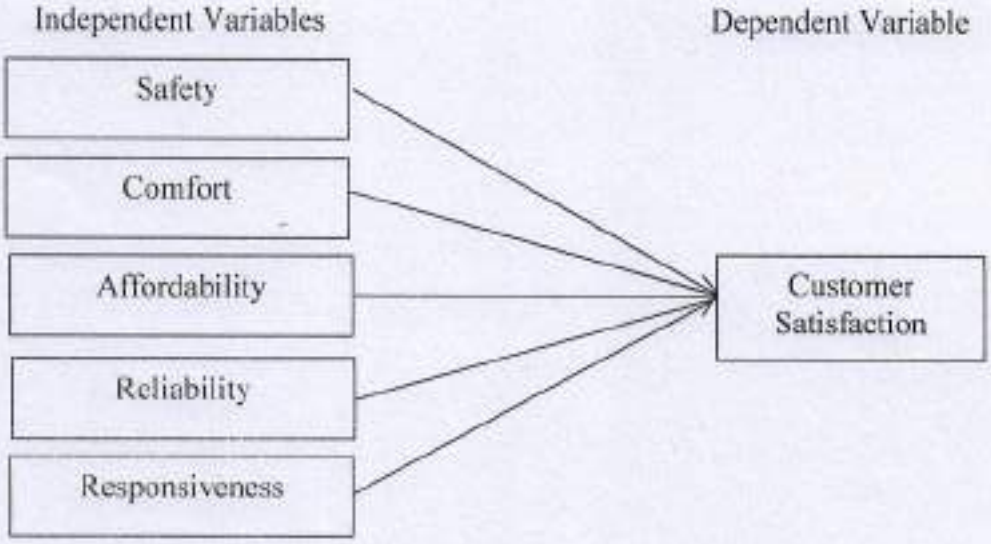
Research Framework and Definition of variables

Research Framework

Research framework is the network that shows the relationship between independent variable denoted by (x) and dependent variable (y). Based on the above mentioned statement of problems and objectives of the study, the following conceptual model will be used in this project work.

Figure 1

Research framework



Note. Adapted from Horsu and Yeboah (2015) and Ong et al., (2022).

Definition of variables

In this study, service quality is analyzed based on five factors commonly referred to as RECSA and SERVQUAL: Safety, Comfort, Affordability, Reliability and Responsiveness.

Safety

Safety is assessed by considering the probability of accidents, as well as concerns regarding the state of vehicles and driving practices, along with adherence to traffic regulations McKnight et al. (1986). Safety measures encompass guidelines for both passengers and drivers, as well as for vehicles, aimed at gauging the potential for passengers to be involved in traffic accidents or encounter criminal activities like theft and harassment. Safety fundamentally pertains to the degree of protection from risks, hazards, or harm to oneself or possessions, whether deliberate or unintended.

Comfort

According to Litman (2008), service comfort pertains to the accessibility of facilities such as seats, space, travel experiences, and climate control. Researchers in the field of public transportation have emphasized the significance of comfort as a crucial aspect to be taken into account Samson and Thompson (2007). Moreover, Budiono (2009) found that comfort is the most influential factor affecting customer satisfaction with regard to public transportation.

Affordability

Affordability revolves around determining if the prices set by transportation providers offer reasonable value for the services rendered. This assessment involves weighing the quality of service against the fare costs and evaluating the fairness of pricing structures McKnight et al. (1986). Regular commuters commonly compare service quality to fare prices, making it challenging to pinpoint exact fare values. Questions often arise about what constitutes an appropriate cost for a transport service and what would be a fair price considering the service's quality. For instance, in the UK, transport companies annually request fare increases from municipal councils, with affordability being a key consideration in approving such hikes. However, there's no universally accepted method for quantifying affordability concerning bus services Maunder et al. (1999).

Reliability

Reliability is the ability and consistency with which a business provides its services to meet the needs of its customers. Stated in various ways, a company's reliability can be defined as its capacity to fulfill promises made regarding the provision of services, timely and accurate problem-solving, competitive pricing, and the delivery or implementation of goods and services. Every company has to be aware of what customers expect from a reliable source. According to Sam et al. (2018) bus service quality is also influenced by service reliability. Therefore, staff members have a duty

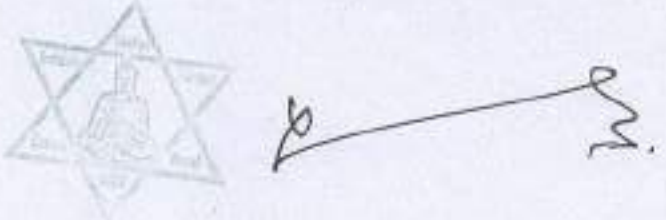
to fulfill their promise to customers to deliver correct and fast service Kobiruzzaman (2020).

Responsiveness

Responsive is defined as maintaining a strong desire to treat customers with dignity and provide them with timely service that meets their demands. Two important components are the focus of this dimension: promptness and willingness Kobiruzzaman (2020). Furthermore, responsiveness describes an organization's dedication to and capacity for offering its customers timely services. It is necessary to promptly receive, assess, and address the needs, suggestions, issues, and concerns of the customers. Employees must address the questions and concerns of their clients, even if they take a while to reply. According to Klokkenga (2020), being responsive will demonstrate to your clients that you are paying attention to them and are acting swiftly to solve their issues. Furthermore, according to Sam et al. (2018), responsiveness is the primary factor influencing the quality of bus service. Therefore, a company that provides excellent customer service will reply to client correspondence as soon as possible, which may often demonstrate how crucial customer satisfaction is to the company.

Customer Satisfaction

Customer satisfaction is the overall assessment of products and services based on their ability to meet customers' expectations and requirements. Oliver (1980) suggests that the literature on customer satisfaction research focuses on the alignment between service delivery and customer expectations. Zeithaml and Bitner (2000) define customer satisfaction as the evaluation of a product or service by customers in terms of whether it fulfills their needs and expectations. Achieving customer satisfaction requires finding a harmony between customer expectations and their perceptions of service quality. In essence, when consumers receive goods or services that match their expectations, they experience satisfaction, which entails achieving a balance between customer expectations and perceptions of service quality.



Chapter IV

Results, Discussion, Conclusion and Recommendations

This chapter presents facts and information on service quality and customer satisfaction towards public transportation in Rupandehi district in order to meet the goals outlined in the introduction chapter.

Demographic Profile

A demographic profile refers to a comprehensive description of a population based on various demographic variables. These variables typically include age, gender, income, education, occupation and marital status. They provide valuable insights into the characteristics and composition of a population, helping organizations make informed decisions and develop targeted approaches.

Table 1

Sample distribution based on Age group

Age	Frequency	Percent	Cumulative Percent
Below 30	224	57.4	57.4
30 to 40	62	15.9	73.3
40 to 50	60	15.4	88.7
50 above	44	11.3	100.0
Total	390	100.0	

Note. Field Survey, 2022

Figure 2

Sample distribution based on Age group

Note. Field Survey, 2022

Table 1 and figure 2 present the age group of respondents. Out of the total respondents, 57.4 percent belong to the age group below 30. Similarly, 15.9 percent of respondents lie between the age group of 30-40. Moreover, 15.4 percent of respondents lie between the 40-50 age groups. Likewise, 11.3 percent of respondents lie between the age group of above 50. Hence, it is inferred that most employees are under 30, possibly because younger employees are more eager to participate in research due to their energy and enthusiasm.

Table 2

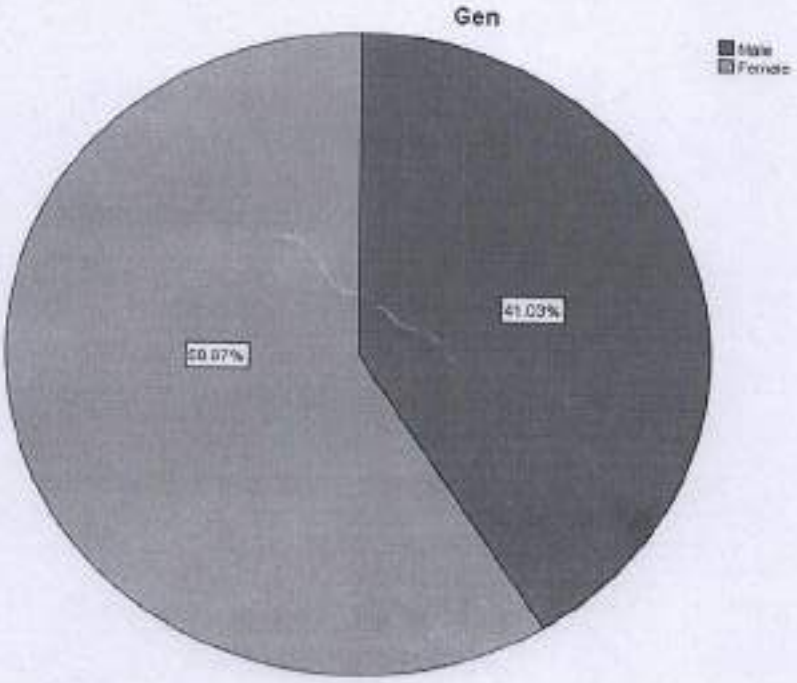
Sample distribution based on Gender

Gender	Frequency	Percent	Cumulative Percent
Male	160	41.0	41.0
Female	230	59.0	100.0
Total	390	100.0	

Note. Field Survey, 2022

Figure 3

Sample distribution based on Gender



Note. Field Survey, 2022

Table 2 and figure 3 reveals the gender mix of the respondents. Out of the total respondents, 41 percent of the respondents were male and 59 percent of the respondents

were female. Thus, the data shows that the male and female respondents have equally participated in the research study.

Table 3

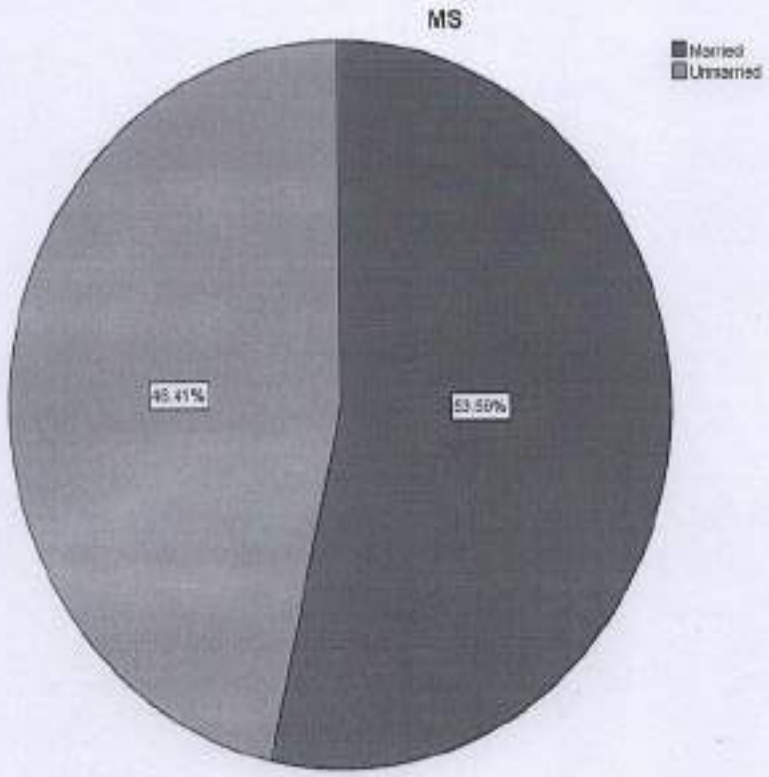
Sample distribution based on marital status

Marital Status	Frequency	Percent	Cumulative Percent
Married	209	53.6	53.6
Unmarried	181	46.4	100.0
Total	390	100.0	

Note. Field Survey, 2022

Figure 4

Sample distribution based on marital status



Note. Field Survey, 2022

Table 3 and figure 4 present the marital status of the respondents. Out of the total respondents, 53.6 percent of the respondents were married and 46.4 percent of the respondents were unmarried.

Table 4

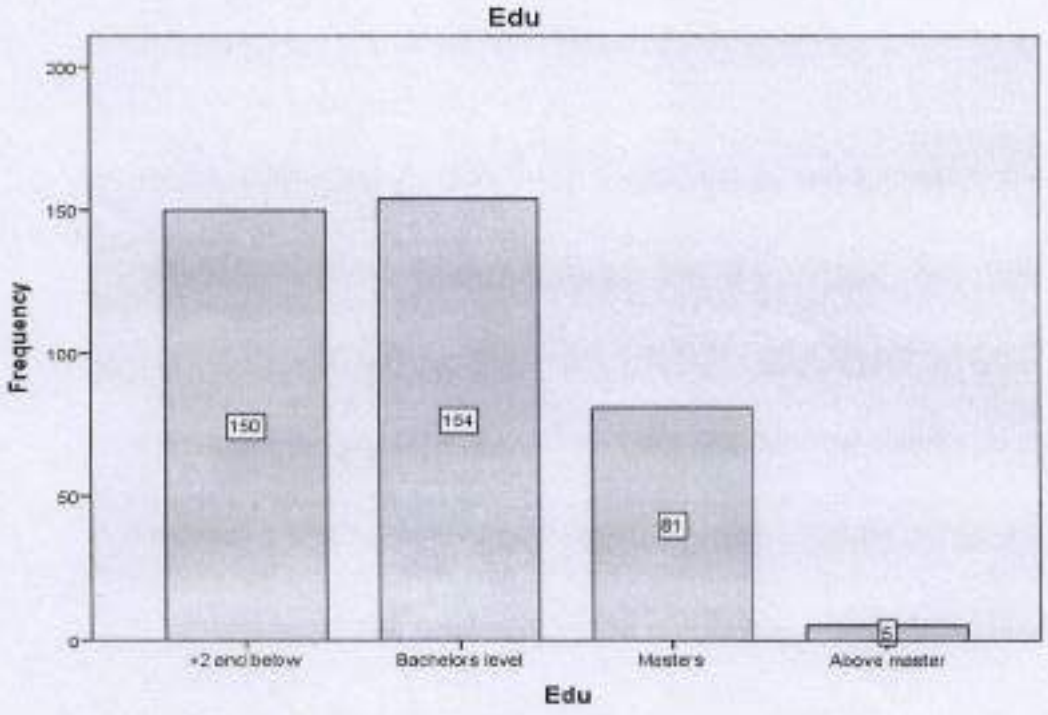
Sample distribution based on Education

Education	Frequency	Percent	Cumulative Percent
+2 and below	150	38.5	38.5
Bachelors level	154	39.5	77.9
Masters	81	20.8	98.7
Above master	5	1.3	100.0
Total	390	100.0	

Note. Field Survey, 2024

Figure 5

Sample distribution based on Education



NoNote. Field Survey, 2022

Table 4 and figure 5 presents the sample distribution based on education of the respondents. Out of the total respondents, 38.5 percent of the respondents were +2 and below. Similarly, 39.5 percent of the respondents were bachelor's level. Moreover, 20.8

percent of the respondents were master's level. Likewise, 1.3 percent of the respondents were above master. Thus, the data shows out of the total respondents, bachelor's level were more participated in the research study.

Table 5

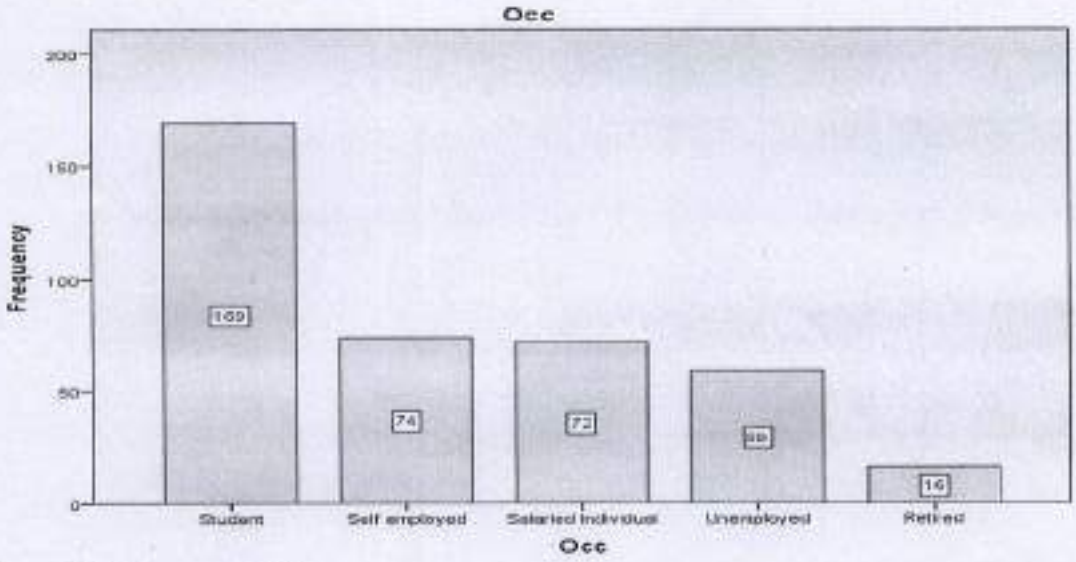
Sample distribution based on Occupation

Occupation	Frequency	Percent	Cumulative Percent
Student	169	43.3	43.3
Self employed	74	19.0	62.3
Salaried Individual	72	18.5	80.8
Unemployed	59	15.1	95.9
Retired	16	4.1	100.0
Total	390	100.0	

Note. Field Survey, 2022

Figure 6

Sample distribution based on Occupation



Note. Field Survey, 2022

Table 5 and figure 6 present the occupation of the total respondents. Out of the respondents, 43.3 percent of the respondents were student. Similarly, 19 percent of the respondents were self employed. Moreover, 18.5 percent of the respondents were salaried individual. Likewise, 15.1 percent of the respondents were unemployed and 4.1 percent of the respondents were retired. Thus, the data shows that the students were

more participated in the research study.

Table 6

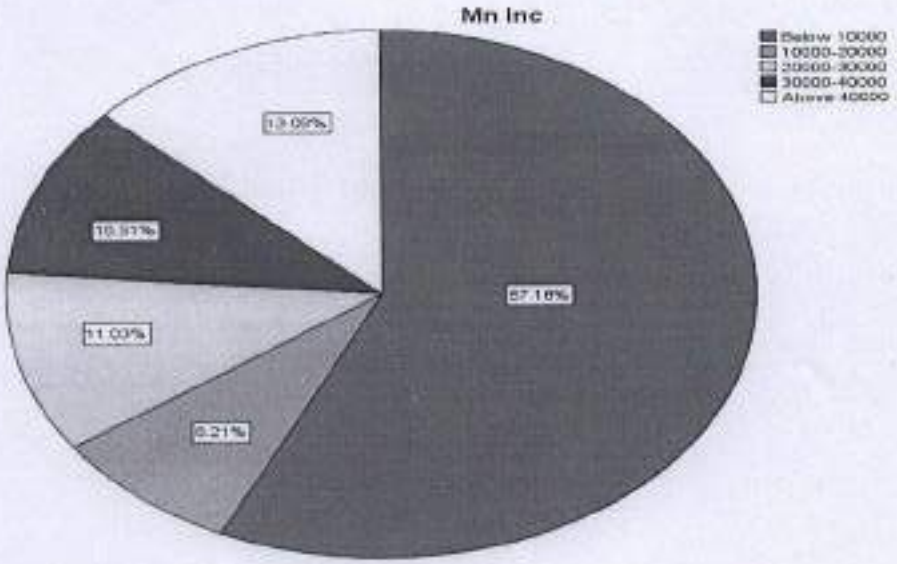
Sample distribution based on Monthly Income

Monthly Income	Frequency	Percent	Cumulative Percent
Below 10000	223	57.2	57.2
10000-20000	32	8.2	65.4
20000-30000	43	11.0	76.4
30000-40000	41	10.5	86.9
Above 40000	51	13.1	100.0
Total	390	100.0	

Note. Field Survey, 2022

Figure 7

Sample distribution based on Monthly Income



Note. Field Survey, 2022

Table 6 and figure 7 presents the monthly income of respondents. Out of the total respondents, 57.2 percent belong to the monthly income below 10000. Similarly, 8.2 percent of respondents lie between the monthly incomes of 10000-20000. Moreover, 11 percent of respondents lie between the 20000-30000 monthly incomes. Likewise, 10.5 percent of respondents lie between the monthly income of 30000-40000 and 13.1

percent of respondents lie between the monthly incomes of above 40000. Thus, the data shows that the below 10000 monthly income respondents were more participated in the research study.

Table 7

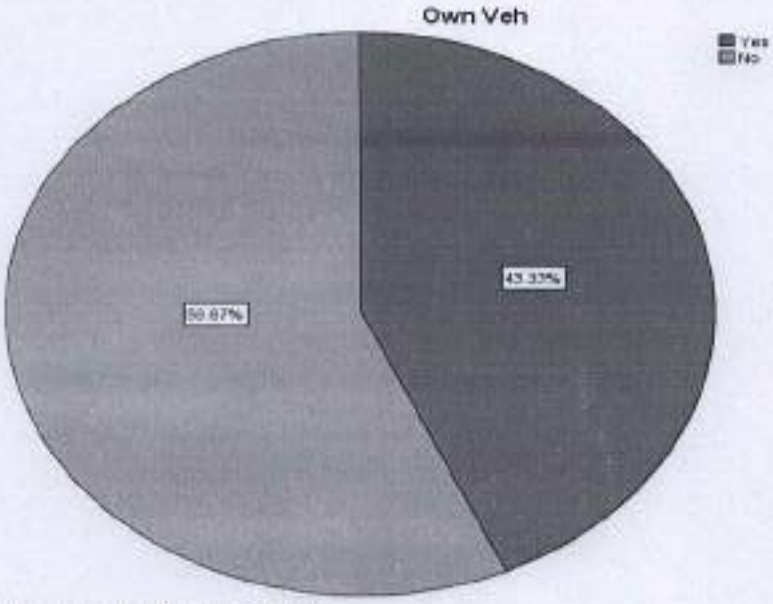
Sample distribution based on Own vehicle

Own Vehicle	Frequency	Percent	Cumulative Percent
Yes	169	43.3	43.3
No	221	56.7	100.0
Total	390	100.0	

Note. Field Survey, 2022

Figure 8

Sample distribution based on Own vehicle



Note. Field Survey, 2022

Table 7 and figure 8 presents of the sample distribution based on own vehicle of the respondents. Out of the total respondents, 43.3 percent of the respondents were who has their own vehicle and 56.7 percent of the respondents were who don't have their own vehicle.

Table 8

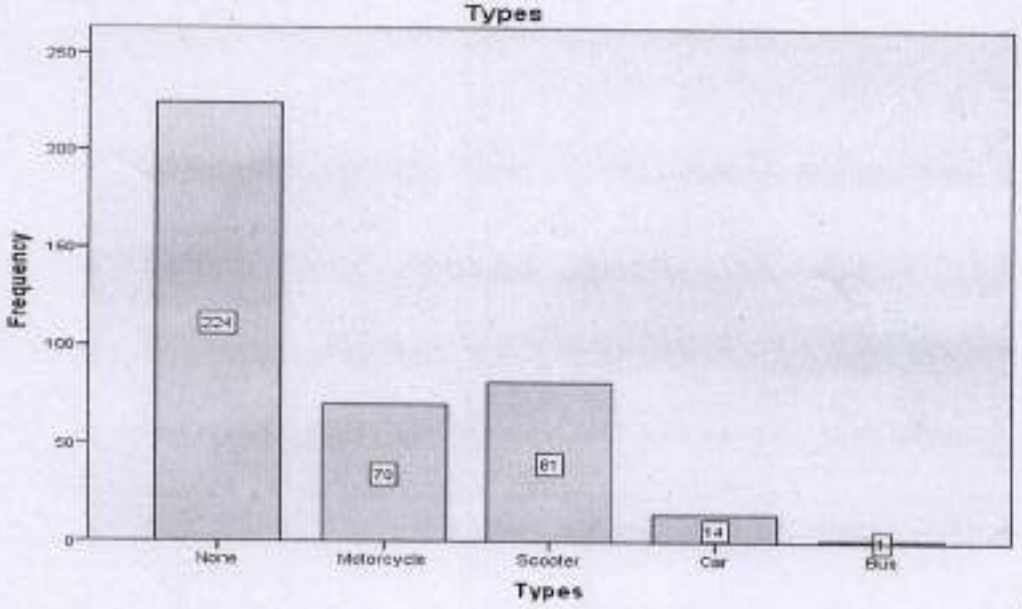
Sample distribution based on types of own vehicle

Types of own vehicle	Frequency	Percent	Cumulative Percent
None	224	57.4	57.4
Motorcycle	70	17.9	75.4
Scooter	81	20.8	96.2
Car	14	3.6	99.7
Bus	1	0.3	100.0
Total	390	100.0	

Note. Field Survey, 2022

Figure 9

Sample distribution based on types of own vehicle



Note. Field Survey, 2022

Table 8 and figure 9 presents the sample distribution based on types of own vehicle of the respondents. Out of the total respondents, 57.4 percent of the respondents were who don't have their own vehicles. Similarly, 17.9 percent of the respondents were having motorcycle. Moreover, 20.8 percent of the respondents were having scooter. Likewise,

3.6 percent of the respondents were having car and 0.3 percent of the respondents were have bus. Thus, the data shows that out of the total respondents, people who haven't their types of own vehicles were more participated in the research study.

Measurement Model Assessment

Table 9

Measurement Items Assessment

Variables	Items	Loadings	VIF	Mean	SD	Mean of construct	SD of construct
Safety	S1	0.640	1.640	3.251	1.109	3.121	1.075
	S2	0.644	1.754	3.008	1.120		
	S3	0.858	1.923	3.046	1.039		
	S4	0.836	1.701	3.182	1.033		
Comfort	C1	0.670	1.260	2.487	1.066	3.001	1.123
	C2	0.735	1.336	3.069	1.099		
	C3	0.722	1.377	3.379	1.196		
	C4	0.800	1.55	3.069	1.134		
Affordability	A1	0.821	1.561	3.026	1.052	2.957	1.107
	A2	0.739	1.549	2.859	1.182		
	A3	0.807	1.767	3.000	1.091		
	A4	0.800	1.704	2.946	1.105		
Reliability	R1	0.701	1.441	2.667	1.117	3.048	1.045
	R2	0.780	1.519	2.946	0.992		
	R3	0.776	1.416	3.105	1.053		
	R4	0.746	1.439	3.477	1.019		
Responsiveness	RES1	0.772	1.590	3.038	0.980	3.034	1.025
	RES2	0.824	1.939	3.067	1.005		
	RES3	0.755	1.451	2.962	1.026		
	RES4	0.831	1.872	3.069	1.090		
Customer Satisfaction	CS1	0.833	2.060	2.938	1.048	3.093	1.038
	CS2	0.809	1.939	3.215	1.084		
	CS3	0.742	1.680	3.131	1.031		
	CS4	0.756	1.788	3.19	0.987		
	CS5	0.725	1.581	2.995	1.043		

Table 9 displays the mean value of construct and standard deviation of construct of all the variables. The mean value of safety is 3.121, which is close to 3, indicating that customer's responses are very close to agreement regarding safety. This suggests a positive attitude among customers toward the safety. Similarly, the standard deviation value for safety shows in Table 9 is 1.075, indicating that the mean value may deviate by 1.075. Likewise, the mean value of comfort and standard deviation is 3.001 and 1.123. Also, the mean value of construct and standard deviation of construct of

affordability is 2.957 and 1.107. Further, the mean value of construct and standard deviation of construct of reliability is 3.048 and 1.045. Moreover, the mean value of construct and standard deviation of construct of responsiveness is 3.034 and 1.025. Lastly, the mean value of construct and standard deviation of construct of customer satisfaction is 3.093 and 1.038.

Similarly, Table 9 indicates the measures and validity related to the outer model. It shows the standardized outer loading, Variance Inflation Factor (VIF), mean, and Standard Deviation (SD) of the outer model. Twenty- five scale items are used to assess six latent variables. The outer loading values of all the items are above the threshold value of 0.70 except S1, S2 and C1, which indicates the absolute contributions of each item to measuring the respective variable (Sarstedt *et al.*, 2017). In the case of S1, S2 and C1, according to Hair et al. (2022), the items having outer loading values above 0.6 can also be retained for further analysis. Similarly, the VIF values of all the items are below 5, indicating no multi-collinearity among the scale items (Hair et al., 2019). Consequently, there is no multi-collinearity among the items. The mean and standard deviation (SD) results of all the measurement items are in a good range on 5-point Likert scale data. Hence, the measurement items qualify for reliability and validity for further assessment.

Convergent Validity and Discriminate Validity

Table 10

Construct reliability and validity assessment

Variables	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Safety	0.757	0.823	0.836	0.564
Comfort	0.711	0.714	0.822	0.537
Affordability	0.805	0.825	0.871	0.628
Reliability	0.745	0.757	0.838	0.565
Responsiveness	0.807	0.808	0.874	0.634
Customer Satisfaction	0.834	0.849	0.882	0.599

Table 10 contains the internal reliability and validity of the constructs used in this study. The Cronbach's Alpha values of all constructs are above the standard threshold value of 0.705 (Bland & Altman, 1997), which indicates that the internal consistency of all constructs and validates the scale used for measuring each of the constructs is reliable. Further, Composite Reliability (CR) rho_a and CR rho_c values are above 0.70, indicating construct reliability and validity (Saari et. al., 2021: Hair et. al., 2022). The Average Variance Extracted (AVE) values are above 0.50 threshold values, suggesting that the convergent validity of all the constructs is established (Hair et al., 2022). Hence, the results of the above table qualify all the quality criteria

Inferential Statistics

One sample Kolmogorov- Smirnov Test

Table 11

One sample Kolmogorov- Smirnov Test

	Safety	Comfort	Affordability	Reliability	Responsiveness	Customer Satisfaction
Kolmogorov-Smirnov Z	1.972	1.706	1.546	1.944	1.454	1.566
Asymp. Sig. (2-tailed)	.001	.006	.017	.001	.029	.015

As shown in Table 11, since the Z values for safety do not fall between -1.96 and +1.96, it can be inferred that these variables do not follow a normal distribution. However, comfort, affordability, reliability, responsiveness and customer satisfaction follows a normal distribution as its Z values lie within the range of -1.96 to +1.96. Parametric tests are appropriate for normally distributed data, while non-parametric tests are suitable for non-normally distributed data. If the data does not follow normal distribution then what to do

- Central Limit Theorem: Increase the sample size as the sample size increases data will follow normal distribution.
- Use Non Parametric Tools: for 2 variables Mann Whitney and for 3 variables Kruskal- Wallis test.

Parametric Test

T- test for difference of two means or Independent sample t-test

Table 12 shows the t- value of Comfort is less than +1.96 and p- value is greater than 5 percent. It means that alternative hypothesis is rejected, indicating an insignificant difference between male and female respondents regarding comfort. The mean value for male respondents is 2.95 and a female respondent is 3.03. Similarly, t- value of the affordability is less than +1.96 and p-value is greater than 5 percent. It means that alternative hypothesis is rejected, indicating an insignificant difference between male and female respondents regarding affordability. The mean value for male respondents is 2.97 and a female respondent is 2.95.

Table 12

T-test for gender

Variables	Gender	N	Mean	t-value	P-value
Comfort	Male	160	2.95		
	Female	230	3.03	-.962	.337
Affordability	Male	160	2.97		
	Female	230	2.95	.294	.769
Reliability	Male	160	3.03		
	Female	230	3.06	-.332	.740
Responsiveness	Male	160	2.98		
	Female	230	3.07	-1.031	.303
Customer Satisfaction	Male	160	3.07		
	Female	230	3.11	-.436	.663

Likewise, Table 15 shows the t- value of reliability is less than +1.96 and p- value is greater than 5 percent. It means that alternative hypothesis is rejected, indicating an insignificant difference between male and female respondents regarding reliability. The mean value for male respondents is 3.03 and a female respondent is 3.06. Further, Table 15 shows the t- value of responsiveness is less than +1.96 and p- value is greater than 5 percent. It means that alternative hypothesis is rejected, indicating a insignificant difference between male and female respondents regarding responsiveness. The mean value for male respondents is 2.98 and a female respondent is 3.07 and lastly, Table 15 shows the t- value of customer satisfaction is less than +1.96 and p- value is greater

than 5 percent. It means that alternative hypothesis is rejected, indicating an insignificant difference between male and female respondents regarding customer satisfaction. The mean value for male respondents is 3.07 and a female respondent is 3.11.

One way ANOVA for more than two categorical variables

One way ANOVA is a parametric test. It is bivariate analysis. It is used for comparing more than two group mean.

Null Hypothesis (H0): There is no significant difference among Age Group with respect to comfort, affordability, reliability, responsiveness and customer satisfaction.

Alternative Hypothesis (H1): There is significant difference among Age Group with respect to comfort, affordability, reliability, responsiveness and customer satisfaction.

Table 13

One way ANOVA for Age Group

Variables	Age	N	Mean	F value	P value
Comfort	Below 30	224	2.93	2.651	0.048*
	30 to 40	62	3.25		
	40 to 50	60	3.07		
	50 above	44	2.94		
	Total	390	3.00		
Affordability	Below 30	224	2.93	0.410	0.746
	30 to 40	62	3.06		
	40 to 50	60	2.94		
	50 above	44	3.01		
	Total	390	2.96		
Reliability	Below 30	224	2.92	6.690	0.000**
	30 to 40	62	3.30		
	40 to 50	60	3.31		
	50 above	44	3.02		
	Total	390	3.05		
Responsiveness	Below 30	224	2.97	1.667	0.174
	30 to 40	62	3.22		

	40 to 50	60	3.07		
	50 above	44	3.06		
	Total	390	3.03		
	Below 30	224	3.00		
	30 to 40	62	3.35		
Customer Satisfaction	40 to 50	60	3.21	3.625	0.013*
	50 above	44	3.03		
	Total	390	3.09		

Note: ** denotes significant at 1% level and *denotes significant at 5% level

Table 13 shows the p-value of comfort is 0.048 which is smaller than 5 percent. Therefore, it can be concluded that the alternative hypothesis is accepted at the 5 % level of significance. Similarly, it is evidence that the p-value of affordability is 0.746 which exceeds 5 percent. Therefore, it can be concluded that the alternative hypothesis is rejected at the 5 percent level of significance. Likewise, the p-value of reliability is 0.00 which is smaller than 1 percent. Therefore, it can be concluded that the alternative hypothesis is accepted at the 1% level of significance. Further, the p-value of responsiveness is 0.174 which exceeds 5 percent. Therefore it can be concluded that the alternative hypothesis is rejected at 5% level of significance and lastly, the p-value of customer satisfaction is 0.013. Therefore, it can be concluded that the alternative hypothesis is accepted at 5 % level of significance.

Non- Parametric Test

Mann- Whitney U test for two categorical variables

Table 14

Results of Mann- Whitney U test based on Gender

Ranks

	Gender	N	Mean Rank	Z-value	P-value
	Male	160	184.68		
Safety	Female	230	203.03	-1.589	.112
	Total	390			

Table 14 shows that the p-value is 0.112 > 0.05 which means that there is no significant difference between two population means, the null hypothesis is accepted. It means that male and female respondents have no significant difference in Safety.

Kruskal- Wallis test for more than two categorical variables

Table 15 shows that the p- value of safety is 0.551, which is larger than 0.05. Thus, the null hypothesis is accepted at the 5% level regarding safety. Hence, there is insignificant difference between safety of below 30 years, 30- 40 years, 40 -50 years and above 50 years concerning safety. Based on the mean rank shown in the table above, it is found that customers with 40-50 years of experience have a better opinion about safety compared to others. It means that age group has insignificant difference in safety.

Table 15

Results of Kruskal- Wallis Test based on Age

Ranks

	Age	N	Mean Rank	Chi square Value	P value
Safety	Below 30	224	199.31	2.105	.551
	30 to 40	62	189.37		
	40 to 50	60	202.43		
	50 above	44	175.26		
	Total	390			

Pearson's Correlations Analysis

Pearson's correlation analysis is a statistical approach for determining the strength and direction of a linear relationship between two continuous variables. Pearson's correlation analysis is used frequently in a wide range of disciplines, including psychology, economics, biology and social sciences. The table shows a correlation matrix with Pearson's correlation coefficients between Customer satisfaction and their variables: Safety, Comfort, Affordability, Reliability and Responsiveness.

Table 16 reflects the results of correlation analysis which shows that all the p-value are less than 0.01 ($p<0.01$) and all coefficient values between customer satisfaction and safety (0.366), customer satisfaction and comfort (0.502), customer satisfaction and affordability (0.476, customer satisfaction and reliability (0.559) and lastly customer satisfaction and responsiveness (0.691).

Table 16

Results of Pearson's Correlations Analysis

	Safety	Comfort	Affordability	Reliability	Responsiveness	Customer Satisfaction
Safety	1.00	.313**	.322**	.355**	.379**	.366**
Comfort	-	1.00	.434**	.560**	.510**	.502**
Affordability	-	-	1.00	.541**	.481**	.476**
Reliability	-	-	-	1.00	.577**	.559**
Responsiveness	-	-	-	-	1.00	.691**
Customer Satisfaction	-	-	-	-	-	1.00

**. Correlation is significant at the 0.01 level (2-tailed).

All independent variables correlation coefficient are significant at 1% level of significance. However, safety has positive and weak correlation between dependent variable. Similarly, comfort, affordability and reliability have positive and moderate correlation between the dependent variable and responsiveness has positive and strong correlation between the dependent variable. Hence, increase in safety, comfort, affordability, reliability and responsiveness could lead to increase in customer satisfaction.

Model Fit Assessment

We examined the goodness-of-fit indices for the model. Specifically, the standardised root mean square residual (SRMR) was utilised for this purpose. The SRMR value was 0.076, less than the threshold value of 0.08. The NFI value is 0.726, which is less than the critical value of 0.90. This indicates that the model possesses good explanatory power, as Hu and Bentler (1998) suggested. Moving on, the study of the significance of exogenous variables in the model was conducted by assessing effect size (f2) on endogenous constructs, measured in terms of r-square change. This approach is based on the methodology laid out by Cohen (1988). R2 values of 0.75, 0.50, or 0.25 for endogenous latent variables can, as a rough rule of thumb, be respectively described as substantial, moderate or weak. Moving on, the study of the significance of exogenous variables in the model was conducted by assessing effect size (f2) on endogenous

constructs, measured in terms of r-square change. This approach is based on the methodology laid out by Cohen (1988). The f-square value of safety is 0.026, comfort is 0.024, affordability is 0.059, reliability is 0.035 and responsiveness is 0.276 for customer satisfaction. The effect size of safety, comfort, affordability and reliability over customer satisfaction is small. Further, the effect size of responsiveness over customer satisfaction is medium. Lastly, the adjusted R- square values of customer satisfaction is 0.531 and R-square value is 0.561 which indicates moderate predictive power (Hair et al., 2013).

Structural Model Assessment

Structural model assessment involves the evaluation and validation of mathematical or computational models that represent complex systems or phenomena. It encompasses techniques aimed at verifying the accuracy, reliability, and predictive power of these models by comparing their outputs to empirical data or experimental observations. This assessment typically involves statistical analyses, sensitivity tests, and model simulations to determine the extent to which the model faithfully captures the underlying structure and dynamics of the system it represents. The ultimate goal is to ensure that the model provides a robust and realistic representation of reality, enabling informed decision-making and further refinement of the model as necessary.

Table 17

Hypothesis Testing (Direct Effect)

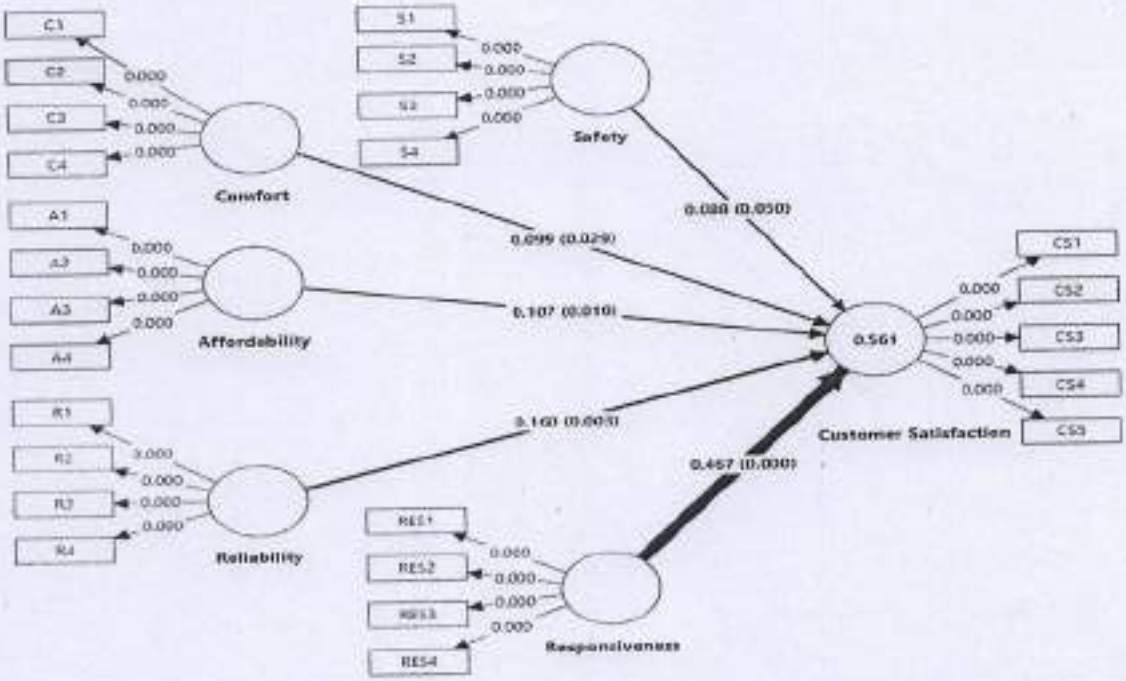
	β	Mean	STDEV	T statistics	P values	Decision
H2: Safety -> Customer Satisfaction	0.088	0.091	0.045	1.962	0.050	Accepted
H3: Comfort -> Customer Satisfaction	0.099	0.102	0.045	2.190	0.029	Accepted
H4: Affordability -> Customer	0.107	0.107	0.041	2.576	0.010	Accepted

Satisfaction						
H5: Reliability -> Customer Satisfaction	0.160	0.162	0.054	2.957	0.003	Accepted
H6: Responsiveness -> Customer Satisfaction	0.467	0.463	0.048	9.764	0.000	Accepted

Table 17 and Figure 10 show the boot-strapping results under 5000 subsamples and decisions on hypotheses. Hypotheses H2, H3, H4, H5, and H6 are accepted at a 0.05 significance level.

Figure 10

Path Diagram



Hence, safety (β=0.088; p<0.05) significantly and positively impacts on customer satisfaction towards public transportation. Similarly, comfort has a positive and significant impact (β=0.099; p<0.05) on customer satisfaction towards public transportation. Further, affordability (β=0.107; p<0.05) significantly and positively

impacts on customer satisfaction towards public transportation. Furthermore, reliability has a positive and significant impact (β=0.160; $p<0.05$) on customer satisfaction towards public transportation. Lastly, responsiveness has a positive and significant impact (β=0.467; $p<0.05$) on customer satisfaction towards public transportation.

Importance- Performance Map Analysis (IPMA)

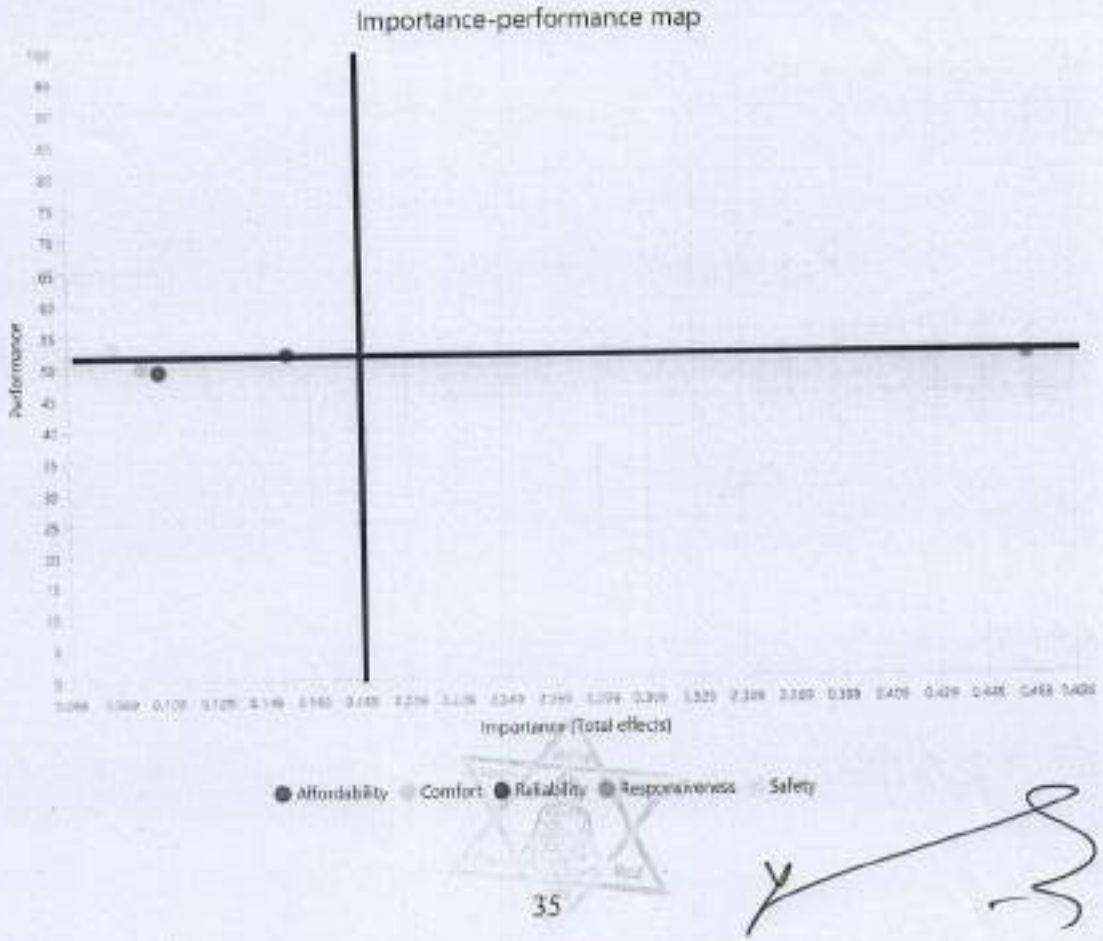
Table 18

IPMA Analysis

	Importance	Performance
Safety	0.088	53.138
Comfort	0.099	49.890
Affordability	0.107	49.239
Reliability	0.160	51.727
Responsiveness	**0.467**	50.835
Mean Value	**0.1842**	**50.9658**

Figure 11

IPMA



The table 19 indicates the importance- performance analysis of the factors of customer satisfaction. The results indicate that if we increase 1 unit in responsiveness from 50.835 to 51.835 then the customer satisfaction will increase from 52.239 to 52.706. Similarly, if we increase 1 unit in safety from 53.138 to 54.138, the customer satisfaction will increase from 52.239 to 52.327. Likewise, if we increase 1 unit in comfort from 49.890 to 50.890, the customer satisfaction will increase from 52.239 to 52.338. Further, if we increase 1 unit in affordability from 49.239 to 50.239, the customer satisfaction will increase from 52.239 to 52.346. Lastly, if we increase 1 unit in reliability from 51.727 from 52.727, the customer satisfaction will increase from 52.239 to 52.399.

MajorFindings

- It found that the results of mean and standard deviation of various constructs. Customers exhibit a positive attitude towards safety, with a mean value of 3.121 and a standard deviation of 1.075. Comfort has a mean value of 3.001 and a standard deviation of 1.123, while affordability's mean is 2.957 with a standard deviation of 1.107. Reliability scores a mean of 3.048 with a standard deviation of 1.045, and responsiveness has a mean of 3.034 and a standard deviation of 1.025. Customer satisfaction registers a mean of 3.093 with a standard deviation of 1.038.
- It found that the results of all measurement items measures for the outer model, including standardized outer loadings, Variance Inflation Factor (VIF), mean, and Standard Deviation (SD). Out of 25 scale items assessing six latent variables, all items exhibit satisfactory outer loading values above 0.70, except for S1, S2, and C1, which still meet the acceptable threshold of 0.6. Additionally, all VIF values are below 5, indicating no multi-collinearity issues among scale items. Mean and standard deviation results fall within an acceptable range for reliability and validity assessment, confirming the robustness of the measurement items.
- It found that the results of internal reliability and validity measures for the constructs. Cronbach's Alpha values for all constructs exceed the standard threshold of 0.705, indicating strong internal consistency and scale reliability. Composite Reliability (CR) rho_a and CR rho_c values are above 0.70, confirming construct reliability and validity. Average Variance Extracted

(AVE) values surpass the 0.50 threshold, signifying established convergent validity for all constructs. Overall, these results meet the quality criteria measures for reliability and validity.

- It found that the results of One- Sample Kolmogorov- Smirnov Test the test statistics value falls between -1.96 and +1.96, it can suggest normal distribution of variables. The Z values for safety do not fall between -1.96 and +1.96, it can be inferred that these variables do not follow a normal distribution. However, comfort, affordability, reliability, responsiveness and customer satisfaction follows a normal distribution as its Z values lie within the range of -1.96 to +1.96.
- It found that the results of independent sample t-tests reveals based on gender. It shows that insignificant differences between male and female respondents regarding comfort, affordability, reliability, responsiveness, and customer satisfaction. The t-values for these factors are less than +1.96, with p-values greater than 5 percent. This rejection of the alternative hypothesis suggests that gender does not significantly influence perceptions of these aspects. The mean values for male and female respondents are provided for each factor, demonstrating minor variations between the two groups.
- It found that the result of One way ANOVA for Age Group. It indicates significant results for comfort and reliability, with p-values of 0.048 and 0.00 respectively, below the 5% and 1% significance levels. Affordability and responsiveness have p-values exceeding 5%, leading to the rejection of the alternative hypothesis. However, for customer satisfaction, the p-value of 0.013 falls below 5%, accepting the alternative hypothesis at the 5% significance level.
- It found that the results of Mann- Whitney U test based on Gender. It shows that the p-value is $0.112 > 0.05$ which means that there is no significant difference between two population means, the null hypothesis is accepted. It means that male and female respondents have no significant difference in Safety.
- It found that the results of Kruskal- Wallis Test based on Age. It shows that the p- value of safety is 0.551, which is larger than 0.05. Thus, the null hypothesis is accepted at the 5% level regarding safety. Hence, there is insignificant difference between safety of below 30 years, 30- 40 years, 40 -50 years and

above 50 years concerning safety. Based on the mean rank shown in the table above, it is found that customers with 40-50 years of experience have a better opinion about safety compared to others. It means that age group has insignificant difference in safety.

- It found that the results of Pearson's correlation analysis, revealing significant correlations between customer satisfaction and safety, comfort, affordability, reliability, and responsiveness, with p-values less than 0.01 ($p<0.01$). Safety shows a positive and weak correlation, while comfort, affordability, and reliability exhibit positive and moderate correlations with customer satisfaction. Responsiveness demonstrates a positive and strong correlation with customer satisfaction. Therefore, improvements in safety, comfort, affordability, reliability, and responsiveness are likely to enhance customer satisfaction.
- It found that the results of hypothesis testing that display bootstrapping results from 5000 subsamples and decisions on hypotheses. Hypotheses H2, H3, H4, H5, and H6 are accepted at a 0.05 significance level. Safety ($\beta=0.088$; $p<0.05$), comfort ($\beta=0.099$; $p<0.05$), affordability ($\beta=0.107$; $p<0.05$), reliability ($\beta=0.160$; $p<0.05$), and responsiveness ($\beta=0.467$; $p<0.05$) all significantly and positively impact customer satisfaction with public transportation.
- It found that the results of importance-performance analysis of customer satisfaction factors. Increasing responsiveness by 1 unit from 50.835 to 51.835 corresponds to a customer satisfaction increase from 52.239 to 52.706. Similarly, increasing safety by 1 unit from 53.138 to 54.138 results in a satisfaction increase from 52.239 to 52.327. Likewise, increasing comfort by 1 unit from 49.890 to 50.890 leads to a satisfaction increase from 52.239 to 52.338. Additionally, increasing affordability by 1 unit from 49.239 to 50.239 results in a satisfaction increase from 52.239 to 52.346. Lastly, increasing reliability by 1 unit from 51.727 to 52.727 corresponds to a satisfaction increase from 52.239 to 52.399.

Discussion

Horsu and Yeboah (2015) found in their study that influence of service quality on customer satisfaction: A study of minicab taxi services in cape coast, Ghana were significant relationship with customer satisfaction. Likewise, Balachandran and Hamzah (2017) found that reliability and comfort were significant factor that influence

of customer satisfaction on ride-sharing services in Malaysia. Similarly, Gorkhale (2021) found in this study was conducted in Bengaluru Metropolitan Area, situated in the Indian state of Karnataka. The results provided insights into the opinions of the customers regarding the variables which influence their overall satisfaction with the taxi service. It was found that all the independent variables had positive and significant relationship with the Customer satisfaction. Moreover, Yao et al., (2014) found that service quality and customer satisfaction towards Kuantan route, Malaysia regarding the SERVQUAL dimensions (i.e. reliability and responsiveness) have positive and significant impact on customer satisfaction. Thus, the current findings are consistent with previous research, which indicates a significant relationship between service quality and customer satisfaction towards public transportation.

Conclusion

This study concludes that there is no significant difference in the perception of safety, comfort, affordability, reliability, and responsiveness among distinct age groups regarding customer satisfaction. This suggests that age does not play a significant role in shaping perceptions related to these factors and their impact on overall customer satisfaction. As the study has found that there is significant difference in perception of age groups for comfort and reliability dimension for enhancing customer satisfaction. This means that age groups might affect how customer perceived about comfort and reliability towards public transportation. This suggests that varying age demographics may influence customers' perceptions regarding these crucial aspects of public transportation. By acknowledging and understanding these differences, transportation authorities and policymakers can tailor strategies to better meet the diverse needs and expectations of passengers across different age groups, thereby enhancing overall satisfaction and utilization of public transportation services.

The findings indicate that service quality variables safety, comfort, affordability, reliability and responsiveness that influence customer satisfaction towards public transportation. In this research, safety, comfort, affordability, reliability and responsiveness are the main factors affecting customer satisfaction towards public transportation as they positive and significantly influence customer satisfaction based on our findings. Safety has weak positive correlation while comfort, affordability, and reliability exhibit positive and moderate correlations with customer satisfaction. Responsiveness has strong positive correlation with customer satisfaction. From this

study, it is concluded that responsiveness is highly influencing factor on customer satisfaction among other independent variables i.e. safety, comfort, affordability and reliability. The study emphasizes the significance of service quality in public transportation, particularly responsiveness, in enhancing customer satisfaction. It suggests that prioritizing and improving responsiveness can attract new customers and foster loyalty. The research suggests that addressing customer needs quickly fosters trust and reliability, leading to increased customers and a shift from private vehicles to public transport.

Recommendations

Following recommendations are suggested on the basis of empirical findings;

- Responsiveness is the major factor which promotes the passengers satisfaction. Therefore, there should be implemented real-time communication channels, automated alerts for service disturbances and dedicated customer service teams to promptly address passenger concerns.
- There should be focused on enhancing passenger comfort through adaptation of latest infrastructure and amenities i.e. comfortable seats, cleanliness, Wi-Fi, entertainment options and so on.
- There should be introduced fare discounts, loyalty programs, and flexible payment options to attract more passengers, particularly price – sensetive customers.
- Despite a weak correlation, there should be enhanced safety protocols, implement visible security measures and provide safety education to passengers.
- Reliability is also the influencing factor of customer satisfaction. Therefore, there should be adopted several measures to enhance the service reliability, including predictive maintenance, optimized scheduling, and real-time service updates. Proactively communicate service changes and disruptions to minimize passenger inconvenience and build reliability perceptions.

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Appendix1
APPENDICES

SERVICE QUALITY AND CUSTOMER SATISFACTION TOWARDS PUBLIC TRANSPORTATION

Dear Respondents,

We are Faculty member and Student of Lumbini Banijya Campus, Butwal, Rupandehi. We are presently conducting a Mini-research on "Service quality and Customer Satisfaction towards Public Transportation" We would be very much appreciating your participation in this survey. Participation in this survey is voluntary and you can choose not to answer all of the questions. However, we hope that you will participate in this survey since your views are important for reform measures. Your cooperation is greatly appreciated, and we thank you for participating in this survey.

Best regards,

Asst. Prof. Pitambar Sapkota

Asst. Prof. Tulshi Prasad Bhusal

Mr. Santosh Jung Kunwalr

Section – A: Demographic Profile

Please tick (√) in the appropriate box/space provided unless otherwise instructed.

1) Age (उमेर)
   - Below 30 (तिस वर्ष भन्दा कम) ☐
   - 30 to 40 (तिस देखी चालिस वर्ष सम्म) ☐
   - 40 to 50 (चालिस देखी पचास वर्ष सम्म) ☐
   - 50 above (पचास वर्ष भन्दा माथी) ☐

2) Gender (लिङ्ग)
   - Male (पुरुष) ☐
   - Female (महिला) ☐
   - Others (अन्य) ☐

3) Marital Status (वैवाहिक स्थीति)
   - Married (विवाहित) ☐
   - Unmarried (अविवाहित) ☐

4) Education (शैक्षिक योग्यता)
   - +2 and below (+२ वा तल) ☐
   - Bachelors level (स्नातक स्तर) ☐

- Masters (मास्टर)
- Above master (मास्टर माथी)

5) Occupation (पेशा)
   - Student (विद्यार्थी)
   - Self employed (स्वरोजगार)
   - Salaried Individual (तलब पाउने व्यक्ति)
   - Unemployed (बेरोजगार)
   - Retired (सेवा निवृत)

6) Monthly Income (मासिक आम्दानी)
   - Below 10000 (दश हजार वा सो भन्दा तल)
   - 10000-20000 (दश हजार देखी बिस हजार सम्म)
   - 20000-30000 (बिस हजार देखी तिस हजार सम्म)
   - 30000-40000 (तिस हजार देखी चालिस हजार सम्म)
   - Above 40000 (चालिस हजार भन्दा बढि)

7) Own vehicle (निजी गाडि)
   - Yes (छ)
   - No (छैन)

8) If yes, Types of own vehicle (यदि छ भने,निजी गाडिको प्रकार)
   - Motorcycle (मोटर साइकल)
   - Scooter (स्कुटर)
   - Car (कार)
   - Bus (बस)

Section- B: Main Part

Please read the following instructions carefully and tick (√) on the appropriate option. Instruction: 1=Strongly Disagree (एकदमै असहमत), **2= Disagree**(असहमत), **3= Neutral** (तटस्थ), **4= Agree**(सहमत) **and 5= Strongly Agree**(एकदमै सहमत)

Independent Variables

Safety (सुरक्षा) Horsu and Yeboah (2015)	1 (१)	2 (२)	3 (३)	4 (४)	5 (५)
Drivers are aware to safe driving (सुरक्षित साथ सवारी चलाउन चालक सचेत छन्)					
Drivers use of safety measures (चालकहरुले सुरक्षा उपायहरु प्रयोग गरेका छन्)					

I Feel safety of personal belongings in Bus (मलाई बसमा व्यक्तिगत सामानहरुको सुरक्षा महशुस हुन्छ)					
I Feel safe on the bus (म बसमा सुरक्षित महशुस गर्दछु)					

Comfort (आरामदायी) Horsu and Yeboah (2015)	1 (१)	2 (२)	3 (३)	4 (४)	5 (५)
There is enough space to take seat in bus (बसमा बस्ने सिट पर्याप्त र फराकिला छन्)					
Good music system in the bus (बसमा राम्रो संगीत प्रणाली रहेको छ) ।					
Easy to get a bus (बस सहजै प्राप्त गर्न सकिन्छ)					
Ease to enter exit vehicles (गाडिमा प्रवेश गर्न वा बाहिर निस्कन सजिलो छ)					

Affordability (किफायती) Horsu and Yeboah (2015)	1 (१)	2 (२)	3 (३)	4 (४)	5 (५)
Reasonable fare for the service (बस सेवाको लागी भाडा उचित छ)					
Affordability Provision of discounts in bus (बसमा उचित छुटको प्रावधान रहेको छ)					
Fare are good value of money (सेवा अनुसार भाडा पैसाको राम्रो मुल्य हो)					
Fare increases are reasonable (भाडामा गरिएको वृद्धिहरु तर्कसंगत छ)					

Reliability (विश्वसनियता) Ojo et al. (2014)	1 (१)	2 (२)	3 (३)	4 (४)	5 (५)
Timely reaching of the vehicle to the destination (गाडि तोकेको समयमै गन्तव्यमा पुग्दछ)					
Proper functioning of the vehicle along the route without break down (कुनै खराबी बिना नै सवारीले आफ्नो रुटमा उचित रुपले सवारी गुड्नुपर्दछ)					

Staff always willing to help passenger (यातायातको कर्मचारीहरुले सधै यात्रुहरुलाई सहयोग गर्न इच्छुक हुन्छन्)					
Driver of the bus always follow the planned route (बसको चालकले सधै योजना बमोजिमको रुटमा सवारी चलाउने गर्दछ)					

Responsiveness (प्रतिक्रियाशिलता) Ojo et al. (2014)	1 (१)	2 (२)	3 (३)	4 (४)	5 (५)
Communication of bus staff is clear and helpful with their passengers (बसका कर्मचारीहरुले यात्रुसँग गर्ने संवाद स्पष्ट र सहयोगी किसिमको छ)					
Always willing to help the passengers (बसका कर्मचारीहरुले यात्रुहरुलाई सधै सहयोग गर्न तत्पर रहन्छन्)					
Bus staff are never too busy respond your request (बसका कर्मचारीहरुले यात्रुहरुको समस्या संबोधन गर्न कहिल्यै व्यस्त हुदैनन्)					
Bus staff give prompt service to the passengers (बसका कर्मचारीहरुले यात्रुहरुलाई तुरुन्त सेवा दिन्छन)					

Dependent Variable

Customer Satisfaction (ग्राहक सन्तुष्टि) Ojo et al. (2014)	1 (१)	2 (२)	3 (३)	4 (४)	5 (५)
I am satisfied with the services provided by the bus (म बस द्वारा प्रदान गरिएका सेवाहरुसँग सन्तुष्ट छु)					
The bus services are offered in an efficient manner (बस सेवाहरु प्रभावकारी रुपमा संचालित छन)					
I always give positive remarks about the bus services (म बस सेवाको बारेमा सधै सकारात्मक टिप्पणी दिन्छु)					
I would recommend my friends to use the bus services (म मेरा साथीहरुलाई बस सेवाहरु प्रयोग गर्न सिफारिस गर्दछु)					
I will use the same bus in the future (म भविष्यमा पनि त्यही बस प्रयोग गर्नेछु)					