RAILWAY PASSENGER'S SATISFACTION ANALYSIS ON SERVICE QUALITY: A STUDY ON KAMALAPUR STATION TO KHULNA RAILWAY STATION

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CERTIFICATION

This is to certify that this project and thesis entitled **"Railway Passenger's Satisfaction Analysis on Service Quality: A Study on Kamalapur Station to Khulna Railway Station"** is done by the following students under my direct supervision and this work has been carried out by them in the laboratories of the Department of Civil Engineering under the Faculty of Engineering of Daffodil International University in partial fulfillment of the requirements for the degree of Bachelor of Science in Civil Engineering. The presentation of the work was held on December,2024.

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This thesis is dedicated to our parents. For their endless love, support, and encouragement.

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ABSTRACT

Platforms are an essential component of all rail transportation. A traveler can use a variety of platform-based amenities at a train station to feel satisfied, which is seen as being quite important. This study used survey questionnaires at the Kamalapur and Khulna railway stations to determine how satisfied passengers are with these services. The study's analytical approach uses factor analysis to pinpoint the key elements influencing passengers' satisfaction with the caliber of the services they receive. Passengers were surveyed as part of the econometric analysis technique. Based on passenger responses to a survey designed to assess service quality in seventeen key categories, the results were drawn. According to the study, the amount of refreshments and readily available food, along with the ticket service and reservation chart display, lighting, restroom and toilet cleanliness, behavior, scheduling, and sanitation, are significant factors that account for 51.102% of the variance explained and affect how satisfied passengers are with railway platforms. A model was created, a conclusion was reached, and the theoretical and practical ramifications were examined. Policymakers are likely to find the passenger satisfaction model produced by this study helpful in developing plans and strategies for enhancing platform-based facilities.

Keyword: Railway Station, Amenities, Service, and Passenger Satisfacti.

CHAPTER 1
INTRODUCTION

1.1 General

Customers rarely know a great deal about the technical components of a service. Functional quality thus becomes the most important criteria in determining service quality (Donabedian, 1983). Passengers' satisfaction with service quality is frequently evaluated using technical and functional attributes (Grönroos, 1984). Service quality, as it relates to service delivery, is the capacity of an organization to meet the expectations of its customers. Enhancing and assessing service quality may increase a company's earnings and standing. Regardless of the industry, an organization's capacity to satisfy customer demands while preserving a competitive edge may be directly impacted by service quality. A passenger's expectations for a certain service are influenced by recommendations, individual requirements, and prior experiences. There may be a discrepancy between expected and perceived service levels. The core requirements for delivering exceptional service quality are highlighted by the service quality model, which was created in 1985. In 1990, A. Parasuraman, Valarie A. Zeithaml, and Len Berry created a model of service quality based on the expectancy-disconfirmation paradigm (Czepiel). Some distinguished scholars have proposed a wide range of criteria for service quality. Customers' perceptions of a service's ability to meet or surpass their expectations can be used to gauge its quality (Czepiel, 1990). (Ekinci and others, 2018) Passenger satisfaction is the outcome of evaluating the quality of the services. The degree of service may be assessed based on the customer's impression, expectation, satisfaction, and attitude. Verma and Sachdev (2004). For this reason, rail passengers place a high value on service quality. Passengers will be happy if they receive just the best (100 percent) service. Consequently, there is a relationship between the quality of service and passenger satisfaction. Passengers will be more satisfied when service quality improves, while customers will be less satisfied when service quality declines.

One of Bangladesh's main forms of transportation is the railway. The Bangladesh Railway carried 42 million passengers during the 2005 fiscal year (Bangladesh Railway, 7 December 2009, Retrieved 15 December 2009). According to Bangladesh

Railway (2007, retrieved December 15, 2009), inter-city services account for more than 70% of the company's earnings. 312 wide gauge and 1,164 meter gauge carriages were owned by the railway in 2014.

The railway was split into East and West zones for the same reason. Two general managers oversee the railway and answer to the director general of Bangladesh Railway. The day-to-day management of the Railway was then transferred from the Ministry to a director general who was appointed as a Railway professional on August 12, 1995. The minister of communications is the head of the nine-member Bangladesh Railway Authority (BRA), which was formed to provide policy guidance The Director General is assisted by the Additional Director General and Joint Director General in carrying out all administrative and policy-making responsibilities.

The general managers of the two zones are assisted by a large number of specialized departments that handle maintenance, operations, and financial management. There are two divisions inside each zone, which serve as the primary operating units. Divisional officers from a range of specialized departments, such as those for manpower, transportation, business, finance, mechanical, way and works, signaling and telecommunication, electrical, and medical, assist the division, which is led by a Divisional Railway Manager. Pahartoli and Syedpur also have distinct divisional supervisors for their respective workshop divisions. Additionally, each zone has its own workshop section. Additionally, both BG and MG locomotives may be maintained generally at a Parbatipur locomotive workshop managed by the Chief Executive.

A planning unit headed by a Chief Planning Officer is also part of Bangladesh Railway's Rector. a Chief Controller of Stores-led stores department and an Additional Director General/Finance-led accounts department to oversee and counsel on the accounting and financial management operations of the two zones.

Bangladesh Railway is a major player in the transportation sector from an industry standpoint. Those from the lower to middle classes make up the majority of its clientele, and they are mostly unaware of the problems with service quality. Rails make their travel easy, accessible, and reasonably priced. The Bangladesh Railway may ignore aspects like customer satisfaction, product marketing, and service quality since it has no competition due to the monopolistic market structure. Currently, Bangladesh Railway is a losing department due to a lack of administrative and technical resources as well as widespread dissatisfaction with the quantity and quality of all railway

services. Most recently, authorities halted several railway routes due to low passenger volume and budgetary concerns.

1.2 Objectives of Study

The paper consciously attempts to examine the method in which passengers assess the platform services provided by Bangladesh Railway. Customer satisfaction is clearly a gauge of total service quality (George & Kumar, 2013; Ekinci et al., 2018; Czepiel, 1990) The objective of this study is to:

1. To examine the key determinants of railway station service quality that affect passenger satisfaction.
2. To develop a model of customer satisfaction in platform services.

1.3 Statement of the Problem

Every year in Bangladesh, a great number of individuals travel by rail. People are compelled to ride on the train's rooftop at some occasions due to the size of the throng. However, on railroad station platforms, travelers encounter a range of issues for a range of causes at a range of times. For example, there isn't enough seats. precautions for personal safety, the protection of luggage, hygienic facilities, and more. There are three categories into which Bangladesh's railway services may be divided.

- Ticketing.
- On Board Service.
- Platform Facilities.

Usually, in crowded train stations, passengers wait in line to get tickets. The decision to employ online ticketing was taken by Bangladesh Railway's officials in an effort to alleviate passengers' suffering. An app that allows customers to purchase train tickets from the comfort of their homes has been introduced. Numerous news outlets have nevertheless reported that users using this program have encountered a variety of issues. According to frequent reports from passengers, the train platform has been designated a residential zone of violation. Because of this, travelers never feel secure leaving their things at the station. Numerous inquiries into the engineering capabilities and operations of Bangladesh Railway have already begun. This situation can be explained in a number of ways. However, the current study found that by researching train platforms and providing the appropriate physical evidence as part of the service marketing mix, customers' requests for platform service and their persistence may be decreased. To what degree customer satisfaction with service quality on the railway station has been examined.

1.4 Outline of Thesis

The introduction is the first chapter of our thesis paper. We explained the significance of our thesis and the rationale behind our topic selection in this introductory chapter. A literature review is the title of the second chapter. Here is a summary of the thesis papers that we looked at and found to be pertinent to our thesis topic. These are the literature review and introduction. A thesis paper requires a thorough review of the literature. In our third chapter, we discuss the study's approach. The introduction, sample and survey, and techniques are all included in this chapter. We discussed here how we collected the data, how we processed it, what tools we used, etc. The title of the fourth chapter is "Analysis and Results."

The first chapter of our thesis paper serves as an introduction. We explained in this introductory chapter the significance of our thesis and the rationale behind our topic selection. The second chapter is titled "A Literature Review." We looked into several thesis papers that were pertinent to our thesis topic, and we have compiled a list of them below. These are the introduction and the literature review. A thesis paper requires a thorough literature review. We discuss the study's approach in our third chapter. This chapter contains the methodologies, sample and survey, and introduction. Here, we discussed the methods we used to collect the data, analyze it, choose the tools we used, etc. Chapter 4 is called "Analysis and Results."

CHAPTER 2
LITERATURE REVIEW

2.1 Introduction

A review of the literature assesses and condenses the most recent findings in a field without adding anything new. They assist the researchers in even establishing the study subject because they are based on prior understanding. In order for additional research to be successful, the literature review suggests potential directions. To enable its extensive use, the importance of a literature review in a scientific paper might be distilled into an analytical feature. In several ways, it raises the credibility of the research:

- It proves facts by pointing out the inconsistencies between different ideas within the subject.
- Their knowledge progress is illustrated, which aids in measuring the impact of new information in the subject.
- Indicates the current position of study in a field's schema.
- It serves as a foundation for further research by highlighting areas that need further examination in addition to illustrating the continuity of knowledge.
- The research subject can be narrowed by evaluating, summarizing, and synthesizing the key ideas in the author's own words.
- Provides the audience with the opportunity to properly acknowledge fact-finding and fact-checking in scientific publications.

2.2 Literature Review

Different degrees of service quality have been examined by numerous scholars in terms of technical, functional, and reputational aspects (Grönroos, 1984; Lehtinen, 1991). (Lapierre et al., 1996) Consider the corporate, physical, and interaction aspects; concentrate on your physical and mental accessibility, as well as your aptitude and capacity to help.

In developing the basic service quality model (Rahaman & Rahaman, 2009), researchers found that eight different service quality attributes—such as waiting arrangements, station information space for passengers to move on, station staff behavior, security in the station, environmental inside the train, and train waiting time—have an impact on overall service satisfaction. Studies on passengers' satisfaction with consultant services have found a number of characteristics, such as the consultant's perceived expertise and attitude toward the passengers during the services production process (Sonne, 1999).

Table 2.1 Quality of Determinants

Quality Determinant	Author
Passengers' perceptions and expectations	(Czepiel, 1990) (Sachdev & Verma, 2004)
Functional aspects	(Donabedian, 1983) (Grönroos, 1984)
Aspects of technology and functioning	(Grönroos, 1984)

According to (Geetika & Nandan, 2010), there are five criteria that affect how satisfied people are with train platforms. The most important ones are security, basic amenities, behavior, information system efficiency, and refreshments. (Hossain, 2013) asserted that six factors influence how satisfied people are with train stations, with passenger behavior, security, refreshment, illumination, information, and basic amenities (clean drinking water and sanitary facilities) being the most significant.

In 2009, Eboli and Mazzulla According to Bunker J. (2014), the degree of passenger satisfaction with bus service was evaluated in relation to several factors, such as bus stop shelters and benches, cleanliness, overcrowding, information systems, safety, and personal security, as well as the helpfulness of staff and the physical condition of the bus stop. For effective service, note the following features at the bus station: shelter, waiting areas and seating, doors, stairways, escalators, signage, and passenger amenities.

Nandan and Geetika (2010) The poll assessed six aspects of passenger satisfaction with electric providers: pricing, customer service, corporate image, billing and payment, power quality and dependability, and city areas. Five parameters were used to quantify passenger satisfaction with high-speed and dial-up internet service (Rintyarna et al., 2022). These elements were billing and offering, performance and dependability, cost of service, passenger service, and advertising.

The literature review indicates that certain quality attributes have been found by researchers in relation to different services. According to the Transit Cooperative Research Plan (Bunker J., 2014), transit quality is the whole measured or perceived performance of transit service as seen from the viewpoint of the passenger. TCRP Report 88 (TCRP Report 100 Chapter 2) defines five categories: 1. Public transportation accessibility; 2. Trip duration; 3. Service monitoring; 4. Passenger travel security and safety; and 5. Maintenance and construction activities.

(Stephen and Vannarajan, 2008) Passengers evaluate Indian railways' service quality based on a number of criteria, including responsiveness, empathy, tangibles, assurance, and reliability. It was concluded that the passengers were only somewhat happy on this dimension. Personnel conduct is the most important indicator of passengers' satisfaction with Indian Railway service (Agarwal, 2008). In a survey on online banking, consumers gave the quality of service the most weight when selecting a bank (Geetika & Nandan, 2010). In another study on passengers' satisfaction with banking services, traditional (basic) facilities, convenience, staff behavior, and the bank's atmosphere were all significant factors. (2005 Of et al)

Customers' level of satisfaction with full-service moving firms was determined by a number of aspects, including the packing service, insurance damage claims, optional coverage, the estimated process, the loading and unloading of items, and the transportation of goods. This suggests that the standard of basic amenities and other auxiliary facilities affected satisfaction (Annamalah et al., 2011).

Table 2.2 Summary of the Literature Review on Passenger Satisfaction

Factors Considered for Passenger's Satisfaction	Authors
Quality of service	(Geetika & Nandan, 2010)
Reactivity, consistency, confidence, and compassion. material things.	(Jackson, 1981) (Annamalah et al., 2011) (Vanniarajan & Stephen, 2008)
Factors to take into account include safety and security, maintenance and construction, trip duration, transit service availability, and service monitoring.	TCRP Report88, 100
Additional factors, such employee conduct.	(Agarwal, 2008)
Packing services, insurance/damage claims (basic facilities, various supporting facilities), optional coverage, loading and unloading services, and transportation of belongings.	(Bunker J, 2014)
Passenger's service, company image, invoicing and payment, price, communications, and information system are all factors to consider.	(Geetika & Nandan, 2010)
A few things to think about include performance and reliability, service fees, passenger service, billing, merchandise, and promotions.	(Time, 2014)
The general atmosphere, staff conduct, basic facilities, and convenience	(Of et al., 2005)
Cleanliness, congestion, information system, safety. personnel security, helpfulness of personnel, and physical condition of bus stops are all factors to consider	(Eboli & Mazzulla, 2009) TCRP Report 100

In terms of service quality, **Table 2.2** summarizes studies on the variables influencing customer satisfaction with different services. In order to discover important common

features of service quality both within and outside the setting, a robust theoretical framework is built for the current study employing the diverse service contexts.

CHAPTER 3
METHODOLOGY

3.1 Introduction

This study uses a case study approach to fulfill its claims and is individual in character. In terms of passenger pleasure, many features are crucial for various services, according to the literature review. Researchers in Bangladesh have also neglected to conduct an investigation into the level of client satisfaction with road station services and their service quality. In order to better understand how customers perceive the quality of services on road platforms, an effort is undertaken. A case study approach is employed, together with the results of a quick check, to identify the elements that contribute to customer satisfaction with this very significant public mileage in the particular context of Bangladesh.

3.2 Survey and Sampling

Both callers from other nations and the whole Bangladeshi population made up the macrocosm of the research. The research mostly relied on primary data collected using carefully crafted questionnaires, which included a five-point Likert scale from "least satisfied" to "most satisfied" to gauge client satisfaction with certain criteria. A scale with balanced keying (an equal amount of positive and negative comments) might eliminate the issue of compliance bias, thus the researchers used a Likert scale to measure opinion-based details. In order to evaluate factors that affect customer satisfaction on the train platform, the survey has 17 categories (appendix-1). Kamalapur Railway and Khulna Railway Station were the two sizable train stations that were chosen as a sample in the study. The largest and most important railway station in Bangladesh is Kamalapur. It is a significant hub. It is situated in Motijheel Thana, the capital of Dhaka. Dhaka Railway Station is its official name. It has seven tracks and eight platforms. A multimodal transportation hub is being built around the station, with completion expected in 2030.

The district of Khulna is home to the Khulna railway platform. The primary station in the city is the Khulna railway station. It can be found on Khulna's Upper Jessore Road,

Power House More. Trains come from India and nearby locations including as Dhaka, Jessore, Sylhet, Rajshahi, Chittagong, Comilla, and Mymensingh. The Dharshana-Jessore-Khulna line connects these cities to the rest of the nation. Because its rail tracks are dual gauge, both meter and wide gauge trains may travel on them. A lot of people go through this station every day. The station has 10 tracks and six platforms.

It was built by the Eastern Bengal Railway in 1833, about 140 years ago. In 2018, Bangladesh Railway reconstructed it. The architecture of the new station is contemporary. Every day, a number of trains pass through Khulna station. The "Chitra Express" and "Sundarban Express" are regularly operated by Bangladesh Railway between the stations of Dhaka and Khulna. The "Kapotaksha Express" and the "Sagardari Express" connect the station to Rajshahi. Between Khulna and Chilahati station, the "Rupsha Express" and the "Simanta Express" run. Additionally, the "Bandhan Express" operates international trains between Khulna and Kolkata. Numerous postal trains, including the "Mohananda Express," "Rocket Express," "Nokshikantha Express," "Benapol Commuter," and "Khulna Commuter," go daily from Khulna to Chapainawabgonj, Parbatipur, Goalando Ghat, and Benapol.

The distance between the Kamalapur Railway station platforms and Khulna Railway station platform we studied for our research is shown below by a Google map.

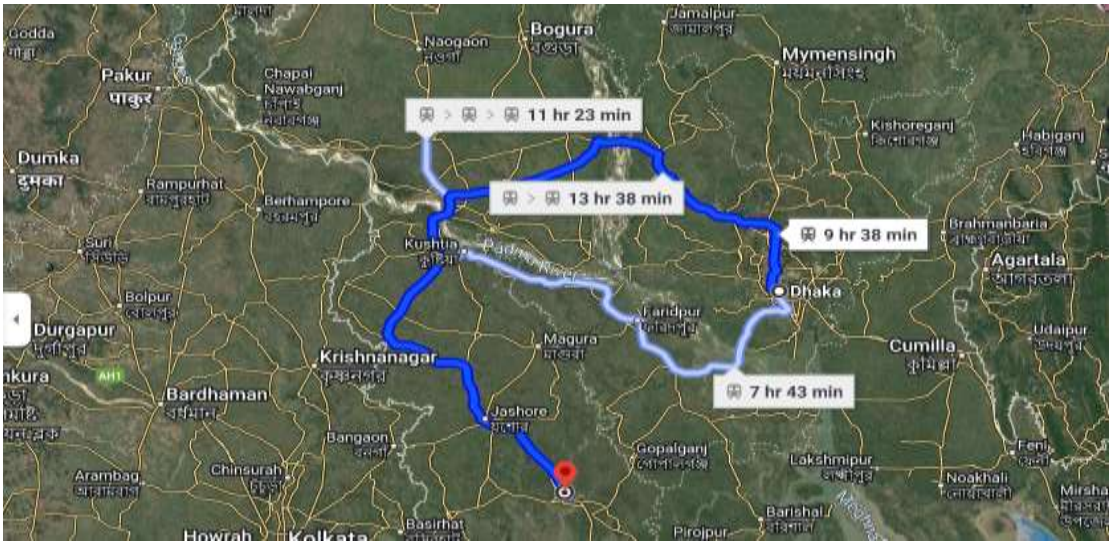

Fig. 3.1 Selected Study Route

The survey included 300 samples in total, 115 from Khulna railway station and another 185 from Kamalapur railway station during the period of November 15, 2024, to December 05, 2024, while people were waiting for trains on platforms.

3.3 Methodology

The study revealed that determinants differed by service, leading to the conclusion that none of the instruments available should be used. Although it was challenging labor, it was required to meet the goals of the study. Using the existing literature, observations, pilot study, and expert judgment, an instrument was created. Through assessments and exploratory research, the variables pertaining to passenger pleasure and perception—two aspects of Bangladesh Railways' service quality—were developed. Frequent travelers were interviewed to determine the factors influencing their enjoyment. These early surveys and assessments were used to build broad passenger satisfaction metrics for train stops. The literature review helped to validate these criteria. A question was then created by modifying them.

The 17 Variables in these surveys were used to gauge passengers' satisfaction with the quality of the services they received, including:

Table 3.2 Determine which factors affect passengers' satisfaction with the service quality of Bangladesh's Railway Platforms.

Code	Variables
V1	Ticket Service
V2	Reservation chart display
V3	Timing and scheduling
V4	Accuracy of announcement
V5	Quantity of Refreshment
V6	Quality of Refreshment
V7	Lighting
V8	Fans
V9	Readily available foods
V10	Sanitary arrangement
V11	Cleanliness of toilets & compartment
V12	Security of luggage
V13	Security of self (passengers)
V14	Parking Management
V15	Platform height
V16	Behavior of train police and TT
V17	Behavior of ticket counter representatives

Definition of Variables

- **Ticket Counter:** The quality of the ticketing service and the quantity of ticket counters in the stations have been discussed in light of passenger service.

- **Reservation Chart Display:** In order to facilitate passenger understanding of train departure times and which train is currently waiting to depart the station, LED monitors are installed at the stations. in order for the passengers to avoid missing any trains. This is supposed to be a representation of a reservation chart.

- **Timing and scheduling:** Timing and scheduling include whether the train departs the station and if it arrives at the platform at the designated time. because the train occasionally comes and departs late.

- **Announcement Accuracy:** When a train departs the station, the announcement is made via the speakers at the station. As soon as the news was made, the passengers boarded the train. However, if the announcement is not heard properly, the passengers will not be able to determine which train is now departing.

- **Quantity of Refreshments:** The number of refreshments available at a train station includes a variety of seating options, enough special waiting areas for passengers who have been waiting for a long period, and an adequate number of cafeterias.

- **Quality of Refreshments:** This pertains to the layout of the waiting areas, such as First Class, Shovan Chair, Shovan, and so on. Additionally, it is contingent upon the class of the pending tickets. at addition, the standard chair-style chairs at the stations are discussed in this section.

- **Lighting:** Whether the platform has enough illumination for passengers at night is referred to as lighting. The stations occasionally experience theft, snatching, and other unpleasant acts as a result of the absence of light.

- **Fans:** The term "fan" describes how many fans the station has.

- **Readily available foods:** It refers to the high caliber of cuisine served in the station at a cost that travelers may easily afford.

- **Sanitary Arrangement:** The platform is required to supply passengers with safe drinking water and sanitary sanitation.

- **Cleanliness of toilets and compartments:** It refers the clean and clear to the toilets and the waiting rooms in the station.
- **Security of luggage:** For the purpose of traveling to other locations, passengers carry their bags to the platform. Sometimes, luggage gets taken when the platform's security is inadequate. for the travelers to encounter significant difficulties. Showing how much luggage safety travelers may guarantee on the Bangladesh Railway Authority platform is what is meant by luggage safety here.

- **Security (passenger):** The railway authorities have been aware of the level of security that can be provided to platform passengers. Parking Management: It has been explained whether there are car parking facilities for passengers in the stations.

- **Platform Height:** The height between the floor and the platform you can stand on is known as the platform height. It is safe to work from the platform height on platform steps.

- **Behavior of train polic and TT:** Porters stay at the station to carry passengers' belongings. This shows how the porters are treated at the station and how they interact with the passengers.

- **Behavior of ticket counter representatives:** However, listening to their concerns, showing empathy, keeping your promises, and being proactive in your interactions is what counts in maintaining your services. Make sure that you are patient and understanding even when faced with demanding customers.

CHAPTER 4
ANALYSIS & RESULT

4.1 Introduction

The components of retail service excellence were identified using factor analysis. The same technologies were utilized by Hsu et al. (www.academic-papers.org) and Agarwal (2008) to identify elements that affect customer satisfaction while making online purchases (Rahaman & Rahaman, 2009) in order to ascertain what aspects affect train passengers' enjoyment. (Hossain, 2013) identify the elements that affect passengers' satisfaction with the quality of services provided by train platforms. The same method was applied in this study to identify the variables affecting passenger happiness. Finding the elements that affect passenger satisfaction on train platforms and testing the hypothesis that these factors do so were the objectives of factor analysis. SPSS 25 was used to analyze the data.

Based on their individual experiences, the passengers were asked to score each of the 17 attributes on a five-point scale. The rate of passenger reaction was quite good. The Kaiser-Meyer-Ohlin (KMO) sample adequacy measure and Bartlett's test of sphericity were used to assess the validity of the data. The range of the KMO statistic is 0 to 1. A number of 1 indicates that factor analysis should provide different and trustworthy components, whereas a score of 0 indicates that factor analysis is unlikely to produce unique and trustworthy factors (Ul Hadia et al., 2016). If the results are less than this, you should either gather more information or reconsider which variables to include. Also, according to Lapierre et al. (1996), values in the range of 0.5 to 0.7 are average, those in the range of 0.7 to 0.8 are good, those in the range of 0.8 to 0.9 are outstanding, and those that exceed 0.9 are extraordinary. Table 4.1 displays the Bartlett's Test and the Kaiser-Meyer-Ohlin Test.

Table 4.1 A brief description of data collection

Location	Survey Date	Distributed Number of Questionnaires	Number of Returned Questionnaires	Response Rate (%)
Kamalapur Railway Station	**05/12/2024 ~ 15/11/2024**	185	185	100
Khulna Railway Station		115	115	

When respondents received questionnaires at the time, they carefully answered the questions. When they didn't comprehend a question, they came to us. We collected data in this manner, one by one, taking our time. That is why our data is free of noise.

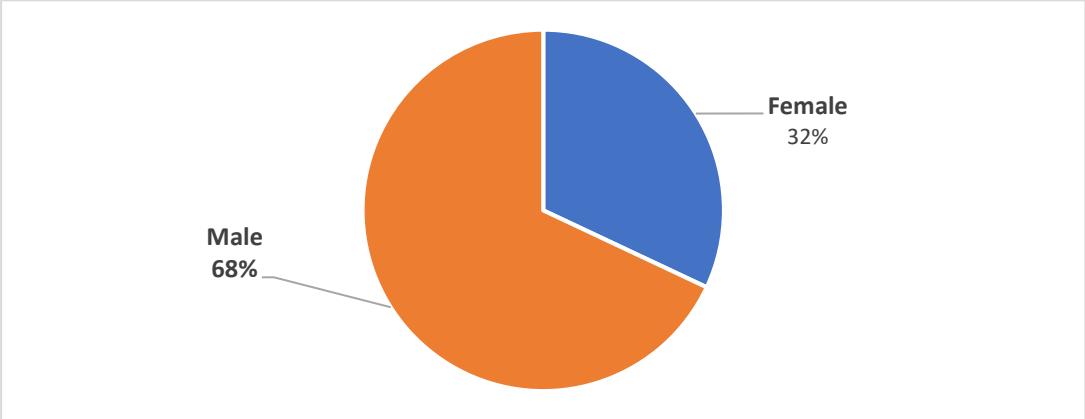

Fig. 4.2 The percentage of respondents by gender

In comparison to women, men made a substantially larger contribution to the data response in **figure 4.2**. This suggests that 68 percent of males and 32 percent of women responded to the poll.

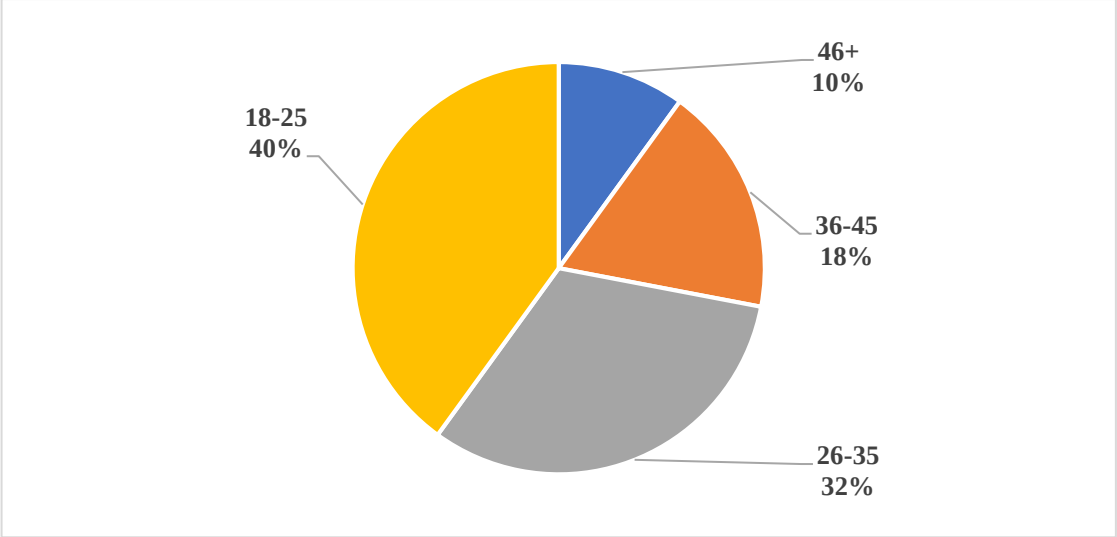

Fig. 4.3 Respondents' percentage by age variation

According to **Figure 4.3**, the response rate was 45% for those between the ages of 18 and 25, 32% for those between the ages of 26 and 35, 18% for those between the ages of 36 and 45, and 5% for those above the age of 46.

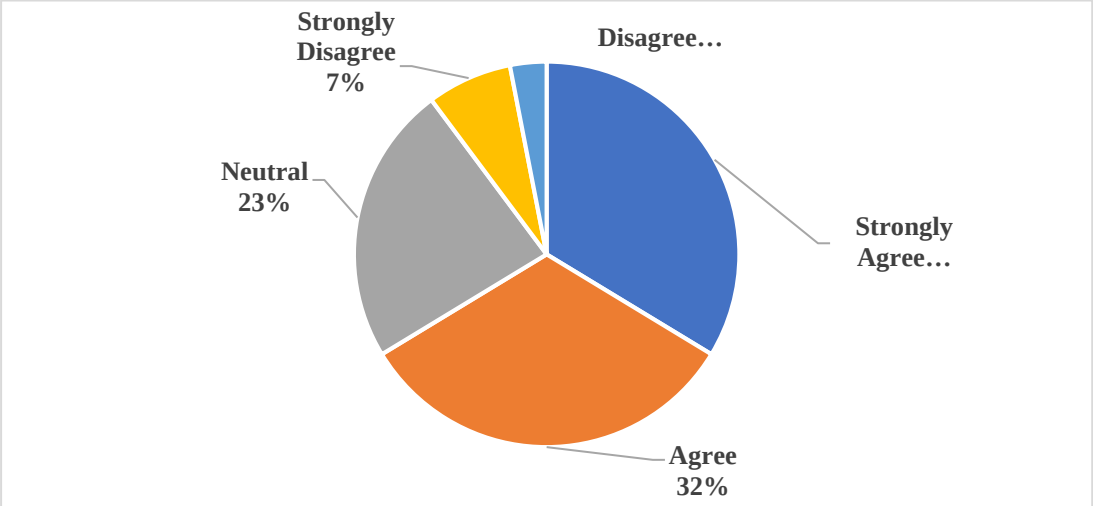

Fig. 4.4 Ticket service quality

The response of passengers to ticket service quality is seen in **Fig. 4.4**. The inquiry concerned the quality of the station's ticketing service. Regarding this subject, 32% of passengers agree, 33% strongly agree, 23% are indifferent, 3% disagree, and 7% strongly disagree.

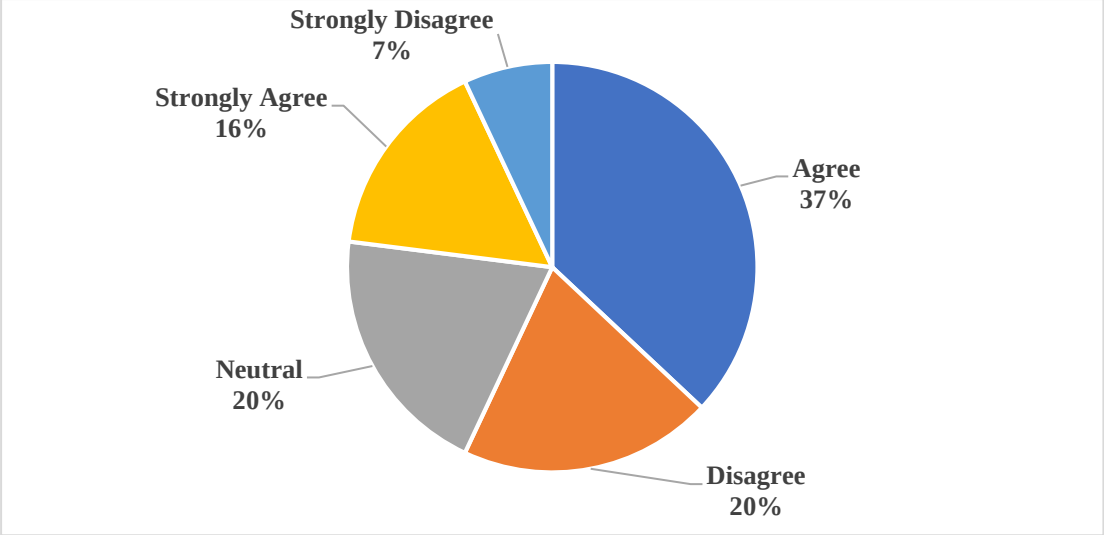

Fig. 4.5 Reservation chart display

Fig. 4.5 illustrates how passengers respond to the platform's reservation chart presentation quality. This variable inquiry was for passenger train stations with sufficient display of reservation charts. On this topic, 16% of passengers highly agree, 37% agree, 20% are indifferent, 20% disagree, and 7% strongly disagree.

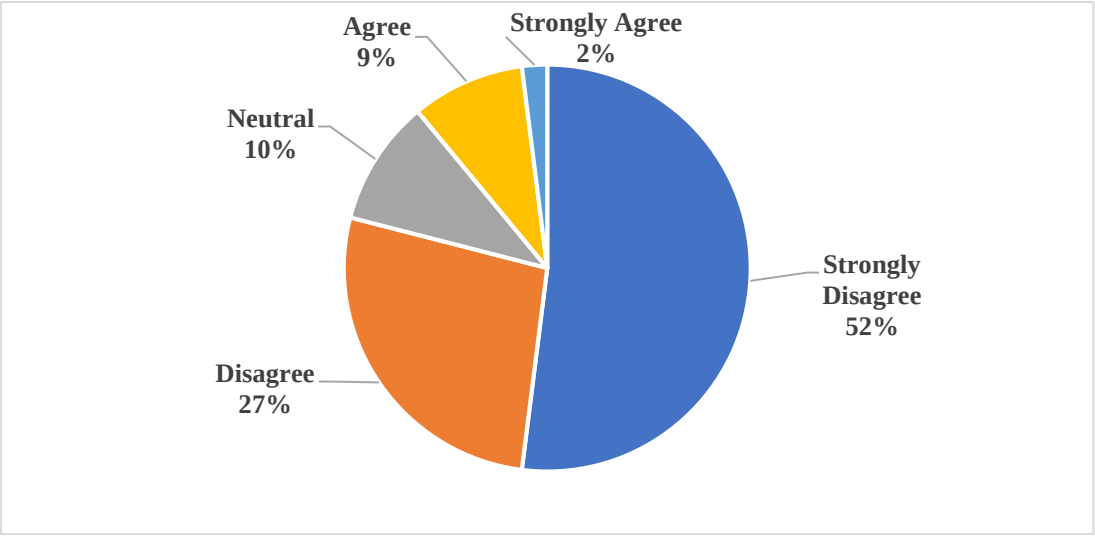

Fig. 4.6 Timing and Scheduling

Passengers' responses to the platform's time and scheduling service quality are displayed **in Fig. 4.6.** 9% of passengers agree, 2% strongly agree, 10% are indifferent, 27% disagree, and 52% strongly disagree with the variable question, which asked whether the train timetable arrives and departs on time at the passenger rail station.

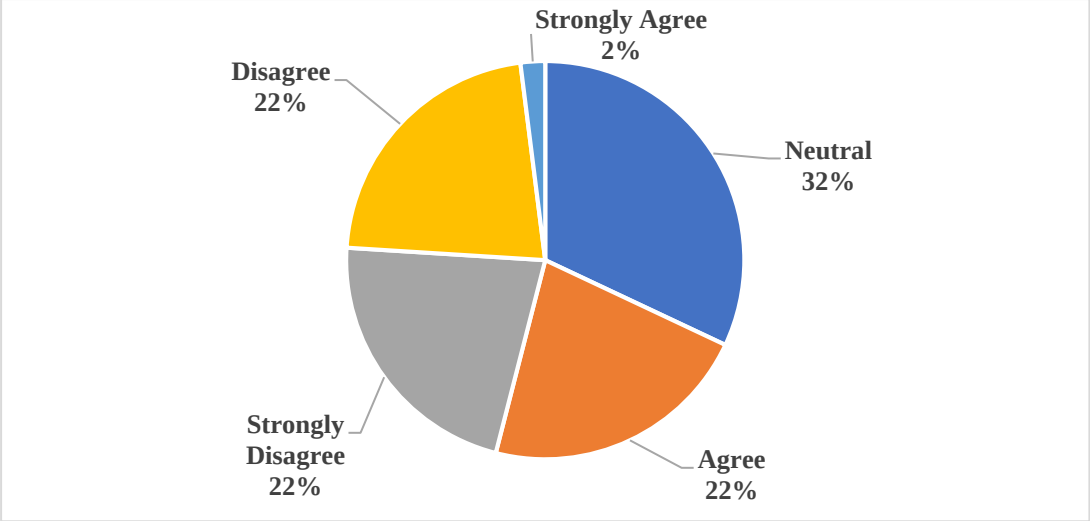

Fig.4.7 Accuracy of announcement quality

Figure 4.7 Displays the response of passengers to the quality of the announcement. This variable question was about the correctness of announcements at passenger train stations. In this case, 22% of travelers agree with the question, 2% strongly agree, 32% are indifferent, 22% disagree, and 22% strongly disagree.

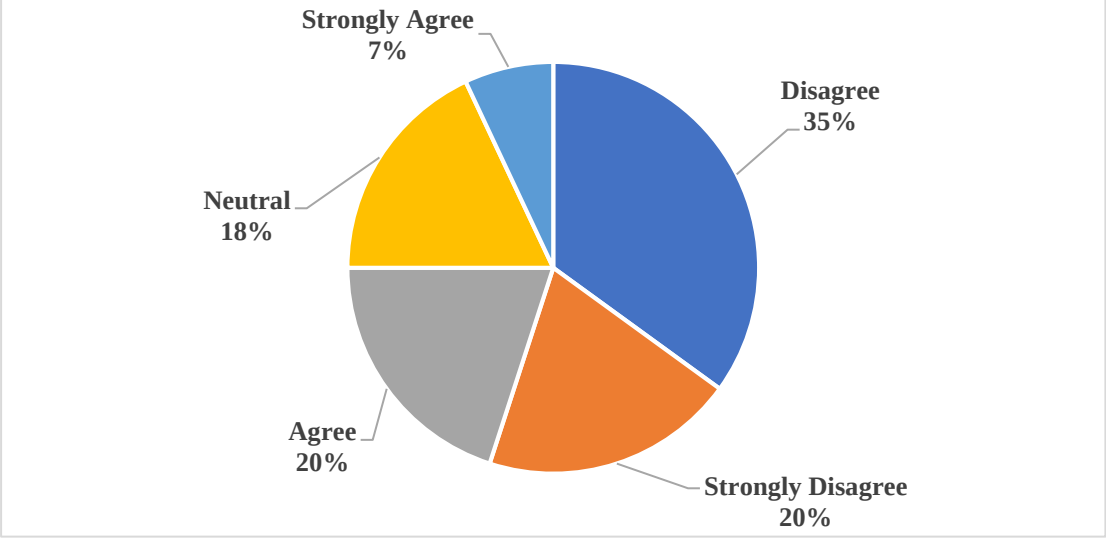

Fig.4.8 Quantity of refreshments

Figure 4.8 Displays the response of passengers to the required amount of refreshments. This varied inquiry concerned passenger train stations with adequate supplies of refreshments. Passengers' responses on this question are as follows: 20% agree, 7% strongly agree, 18% are indifferent, 35% disagree, and 20% strongly disagree.

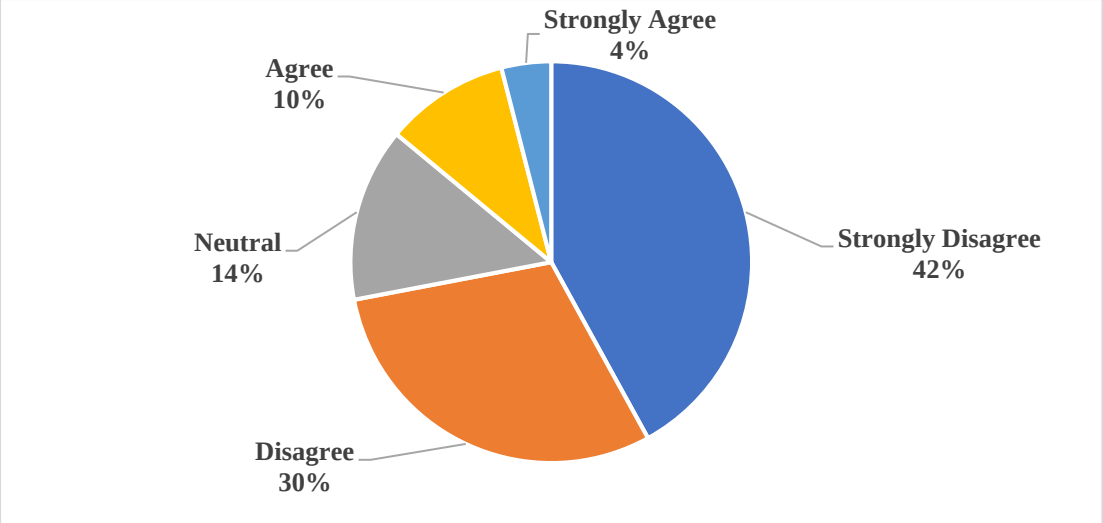

Fig.4.9 Quality of refreshments

Figure 4.9 Displays the response of passengers to the platform's adequate level of service and refreshments. There was sufficient high-quality service and refreshments at the passenger rail station, according to this variable question. The percentage of passengers who agree with this question is 10%, 4% strongly agree, 14% are indifferent, 30% disagree, and 42% strongly disagree.

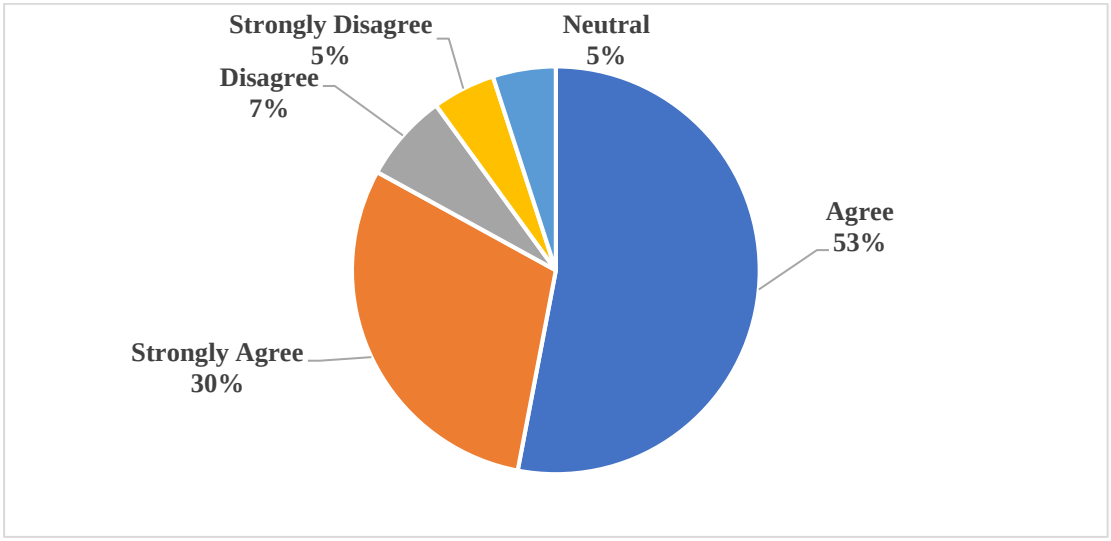

Fig.4.10 lighting system Quality

Figure 4.10 Displays the response of passengers to the platform's lighting system quality. The variable question asked whether a passenger train station had an adequate lighting system. In this case, 53% of travelers agree with the question, 30% strongly

agree, 5% are indifferent, 7% disagree, and 5% strongly disagree. Therefore, the platform's lighting system needs to be adequate.

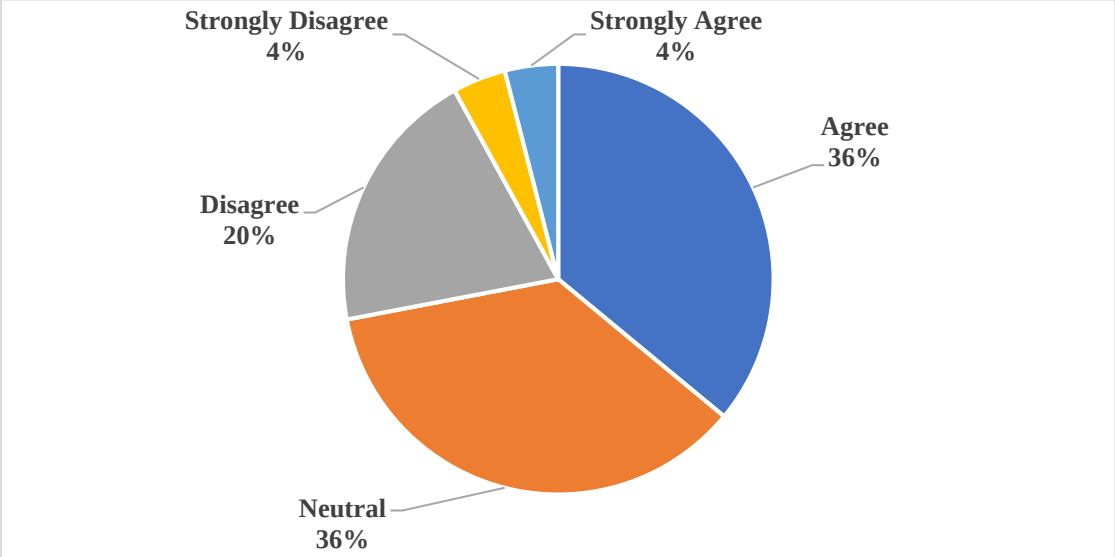

Fig.4.11 Fans service quality

Figure 4.11 Displays the response of passengers to the platform's adequate fan service quality. The rail station has adequate fans, according to this variable inquiry for travelers. Passengers' responses on this question are as follows: 36% agree, 4% strongly agree, 36% are indifferent, 20% disagree, and 4% strongly disagree. There must be a sufficient number of fans on the platform.

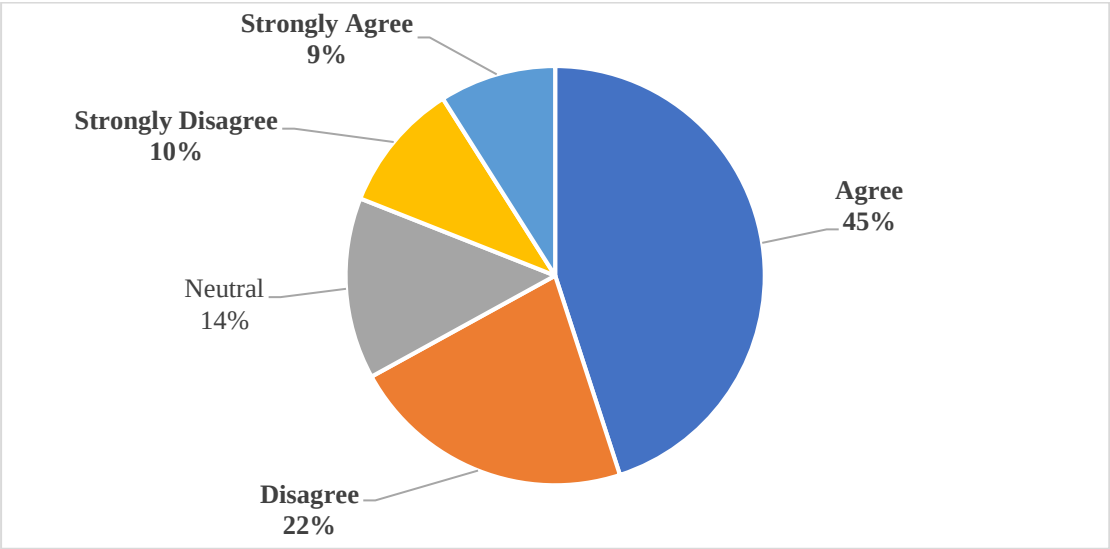

Fig.4.12 Readily available, quality food service

Figure 4.12 Displays the response of passengers to the high-quality cuisine that is easily accessible on the platform. This variable inquiry was about the availability of high-quality meals at the train station for passengers. Passengers' responses on this question are as follows: 45% agree, 9% strongly agree, 14% are indifferent, 22% disagree, and 10% strongly disagree.

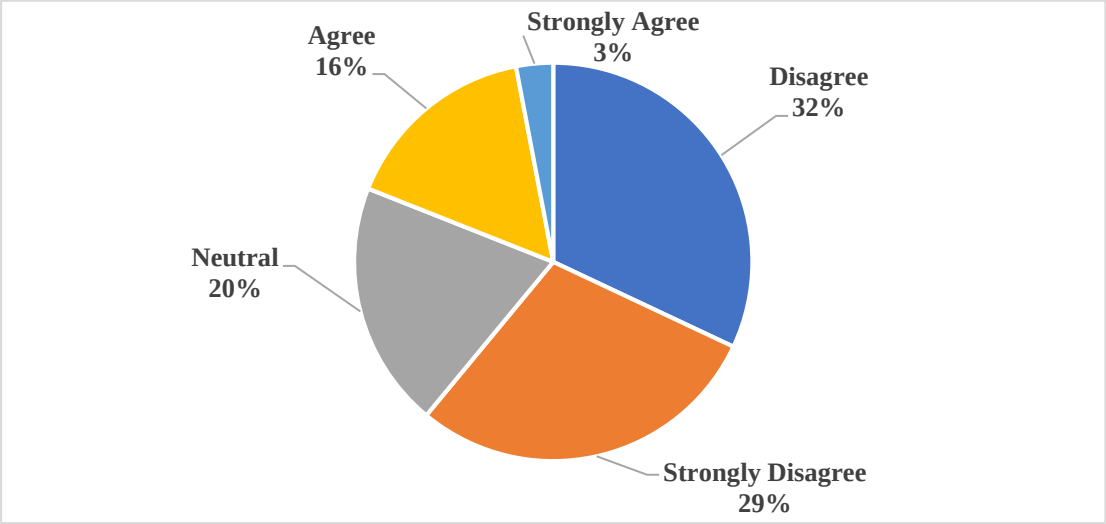

Fig.4.13 Sanitary arrangements

Figure 4.13 demonstrates the response of passengers to the adequate hygienic setup on the station. This variable inquiry concerned whether the train station had enough sanitary facilities for passengers. About 16% of passengers agree with this question, 3% strongly agree, 20% are indifferent, 32% disagree, and 29% strongly disagree. had enough sanitary facilities for passengers. About 16% of passengers agree with this question, 3% strongly agree, 20% are indifferent, 32% disagree, and 29% strongly disagree.

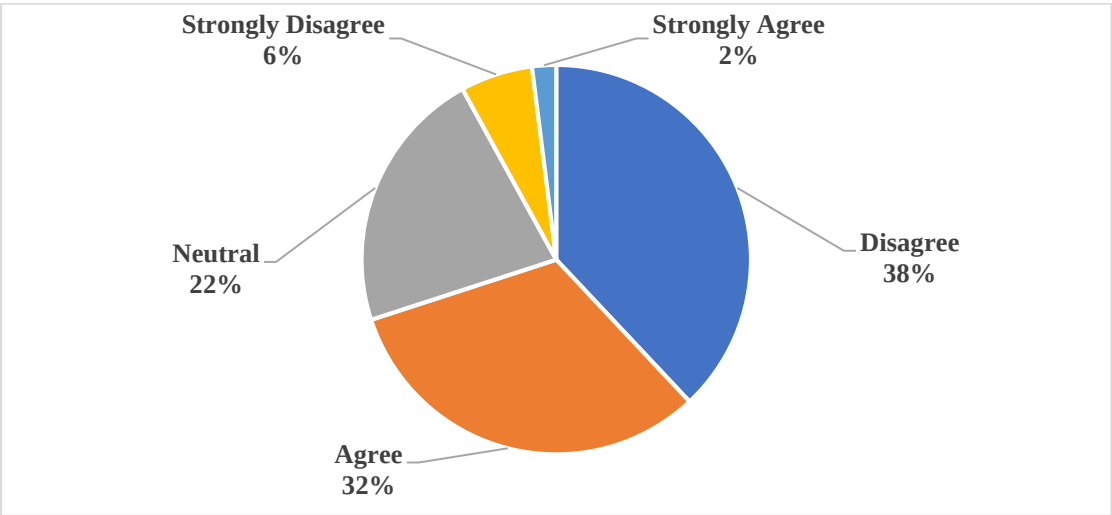

Figure 4.14 Cleanliness in the compartments and toilets

Figure 4.14 displays the response of passengers to the level of cleanliness in the compartments and the platform's restroom facility. For passengers, this variable question was whether the train reached the station on schedule. 22% of passengers are

indifferent, 38% disagree, 6% strongly disagree, 32% agree, and 2% strongly agree with this question. Passengers must be satisfied with the hygiene of the restrooms and the cabins.

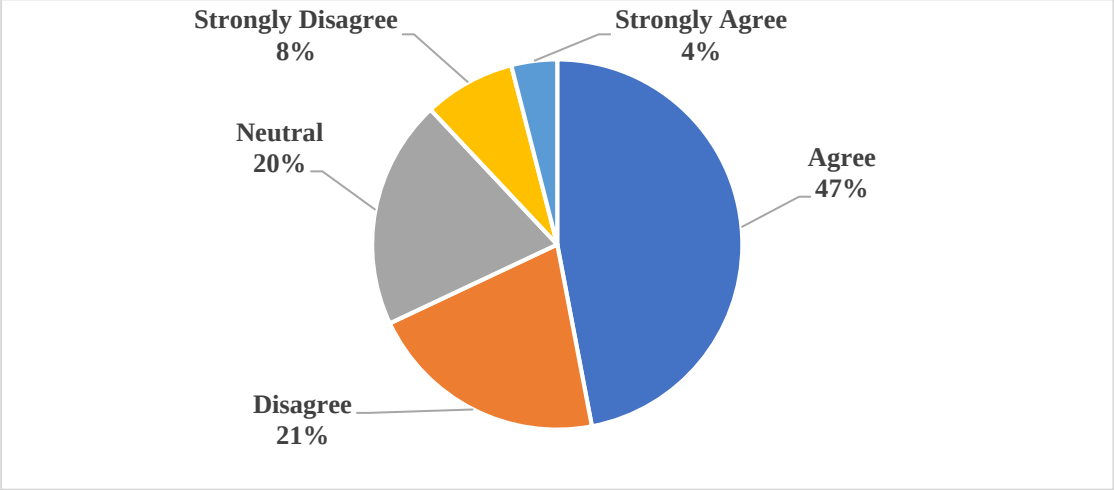

Fig.4.15 Security of luggage

Figure 4.15 indicates how users feel about the platform's adequate security and high-quality baggage service. This variable question asked if the platform offers sufficient luggage security for passengers. This question has 47% of passengers agreeing, 4% strongly agreeing, 20% indifferent, 21% disagreeing, and 8% strongly disagreeing.

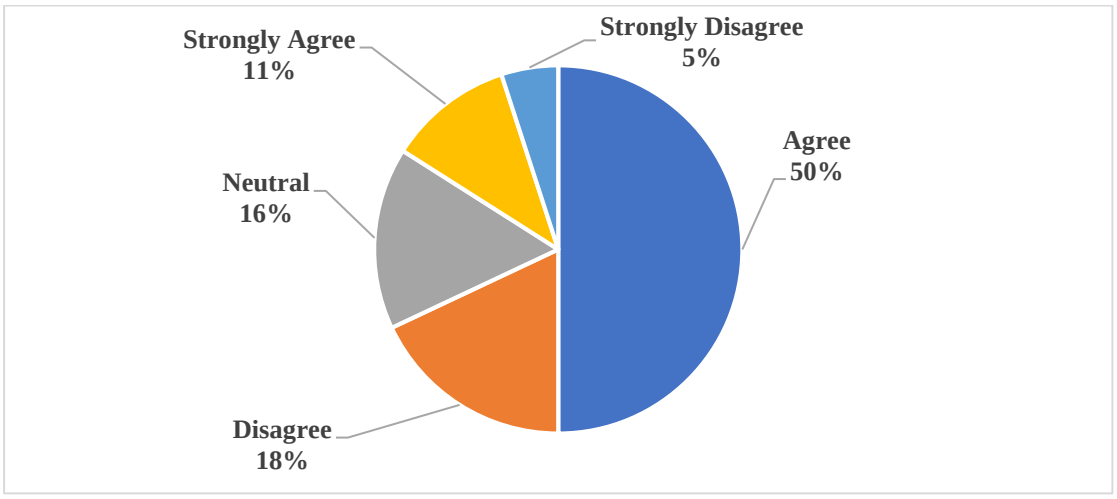

Fig.4.16 Security of the passengers

Figure 4.16 displays how users respond to the platform's adequate security and high level of customer support. The platform's passenger security was the variable question. On this topic, 50% of passengers agree, 11% strongly agree, 16% are indifferent, 18% disagree, and 5% strongly disagree.

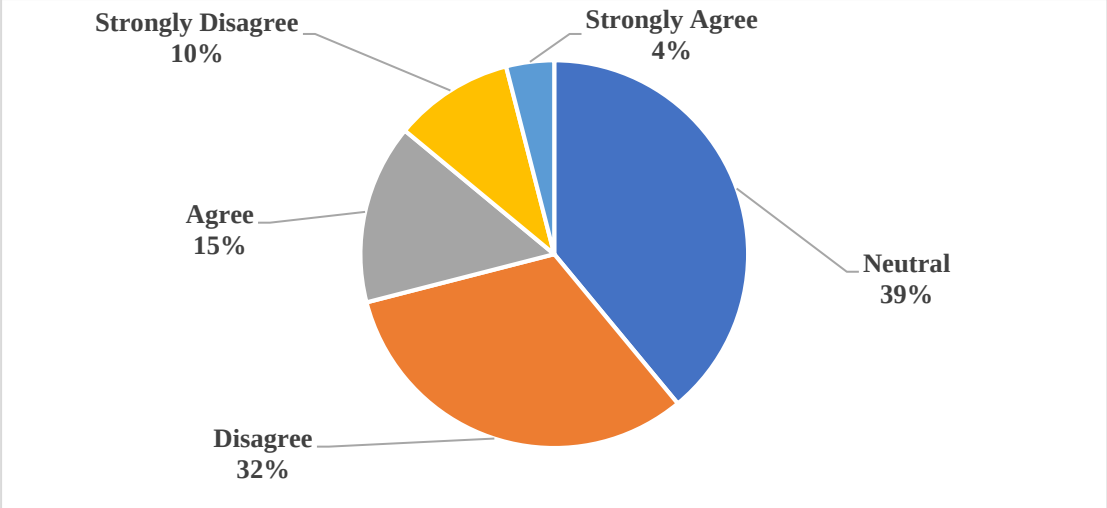

Fig.4.17 Parking spaces quality

Figure 4.17 displays the response of passengers to the platform's ample parking spots and level of service. This variable question asked whether there were adequate parking spots at the train station. 10% strongly disagree, 39% are indifferent, 32% agree, 15% agree, and 4% highly agree with this question.

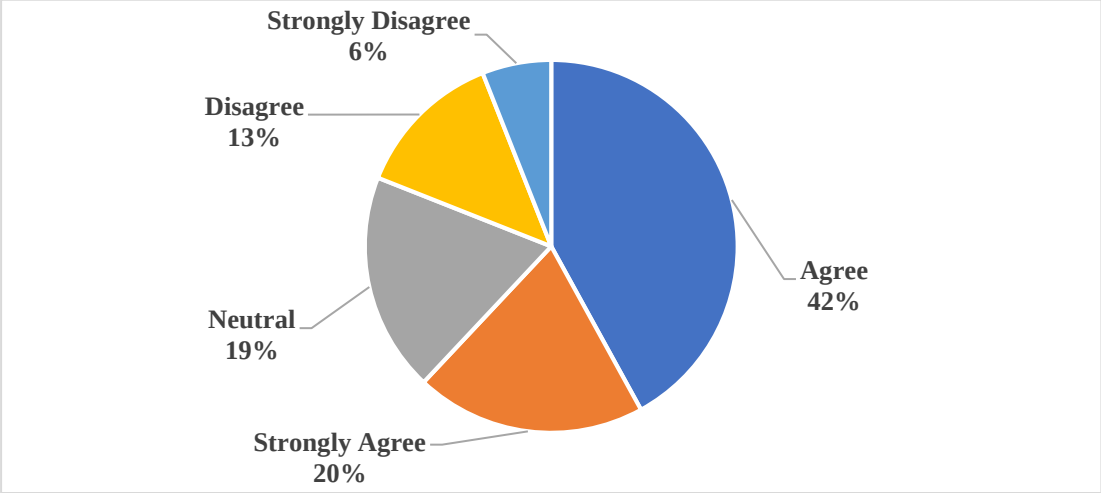

Fig.4.18 Platform height at the station

Figure 4.18 displays the response of passengers to the station's platform height. The platform height was deemed suitable for passengers in this changeable question. About 42% of passengers agree with this question, 20% strongly agree, 19% are indifferent, 13% disagree, and 6% strongly disagree.

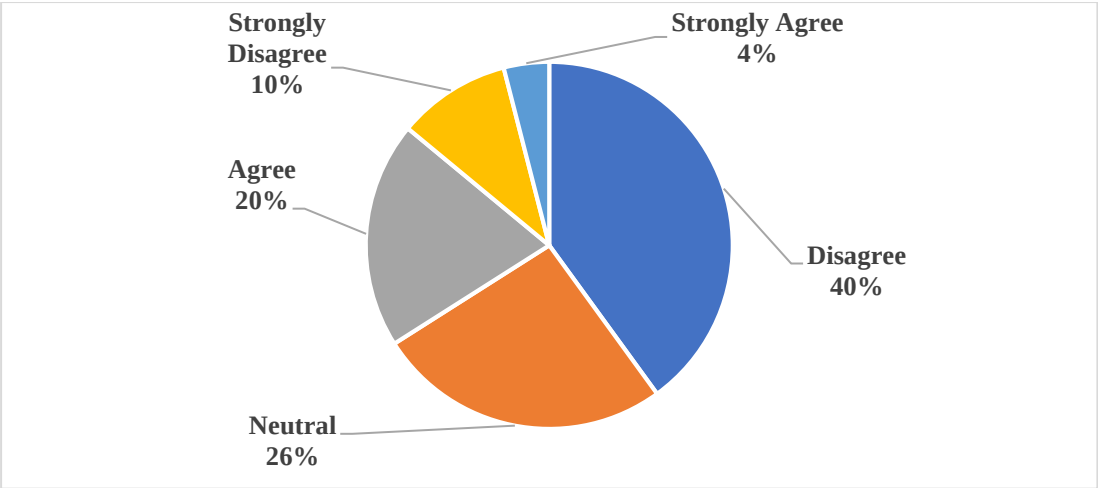

Fig.4.19 Behavior of train police and TT

Figure 4.19 displays the response of passengers to the behavior of train police and TT conduct. This variable question asked whether or not passengers behaved politely toward porters in the train station. 20% of passengers in this instance agree with the question, 4% strongly agree, 26% are indifferent, 40% disagree, and 10% strongly disagree. The conduct of porters on the railroad station has to be improved.

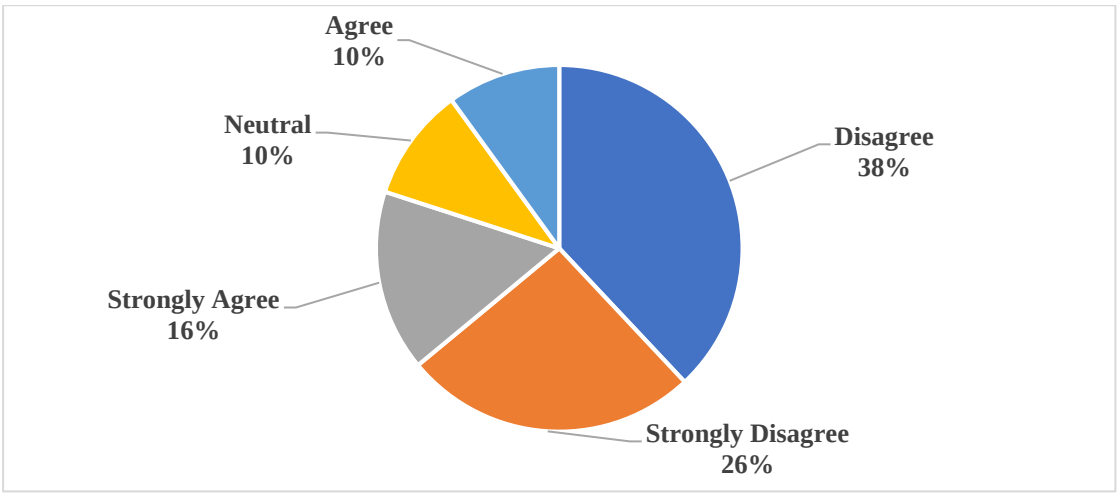

Fig.4.20 Behavior of ticket counter representatives.

Figure 4.20 shows how the passengers are responding to the way the personnel is acting on the platform. This variable question asked whether or not passengers behaved well toward the train station workers. In this case, 38% of passengers disagree, 26% strongly disagree, 10% are neutral, 16% strongly agree, and 10% agree with the question.

Table 4.21 Kaiser-Meyer-Ohlin Measure and Bartlett's Test

KMO Measure of Sampling Adequacy	**0.667**	
Bartlett's Test of Sphericity	**Approx.Chi-Square**	**410.901**
	df	**136**
	Sig.	**0.000**

The data adequacy and factor analysis validity for the current study are displayed in the above table. This data's KMO value is 0.667 This is mediocre, according to Kaiser (1974), therefore we can be sure that factor analysis is suitable for these data.

At the 0.000 level of significance, however, Bartlett's Test of Sphericity has a Chi-Square value of 410.901 with 136 degrees of freedom. The Test of Sphericity indicated that significance is perfectly appreciated due to the significance $p<0.05$. The factors' appropriateness was assessed, and further research using the Principal Axis Factoring Method was recommended.

The principal axis All of the variables' correlations were examined using factoring. The next step in the procedure was to examine communalities, which are listed in Table 4.22.

Table 4.22 Communalities

Serial	Variables	Initial	Extraction
1	Ticketing service	0.354	0.458
2	Reservation chart display	0.336	0.488
3	Timing and scheduling	0.235	0.315
4	Accuracy of announcement	0.184	0.177
5	Quantity of Refreshment	0.253	0.260
6	Quality of Refreshment	0.204	0.218
7	Lighting	0.154	0.187
8	Fans	0.153	0.210
9	Readily available foods	0.197	0.437
10	Sanitary arrangement	0.234	0.235
11	Cleanliness of toilets & lobby	0.195	0.320
12	Security of luggage	0.254	0.278
13	Security of self (passengers)	0.245	0.270
14	Parking Management	0.262	0.400
15	Platform height	0.159	0.202
16	Behavior of train polic and TT	0.305	0.439
17	Behavior of Ticket Counte Representatives	0.168	0.660

Extraction Method: Principal Axis Factoring.

The table shows results from factor analysis, showing 66% of passengers had similar responses to behavior of ticket counter representatives, 49% to reservation chart display, 46% to ticketing service, and 44% to readily available foods. Five factors could be extracted using the rule of thumb method**.**

4.22 Data and Analysis

Using the principal axis factoring technique, we first estimate the common variance when the communalities are smaller than t. Each variable's communality is taken to be equal to its square multiple regression coefficient in relation to the other variables in this first estimate. These initial estimates of the communalities are used in the principal axis factoring process to replace the major diagonal of the correlation matrix, which is made up of all ones. The principal component is now applied to this improved version of the correlation matrix, as was previously described.

The table above displayed the factor analysis results. The proportion of passengers that responded similarly to each variable is shown by each value in the column extraction. According to the ticket service value, 99% of travelers had identical answers about this variable. In addition, we find that 55% of respondents are worried about illumination, and 74% are worried about the reservation display chart. The cleanliness of the restrooms and lobby worries 51% of respondents, followed by the amount of refreshments (48%), porter behavior (30%), staff behavior (29%), food availability (29%), sanitary arrangements (28%), security and luggage (27%), and timing and scheduling (27%). 24% are worried about fans, 14% are worried about platform height, 15% are worried about parking places, 10% are worried about passenger security, and 25% are worried about the announcement's accuracy.

Selecting the number of Eigen values larger than one was a solid general guideline when employing Principal Axis Factoring. The rule of thumb approach may extract five items, according to the Eigen values (appendix 2).

Following receipt, the survey results were coded and loaded into SPSS software for statistical analysis. The data gathered for the study was assessed using the Principal Axis Factoring Rotation Method: The respondents' choice of normalization to identify the essential elements was determined by Kaiser and Varimax. also discovered sunilar dimensions of variables from observed variables that have a higher correlation with observed variables and factors that appear to be unconnected but do not correlate. on the survey information. The principal axis Two rotating factor loading factoring (Table 4.2) was applied. For variables with a factor loading higher than 0.31, a factor was constructed. Factor loading is the correlation coefficient between the variable and the

factor. Factor loading displays the variation that the variable on that specific factor accounts for.

The first seventeen variables were factored using varimax rotation, and then the principal axis factoring was used. The link between components at the factor analysis level is explained using a statistical technique called varimax rotation. One step in the procedure is changing the coordinates of data obtained by looking at a main component. Maximizing the variance shared by all the elements is the aim of the adjustment or rotation. Because the shared variance is maximized, the findings show the correlation between the data and each core component more clearly. In order to increase diversity, it is common practice to decrease correlation on any other element and increase the squared correlation of items associated with one component.

In addition to words, the varimax rotation simplifies item loadings by eliminating the middle ground and precisely defining the factor upon which data loads. The varimax is introduced in this entry. Lighting, reservation chart display, and ticket service. The five characteristics determined by the factor analysis were the number of refreshments, the cleanliness of the restrooms and lobby, conduct, scheduling, and the availability of food. It was discovered that the five elements' Eigen values, for example, ranged from(2.873 to 1.109). Additionally, 51.108% of the total difference in railway platform services on basic platforms could be accounted by these five criteria. The Eigen value, the percentage of variation explained by the components, and the factor loading of the variable influencing satisfaction are displayed in Table 4.3.

Table 4.23 Factor Loading of Variable

Factor	Variables	Factor Loading	Eigen value	Percentage of variance explained
Ticket Service & Reservation Chart Display	Ticket Service & Reservation Chart Display	0.511 0.530	1.944	17.643
Lighting,Cleanliness of Toilets & Lobby & Behavior	Enough Lighting,Cleanliness of Toilets & Lobby & Behavior	0.349 0.508 0.723	1.559	10.705
Scheduling & Sanitary	Timing & Scheduling Sanitary Arrangement	0.426 0.366	1.196	9.135
Quantity of Refreshment	Quantity of Refreshment	0.432	0.912	6.936
Readily Available Foods	Readily Available Foods	0.384	0.819	6.656
Total Variance			**51.102%**	
Source:Appendix3,4				

Table 4.23 To support the suggested criteria of passenger satisfaction—such as ticket service and reservation chart display, illumination, cleanliness of restrooms and lobby, behavior, scheduling and hygienic conditions, number of refreshments, and easily accessible foods—statistical data is presented. The elements that affect passengers' pleasure on railroad platforms are summarized in the table below. The most important factor affecting platform satisfaction was found to be;

Factor 1

The first pertinent element is **"Ticket service & Reservation Chart Display**," which has a percent of variance explained of 17.643 and an Eigen value of 0.912. Two variables (ticket service and reservation chart display) that have performed well with

factor loading (0.511 and 0.530) make up this factor. It was found that 17.643 percent of the variation described by this factor was explained by the variables that were included.

Factor 2

Lighting, restroom cleanliness, and lobby and behavior rank second in importance, with corresponding Eigen values of 1.559 and 10.705 percent of variation explained. The percent variance by this component was 10.705 percent, according to the factors that were included. Three factors make up this component (Enough Lighting. Toilet and lobby cleanliness, as well as staff behavior) with factor loading (0.349,0.508 and 0.723)

Factor 3

"Scheduling & Sanitary," the third component, has an Eigen value of 1.196 and an 9.135 percent variation explained by variables. The two variables that make up this factor, "Timing & scheduling and sanitary arrangement," had factor loadings of 0.426 and 0.366, respectively. It was discovered that these variables accounted for 9.135 percent of the variation.

Factor 4

"Quantity of Refreshment," the fourth component, has an Eigen value of 0.912 and a matching percent of variance explained of 6.963. A single variable named "Quantity of refreshment" accounts for 6.963 percent of the variance, and it has a factor loading of 0.432.

Factor 5

"Readily Available Foods," the fifth component, with a percent of variance explained of 6.656 and an Eigen value of 0.819. This factor, which had a single variable named "Readily available foods" with a factor loading of 0.384, had a percent of variance of 6.656%.

Following a careful analysis using statistical methods, elements were ranked in order of importance among the deciding factors. Table 4.4 displays how various variables were ranked.

Table 4.24 Factor Ranking

Factors	Mean	Rank
Factor 1 (Ticket service & Reservation Chart Display)	3.78	1
Factor 3 (Scheduling & Sanitary)	1.637	2
Factor 5 (Readily Available Foods)	1.59	3
Factor 4 (Quantity of Refreshment)	1.46	4
Factor 2 (Cleanliness of Toilets and Lobby & Behavior)	1.30	5

Source: Appendix 5 (Highest is First)

Factor 1 (Ticket service & Reservation Chart Display) is ranked the first in table 4.24. presenting that factor I should be given preference by Bangladesh Railway; factor 3 (Scheduling & Sanitary), factor 5 (Readily Available Foods), factor 4 (Quantity of Refreshment), and factor 2 (Cleanliness of Toilets and Lobby & Behavior) for ensuring Passenger's satisfaction on Bangladesh Railway Stations.

4.23 Passenger's Satisfaction Model

A model of passenger satisfaction on railway platforms is suggested in Figurel, and we have five important components based on factor analysis. Two categories comprise the variables: ticket service and reservation chart display, lighting, cleanliness of restrooms and lobby and behavior, scheduling and sanitation, quantity of refreshments, and readily available foods. The model's dependent variable is passenger satisfaction.

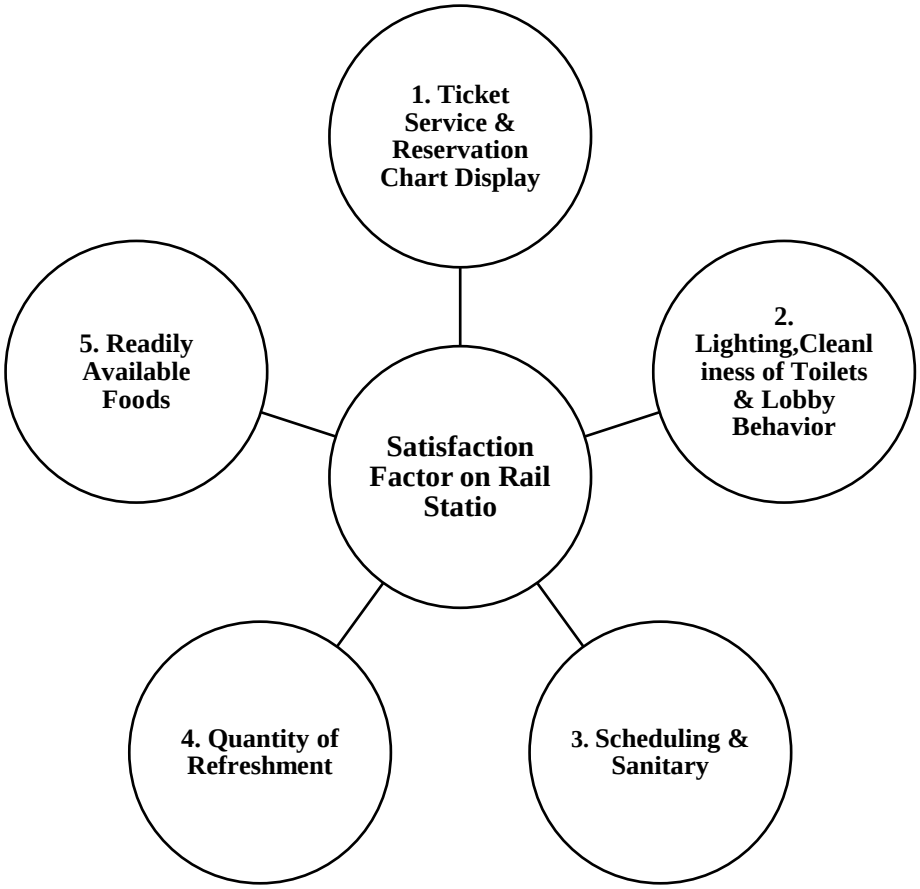

Fig.4.21 Determinants of Passenger Satisfaction on Railway Platforms Research Model

The model has been verified since it was created with statistical support. It may be developed and utilized for future research of this kind.

4.4 Result and Discussion

The relationship between total passenger satisfaction and aspects of service quality has been highlighted using a natistiction model. According to this model, the number of refreshments and easily accessible foods, lighting, cleanliness of the restrooms and lobby, behavior, ticket service and reservation chart display, and scheduling and sanitation are the five different service quality characteristics that have been found to influence the satisfaction of Bangladesh railway service on sample platforms. On Bangladeshi train platforms, these five factors accounted for 51.102% of the difference in passenger satisfaction. Statistical research has shown that the ticketing service and reservation chart display on platforms can significantly affect passenger satisfaction in sample platforms (Factor analysis SPSS 25, Principal Axis Factoring, Varimax Rotation, and Scree Plot). The platforms' lighting systems need to be improved to be adequate and suitable. Timing scheduling and hygienic arrangements are a more reasonable percentage of overall passenger satisfaction in Bangladeshi railway platforms, especially in sample platforms, according to this method.

The Bangladesh Railway Citizen Charter states that in order to protect the fundamental rights of its passengers, the railway must provide a range of supporting services on the platform (such as ticket service and reservation chart display lighting, hygienic restrooms and lobby, behavior scheduling, a sanitary quantity of readily available food, and so on) and in other designated areas where passengers require service. However, a thorough examination of sample platforms and field research revealed that the problem goes beyond passenger satisfaction. The following are the reasons:

- **Ticket Service & Reservation Chart Display:**

Online and offline systems are available on Bangladesh Railway, however this area has not seen any advancements. Purchasing tickets at the ticket desks can occasionally be a nuisance for passengers. Despite efforts by the Bangladesh Railway Authority to enhance its online ticketing infrastructure, online purchasing is increasingly important during vacations. The Shohoz app has partnered with Bangladesh Railway to sell tickets online. The most number of times the program has failed to function There are long lineups at the desk to purchase tickets during the Eid holidays, and occasionally

individuals do not receive their tickets. If the authority enhances the station's ticketing service, travelers would greatly benefit.

However, it is imperative that the platform's reservation display chart be improved. Once the chart is made, it will let people find out whether there are any seats available on the train. The reservation chart must be made available online so that travelers may check the status of their seats when making a reservation for a specific train. Anyone can purchase tickets and cancel at any moment. If there were digital reservation display charts on the site, that would be great. This aspect is a worry for passengers.

- **Lighting, Cleanliness of Toilets & Lobby & Behavior:**

There are not enough lighting systems visible on the platform. The station neighborhood is home to a few thieves and addicts. At night, they took the supplies and lights. The lights don't function correctly most of the time. It is an issue for travelers who travel at night. Passengers may feel unsafe in train stations because of inadequate lighting systems.

Cleaning up our national property is our responsibility. The restrooms at every station are not clear and clean. A foul odor emanates from that location. Additionally, it has been observed that the waiting areas are not neat and orderly. Bangladesh Railway offers a variety of seat quality options. For instance, first-class chairs, first-class air conditioning, shovon chairs, etc. All of these class seats are located in separate rooms at the station. In essence, travelers arrive at these waiting areas based on their seat class and bide their time until the train arrives. However, upon arriving at the station, it was observed that the waiting areas were often unclean. The railway administration must make improvements and maintain cleanliness in order to address this issue.

People, animals, robots, and man-made things engage in a variety of behaviors within a particular setting. Along with the inorganic physical reality, these systems may also include other species or systems. When utilizing the ticket reservation system, staff members at the entry and occasionally on the platform disregard the basic standards of etiquette. People are becoming less interested in taking trains as a result of their terrible actions. A traveler who misbehaves gets punished each time they arrive at the station

for any kind of service. The railway management should concentrate on this aspect in order to improve passenger satisfaction at the station area.

- **Scheduling & Sanitary:**

An effective timetable may influence how appealing the train's transportation system is, making it a crucial component of the rail company's transportation system. When developing schedules, the train system's infrastructure and the required number of transfers based on the passenger's journey are taken into account. The timetable emphasizes how interconnected the trains are and how one delay can influence and complicate the timetables of other trains. It has occasionally been observed that trains arrive too late. As a result, travelers experienced delays and could have missed crucial tasks. Frequent service intervals can also reduce the likelihood that customers will need to switch trains. Because of the rail schedule's recurring pattern, travelers may just make their own travel arrangements. Therefore, the railway administration (BR) will make sure that passengers are as satisfied as possible in station areas.

Sanitation facilities and clean drinking water are also crucial components of the platforms. There are not enough water systems. Authorities should upgrade the sanitary systems since passengers are worried about this.

- **Quantity of Refreshment:**

The amount of refreshments pertains to the arrangement of seats and areas in the waiting areas or platforms, as well as the cafeterias at the stations. During our field investigation, we discovered that the stations lacked sufficient sitting areas. The majority of the seats are damaged. Direct conversations with a few passengers have shown that they must endure unpleasant seating arrangements in platforms or waiting areas. In comparison to the amount of people, there are incredibly few seats available for seating. A portion of the passengers were observed standing and waiting for the train as they made their way straight to the station. The railway officials must make appropriate use of the platforms because there is ample room there. To improve customer happiness, more seats should be available on the platforms. When waiting for a train for an extended period of time, passengers need to eat something, although there are many cafeterias. Foods purchased from outside the platform are unsanitary and

highly costly. Thus, they require the cafeteria at the train. The railway authority must expand cafeterias and sitting areas in order to address this issue.

- **Readily Available Foods:**

The food products in the stations are pricey. For every food item, they charged double the original amount. The majority of passengers are unable to pay. People who must go a great distance must purchase meals, but the costs are exorbitant. To satisfy passengers, Bangladesh Railway should enhance the food options that are easily accessible.

CHAPTER 5
CONCLUSION & RECOMMENDATION

5.1 Conclusion

The increase in transportation along this route has resulted in a considerable strain on the rail service. Based on the information we collected from travelers, we identified a few important characteristics. Customers want to see improvements in this variable, as seen by the high factor loading of 96% for these ticket services. Reservation chart display (77% factor loading) is another similar factor. Staff demeanor (42% factor loading), illumination (72% factor loading), sanitary layout (43% element loading), cleanliness of the lobby and restrooms (67% component loading), timing & schedule (46% factor loading), number of refreshments (60%) and easily accessible meals (51% factor loading). In order to increase passenger happiness, these aspects must be improved.

Ticket service and reservation chart display, illumination, Compartments and toilets are clean, scheduling and hygienic conditions, the amount of refreshments and easily accessible meals are the factors. These five factors accounted for 51.108% of the variation in passenger satisfaction on Bangladeshi train stations. In this case, 17.643% of the difference was explained by the service and reservation chart display factor, 10.705% by lighting, lobby and restroom cleanliness, and behavior, and 9.135% by scheduling and hygienic conditions. 6.656% was for easily accessible foods, while 6.963% was for the amount of refreshments. By examining their percentage factor variance, it is possible to understand which five of the model's components are the most significant. Sufficient security measures should be put in place for the passengers at the airport to enhance the level of service they get.

At the same time, announcement accuracy has to be improved because passengers can miss information if train arrival and departure announcements are not delivered correctly. Boost the station's fan base and seating capacity as well. What we have is insufficient for the passengers. Increase the number of refreshments available at the station, including passenger chairs in the waiting areas, etc. Therefore, it is imperative that worker conduct be improved. The restrooms in the stations are filthy, the waiting

areas are messy, and the restrooms have an unpleasant odor. Finally, there will be a huge improvement in the quality of passenger service if all of these elements can be made much better. Consequently, the quality of railway services is recognized as a significant metric that might increase passenger satisfaction.

5.2 Recommendation For Future Study

The quality of passenger service at Khulna and Kamalapur railway stations was the subject of our thesis research. The study has led us to identify a few of these elements. Our study has only included two train station platforms. Future studies, in our opinion, ought to examine every railway station in Bangladesh to get a general sense. We believe that our study will yield valuable data for next further investigation. We are hopeful that our study may contribute positively to future research on how to deal with more variables in the future, even if we have only worked with 17. We think further research should be done on novel elements. Future research, in our opinion, should pay greater attention to gathering data and devote more time to doing so. In order to obtain accurate information, we could suggest getting in touch with each conscious passenger.Data collection requires patience, but a few of additional passengers will refuse to offer information. The research field will need additional respondents in the future, however we worked with 300 respondents. due to the fact that precise and reliable data requires a large number of replies. The thesis was easily analyzed using IBM SPSS software. Furthermore, we think that a thorough grasp of the SPSS software is essential for analyzing research data in the future.

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Appendix-1
Statistical Descriptive

Serial	Variable	Mean	Std. Deviation	Analysis N
1	Ticketing service	3.36	1.189	300
2	Reservation chart display	3.78	1.132	300
3	Timing and scheduling	2.61	1.291	300
4	Accuracy of announcement	2.89	1.263	300
5	Quantity of Refreshment	2.94	1.285	300
6	Quality of Refreshment	3.53	1.211	300
7	Lighting	3.05	1.312	300
8	Fans	3.02	1.048	300
9	Readily available foods	3.33	1.008	300
10	Sanitary arrangement	3.64	1.036	300
11	Cleanliness of toilets & compartment	3.15	.997	300
12	Security of luggage	3.10	1.143	300
13	Security of passengers	3.10	1.058	300
14	Parking Space	3.67	1.092	300
15	Platform height	3.38	1.141	300
16	Behavior of Train Polic and TT	3.53	1.089	300
17	Behavior of Ticket Counter Representatives	3.68	.909	300

Appendix-2
Correlation Matrix

Correlation Sig. (1-tailed)

	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12	V13	V14	V15	V16	V17
V1		.000	.158	.030	.045	.015	.180	.046	.021	.000	.365	.414	.275	.000	.096	.225	.223
V2	.000		.467	.049	.307	.020	.254	.026	.001	.000	.043	.210	.192	.008	.185	.122	.043
V3	.158	.467		.052	.000	.143	.004	.011	.295	.078	.450	.015	.000	.001	.068	.000	.023
V4	.030	.049	.052		.017	.380	.013	.108	.027	.450	.270	.004	.198	.012	.258	.000	.064
V5	.045	.307	.000	.017		.005	.021	.179	.417	.345	.020	.000	.000	.049	.298	.000	.000
V6	.015	.020	.143	.380	.005		.002	.425	.105	.003	.005	.003	.204	.037	.296	.000	.429
V7	.180	.254	.004	.013	.021	.002		.275	.456	.117	.009	.029	.020	.021	.201	.000	.264
V8	.046	.026	.011	.108	.179	.425	.275		.050	.402	.019	.211	.028	.015	.488	.234	.337
V9	.021	.001	.295	.027	.417	.105	.456	.050		.119	.003	.357	.402	.008	.087	.035	.437
V10	.000	.000	.078	.450	.345	.003	.117	.402	.119		.024	.022	.286	.003	.014	.058	.036
V11	.365	.043	.450	.270	.020	.005	.009	.019	.003	.024		.027	.371	.349	.192	.062	.108
V12	.414	.210	.015	.004	.000	.003	.029	.211	.357	.022	.027		.000	.280	.250	.000	.181
V13	.275	.192	.000	.198	.000	.204	.020	.028	.402	.286	.371	.000		.004	.017	.002	.333
V14	.000	.008	.001	.012	.049	.037	.021	.015	.008	.003	.349	.280	.004		.001	.048	.377
V15	.096	.185	.068	.258	.298	.296	.201	.488	.087	.014	.192	.250	.017	.001		.444	.023
V16	.225	.122	.000	.000	.000	.000	.000	.234	.035	.058	.062	.000	.002	.048	.444		.002
V17	.223	.043	.023	.064	.000	.429	.264	.337	.437	.036	.108	.181	.333	.377	.023	.002	

Appendix-3
Total Variance Explained

Total Variance Explained

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings
	Total	%of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	2.999	17.643	17.643	2.338	13.752	13.752	1.944
2	1.820	10.705	28.348	1.197	7.040	20.792	1.559
3	1.553	9.135	37.482	.859	5.055	25.847	1.196
4	1.184	6.963	44.446	.673	3.960	29.807	.912
5	1.132	6.656	51.102	.488	2.873	32.680	.819
6	.983	5.780	56.882				
7	.950	5.588	62.470				
8	.877	5.157	67.627				
9	.847	4.985	72.612				
10	.816	4.801	77.413				
11	.738	4.339	81.752				
12	.658	3.873	85.624				
13	.576	3.388	89.012				
14	.544	3.199	92.211				
15	.504	2.964	95.174				
16	.423	2.486	97.661				
17	.398	2.339	100.000				

Extraction Method: Principal Axis Factoring.

a. When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.

Appendix-4
Rotated Factor Matrix

Factor Matrix[a]

	Factor 1	2	3	4	5
Ticketing sarvice	0.511				
Display of resarvation charts	0.530				
Timing and Scheduling			0.426		
Accurate announcement					
Quality of refreashment				0.432	
Quality of Refreshment					
Lighting		0.349			
Fans					
Food quality& price					.384
Sanitary arrengment	.366				
Cleaning(compertment & toilet)			.508		
Security of luggage					
Security of passengers					
Parking space					
Platform Height					
Behavior of Train Polic and TT					
Behavior of Ticket Counter Representatives				0.723	

Extraction Method: Principal Axis Factoring.

a. Attempted to extract 5 factors. More than 25 iterations required. (Convergence=.009). Extraction was terminated.

Extraction Method: Principal Axis

Factoring Rotation Method: Varimax with Kaiser Normalization

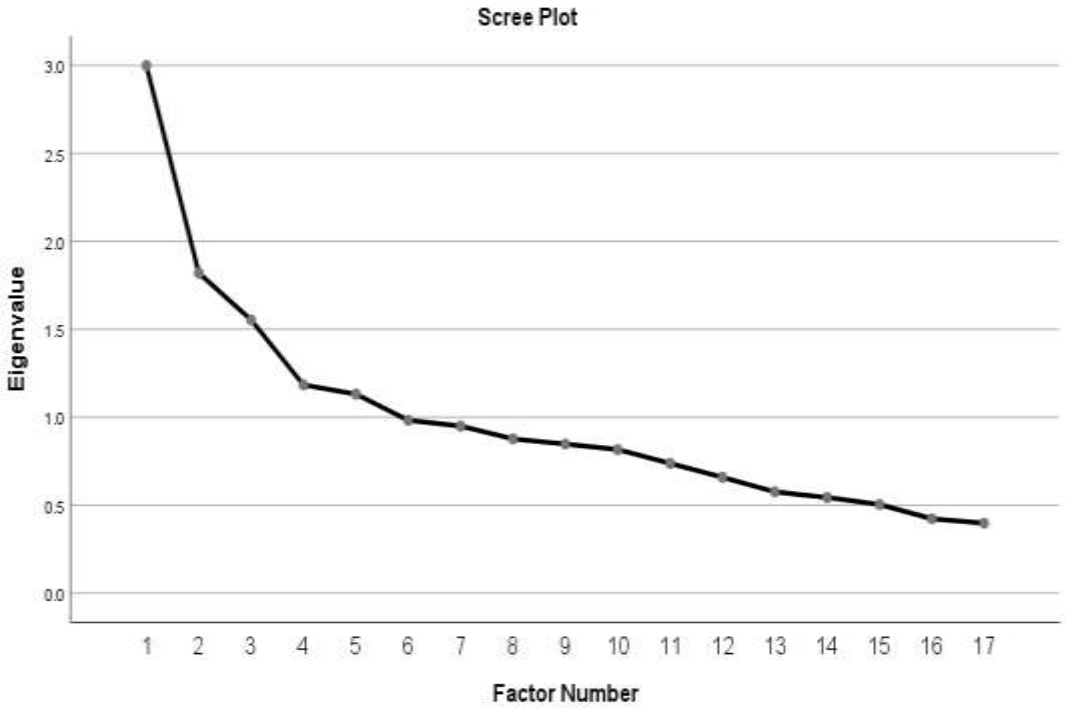
(a) Rotation converged in 8 iterations

Appendix 5
Factors Grant Average

Factors	Variables	Factor Loading (1)	Mean of Factors (2)	Factor Loading× Mean of Factors (1×2)	Total	Average of Factors
Ticket Service & Reservation Chart Display	Ticket Service	0.511	3.36	1.72	3.73	1.865
	Reservation Chart Display	0.530	3.78	2.01		
Lighting, Cleanliness of Toilets and Lobby & Behavior	Lighting	0.349	3.05	1.07	5.33	2.665
	Cleanliness of Toilets and Lobby	0.508	3.15	1.60		
	Behavior of Staffs	0.723	3.68	2.66		
Scheduling & Sanitary	Timing &Scheduling	0.426	2.61	1.12	2.45	1.225
	Sanitary Arrangement	0.366	3.64	1.33		
Quantity of Refreshment	Quantity of Refreshment	0.432	3.53	1.52	1.52	1.52
Readily Available Foods	Readily Available Foods	0.384	3.33	1.29	1.29	1.29

(Source: Appendix1&4)

Appendix 6
Scree Plot



Daffodil International University

Department of Civil Engineering

Name of Platform:

I am a student of Daffodil International University. I'm researching the platform's passenger service quality and, in turn, the degree of passenger happiness. I hope you will impulsively participate in the study.

(Please use √ on your choosing boxes; please don't use double√ for a single question)

- **18-25**
- **26-35**
- **36-45**
- **46+**

Gender: Male/Female	Profession: _____	Age:

1. The ticketing service is excellent.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

2. The rail station has a sufficient display of reservation charts.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

3. The schedule of train arrives & departs on time.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

4. The rail station has accuracy of announcements.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

5. The rail station adequately provides the necessary quantity of refreshments, including seating space and a cafeteria.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

6. The rail station has enough quality of refreshments.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

7. The station has sufficient lighting system.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

8. The platform at the station has enough fans.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

9. Quality of food in the station at a reasonable price.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

10. The rail station has sufficient sanitary arrangement.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

11. Cleanliness in the compartments and the toilets.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

12. The rail station has enough security of luggage in platform.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

13. The rail station has enough security of the passengers.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

14. The rail station has enough parking spaces.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

15. The platform height of the station is well enough.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

16. Behavior of train police and TT.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

17.Behavior of ticket counter representatives.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

ড্যাফোডিল ইন্টারন্যাশনাল ইউনিভার্সিটি

পুরকৌশল বিভাগ

প্ল্যাটফর্মের নামঃ

আমি ড্যাফোডিল ইন্টারন্যাশনাল ইউনিভার্সিটির ছাত্র। আমি প্ল্যাটফর্মের যাত্রী পরিষেবার মান এবং সেই অনুযায়ী যাত্রীদের সন্তুষ্টির স্তর নিয়ে একটি সমীক্ষা চালাচ্ছি। সেই গবেষণা কাজে আপনাদের স্বতঃস্ফূর্ত ভাবে অংশগ্রহণ করার কামনা করছি।

(অনুগ্রহ করে আপনার বাছাই করা বাক্সে (✓) ব্যাবহার করুন অনুগ্রহ করে একটি প্রশ্নের জন্য দ্বিগুণ ব্যাবহার করবেন না)

লিঙ্গঃ পুরুষ মহিলা	**পেশাঃ**	**বয়সঃ**

১. টিকেট ব্যবস্থার মান যথেষ্ট ভালো।

খুব অসন্তষ্ট	অসন্তষ্ট	কোনোটাই না	সন্তষ্ট	খুব সন্তষ্ট

২. অনলাইন টিকিট পরিষেবা।

খুব অসন্তষ্ট	অসন্তষ্ট	কোনোটাই না	সন্তষ্ট	খুব সন্তষ্ট

৩. টিকিট কাউন্টার প্রতিনিধিদের আচরণ।

খুব অসন্তষ্ট	অসন্তষ্ট	কোনোটাই না	সন্তষ্ট	খুব সন্তষ্ট

৪. রেল স্টেশনে পর্যাপ্ত বসার জায়গা রয়েছে।

খুব অসন্তষ্ট	অসন্তষ্ট	কোনোটাই না	সন্তষ্ট	খুব সন্তষ্ট

৫. রেল স্টেশনে পর্যাপ্ত ফ্যান এবং আলো আছে।

খুব অসন্তষ্ট	অসন্তষ্ট	কোনোটাই না	সন্তষ্ট	খুব সন্তষ্ট

৬. রেল স্টেশনে ঘোষণার যথেষ্ট স্বচ্ছতা রয়েছে।

খুব অসন্তষ্ট	অসন্তষ্ট	কোনোটাই না	সন্তষ্ট	খুব সন্তষ্ট

৭. রেল স্টেশন যথেষ্ট রিজার্ভেশন চার্ট প্রদর্শন আছে।

খুব অসন্তষ্ট	অসন্তষ্ট	কোনোটাই না	সন্তষ্ট	খুব সন্তষ্ট

৮. রেল স্টেশনে নিজের (যাত্রীদের) যথেষ্ট নিরাপত্তা রয়েছে।

খুব অসন্তষ্ট	অসন্তষ্ট	কোনোটাই না	সন্তষ্ট	খুব সন্তষ্ট

৯. রেলস্টেশনের কর্মচারীদের আচরণ খুবই ভদ্র।

খুব অসন্তুষ্ট	অসন্তুষ্ট	কোনোটাই না	সন্তুষ্ট	খুব সন্তুষ্ট

১০. রেল স্টেশনে পর্যাপ্ত মানের জলখাবার রয়েছে।

খুব অসন্তুষ্ট	অসন্তুষ্ট	কোনোটাই না	সন্তুষ্ট	খুব সন্তুষ্ট

১১. ট্রেনের সময়সূচী সময় মতো পৌঁছাবে এবং ছাড়বে।

খুব অসন্তুষ্ট	অসন্তুষ্ট	কোনোটাই না	সন্তুষ্ট	খুব সন্তুষ্ট

১২. ট্রেনের আসন আরামদায়ক।

খুব অসন্তুষ্ট	অসন্তুষ্ট	কোনোটাই না	সন্তুষ্ট	খুব সন্তুষ্ট

১৩. ট্রেনে পর্যাপ্ত ফ্যান এবং লাইট আছে।

খুব অসন্তুষ্ট	অসন্তুষ্ট	কোনোটাই না	সন্তুষ্ট	খুব সন্তুষ্ট

১৪. ট্রেন বা ট্রেন পরিষেবাগুলিতে খাবারের মান।

খুব অসন্তুষ্ট	অসন্তুষ্ট	কোনোটাই না	সন্তুষ্ট	খুব সন্তুষ্ট

১৫. কম্পার্টমেন্ট এবং টয়লেট পরিষ্কার।

খুব অসন্তুষ্ট	অসন্তুষ্ট	কোনোটাই না	সন্তুষ্ট	খুব সন্তুষ্ট

১৬. ট্রেন পুলিশ এবং টিটির আচরণ।

খুব অসন্তুষ্ট	অসন্তুষ্ট	কোনোটাই না	সন্তুষ্ট	খুব সন্তুষ্ট

১৭. স্টেশনের কর্মচারীদের আচরণ খুব ভালো।

খুব অসন্তুষ্ট	অসন্তুষ্ট	কোনোটাই না	সন্তুষ্ট	খুব সন্তুষ্ট