Analysis of Railway Passengers' Satisfaction with Service Quality: A Case Study from Kamalapur to Ishwardi Railway Station

[In the partial fulfillment of the requirements for the degree of Bachelor of Science in Civil Engineering]

Submitted To

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November 2024

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DEDICATION

Dedicated this work to my parents and beloved teachers, who raised and guided me in every single moment of my life.

ABSTRACT

Train platforms play a vital role in the rail transport system. A range of platform-related services available at railway stations contribute significantly to passenger satisfaction. This research utilized survey questionnaires at Kamalapur and Ishwardi railway stations to assess how content passengers were with these amenities. The study employed factor analysis as its analytical method to identify the primary factors that influence passengers' satisfaction with service quality. Data collection was conducted through an econometric analysis involving passenger surveys. Findings were based on passenger responses regarding service quality across seventeen major categories. The study revealed that key factors—such as the availability of refreshments and food, ticketing services, reservation chart visibility, lighting, restroom hygiene, staff behavior, schedule accuracy, and overall cleanliness—collectively accounted for 51.102% of the explained variance in satisfaction levels. A satisfaction model was developed, leading to conclusions and discussions on both theoretical and practical implications. This model is expected to be a valuable resource for policymakers in formulating strategies to improve facilities on railway platforms.

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CHAPTER 1

INTRODUCTION

1.1 General

Customers rarely have a thorough understanding of a service's technical components. Functional quality becomes the most important criterion for determining service quality (Donabedian, 1983). Passengers' satisfaction with service quality is frequently measured using technical and functional attributes. Service quality, in terms of service delivery, refers to an organization's ability to meet its customers' expectations. Improving and assessing service quality may boost a company's profits and reputation. Service quality, regardless of industry, can have a direct impact on an organization's ability to meet customer demands while maintaining a competitive edge. Recommendations, individual needs, and previous experiences all have an impact on a passenger's expectations for a specific service. There could be a disparity between expected and perceived service levels. The service quality model, developed in 1985, highlights the key requirements for providing exceptional service quality. A. Parasuraman, Valarie A. Zeithaml, and Len Berry developed a service quality model in 1990 using the expectancy-disconfirmation paradigm (Czepiel). Some distinguished scholars have proposed a diverse set of service quality criteria. Customers' perceptions of a service's ability to meet or exceed their expectations can be used to assess quality (Czepiel, 1990). (Ekinci and others, 2018). Passenger satisfaction is the result of assessing the quality of services. The degree of service can be evaluated based on the customer's impression, expectations, satisfaction, and attitude, Verma and Sachdev (2004). As a result, rail passengers prioritize service quality. Passengers will be satisfied if they only receive the best (100%) service. Consequently, there is a relationship between service quality and passenger satisfaction. Passengers will be more satisfied as service quality improves, whereas customers will be less satisfied as service quality declines. Railways are one of Bangladesh's main modes of transportation. The Bangladesh Railway transported 42 million passengers in the 2005 fiscal year (Bangladesh Railway, 7 December 2009, retrieved 15 December 2009). Intercity services account for more than 70% of Bangladesh Railway's revenue (2007, retrieved December 15, 2009). The railroad owned 312 wide-gauge and 1,164 meter-gauge carriages in 2014.

The railway was divided into East and West zones for the same reason. Two general managers oversee the railway and report to the director general of Bangladesh Railway. On August 12, 1995, the ministry delegated day-to-day management of the railway to a director general, who was appointed as a railway professional. The nine-member Bangladesh Railway Authority (BRA), which was established to provide policy guidance, is led by the minister of communications. The Additional Director General and Joint Director General assist the Director General with all administrative and policy-making duties.

The two zones' general managers are supported by a large number of specialized departments in charge of maintenance, operations, and finance. Each zone has two divisions that serve as the primary operational units. Divisional officers from various specialized departments, including manpower, transportation, business, finance, mechanical, way and works, signaling

and telecommunication, electrical, and medical, support the division, which is led by a divisional railway manager. Pahartoli and Syedpur both have their own divisional supervisors for their respective workshop divisions. Furthermore, each zone has its own workshop area. Furthermore, both BG and MG locomotives can be maintained at a Parbatipur locomotive workshop run by the chief executive.

The Rector of Bangladesh Railways also supervises a planning unit headed by a chief planning officer. A chief controller of stores-led stores department and an additional director general/finance-led accounts department will supervise and advise 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. The majority of its customers are from the lower to middle classes, and they are generally unaware of the issues with service quality. Rails make travel convenient, accessible, and affordable. Because of its monopolistic market structure, the Bangladesh Railway may overlook issues such as customer satisfaction, product marketing, and service quality. Currently, the Bangladesh Railway Department is A lack of administrative and technical resources, as well as widespread dissatisfaction with the quantity and quality of all railway services, has resulted in financial losses. Most recently, authorities halted several railway routes due to low passenger volume and budgetary concerns.

1.2 Objectives of Study

The paper consciously investigates how passengers evaluate the platform services provided by Bangladesh Railway. Customer satisfaction is clearly an indicator of total service quality (George & Kumar, 2013; Ekinci et al., 2018; Czepiel, 1990). This study's objective is to

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

1.3 Statement of the Problem

A large number of people travel by train in Bangladesh each year. People are forced to ride on the train's rooftop on some occasions due to the size of the throng. However, passengers experience a variety of problems for a variety of reasons at a variety of times on railroad station platforms. There aren't enough seats, for instance, and there are security measures for luggage, personal safety, sanitary facilities, and more. The railway services in Bangladesh can be categorized into three groups.

1. Ticketing.
2. Onboard Service.
3. Platform Facilities.

In busy train stations, people typically have to wait in line to purchase tickets. In an attempt to lessen the suffering of passengers, officials at Bangladesh Railway decided to use online ticketing. There is now an app that lets users buy train tickets from the convenience of their homes. Nevertheless, a number of news organizations have noted that users of this program have experienced a range of problems. Passengers have reported the train platform as a residential zone of violation on a regular basis. As a result, passengers never feel safe leaving their belongings at the station. Many investigations into Bangladesh Railway's engineering capabilities and operations have already commenced. There are several explanations for this circumstance. However, the current study discovered that customers' requests for platform service and their persistence may be reduced by investigating train platforms and offering the relevant tangible proof as part of the service marketing mix. To what degree customer satisfaction with service quality at the railway station has been examined.

1.4 Outline of Thesis

Our thesis paper's introduction is its first chapter. In this introductory chapter, we outlined the importance of our thesis and the reasoning behind the choice of topic. The second chapter is titled A Literature Review. The thesis papers that we examined and determined were relevant to our thesis topic are summarized here. These are the introduction and the review of the literature. A comprehensive review of the literature is necessary for a thesis paper. We go over the methodology of the study in our third chapter. This chapter contains the techniques, sample and survey, and introduction. Here, we covered our data collection, processing, tool usage, and other related topics. The fourth chapter is called "Analysis and Results."

Our thesis paper begins with an introduction in the first chapter. The importance of our thesis and the reasoning behind our topic choice were covered in this introductory chapter. The title of the second chapter is "A Literature Review." Below is a list of the thesis papers that we examined and found to be relevant to our thesis topic. The literature review and the introduction are these. A comprehensive review of the literature is necessary for a thesis. In chapter three, we go over the methodology of the study. The methods, sample and survey, and introduction are all included in this chapter. Here, we talked about the techniques we employed to gather the data, examine it, select the instruments we employed, etc. The fourth chapter is titled "Analysis and Results."

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

Without introducing anything new, a review of the literature evaluates and summarizes the most recent discoveries in a field. The fact that they are predicated on existing knowledge helps the researchers even determine the study subject. The literature review identifies potential avenues for future research to be successful. To The significance of a literature review in a scientific paper may be reduced to an analytical feature to allow for its wide use. It increases the research's credibility in multiple ways:

- 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

Many academics have studied various levels of service quality in terms of technical, functional, and reputational aspects (Grönroos, 1984; Lehtinen, 1991). (Lapierre and others, 1996) Think about the business, physical, and social aspects; focus on your ability and willingness to assist, as well as your physical and mental availability.

Researchers discovered that eight distinct service quality attributes—such as waiting arrangements, station information space for passengers to move on, station staff behavior, station security, train environment, and train waiting time—have an effect on overall service satisfaction when creating the basic service quality model (Rahaman & Rahaman, 2009). Numerous traits, including the consultant's perceived level of expertise and attitude toward the passengers during the service production process, have been identified in studies on passengers' satisfaction with consultant services (Sonne, 1999).

Table 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)

Geetika & Nandan (2010) state that people's satisfaction with train platforms is influenced by five factors. Security, basic amenities, behavior, the effectiveness of the information system, and refreshments are the most crucial. According to Hossain (2013), passenger behavior, security, refreshments, illumination, information, and basic amenities (clean drinking water and sanitary facilities) are the six factors that have the biggest impact on people's satisfaction with train stations.

Eboli and Mazzulla in 2009 A number of factors, including bus stop shelters and benches, cleanliness, crowding, information systems, safety, and personal security, as well as staff helpfulness and the physical state of the bus stop, were taken into consideration when assessing the level of passenger satisfaction with bus service (Bunker J., 2014). A bus station's shelter, waiting areas and seating, doors, stairways, escalators, signage, and passenger amenities are all important components for efficient service.

(2009) Nandan and Geetika Six elements of passenger satisfaction with electric providers were evaluated in the survey: city areas, billing and payment, corporate image, pricing, customer service, and power quality and dependability. In order to measure passenger satisfaction with dial-up and high-speed internet service, five criteria were employed (Rintyarna et al., 2022). These included cost of service, passenger service, advertising, performance and reliability, and billing and offering.

According to the review of the literature, researchers have discovered specific quality attributes in connection with various services. The entire measured or perceived performance of transit service as viewed from the passenger's point of view is transit quality, according to the Transit Cooperative Research Plan (Bunker J., 2014). Five categories are defined in Chapter 2 of TCRP Report 88 (TCRP Report 100): 1. The ease of access to public transportation; 2. The length of the trip; 3. Service monitoring; 4. Security and safety of passenger travel; and 5. Maintenance and construction activities.

In 2008, Stephen and Vannarajan Based on a variety of factors, such as responsiveness, empathy, tangibles, assurance, and dependability, passengers assess the quality of Indian Railways' services. The passengers were found to be only moderately satisfied with this dimension. According to Agarwal (2008), the most significant predictor of passengers' satisfaction with Indian Railway service is personnel conduct. Customers ranked service

quality as the most important factor when choosing a bank in an online banking survey (Geetika & Nandan, 2010). Another study on passengers' satisfaction with banking services found that staff behavior, the atmosphere of the bank, convenience, and traditional (basic) facilities were all important factors. In 2005, Of et al.

The packing service, insurance damage claims, optional coverage, the estimated process, the loading and unloading of items, and the transportation of goods were among the factors that influenced customers' satisfaction levels with full-service moving companies. According to Annamalah et al. (2011), this implies that satisfaction was impacted by the quality of auxiliary facilities and basic amenities.

Table 2: Summary of the Literature Review on Passenger Satisfaction.

Factors Considered for Passenger's Satisfaction	Authors
Quality of service	(Geetika & Nandan, 2010)
Adaptability, constancy, assurance, and empathy.tangible items.	(Jackson, 1981) (Annamalah et al., 2011) (Vanniarajan & Stephen, 2008)
Considerations include trip duration, transit service availability, maintenance and construction, safety and security, and service monitoring.	TCRP Report 88, 100
other elements, like employee behavior.	(Agarwal, 2008)
Insurance/damage claims (basic facilities, various supporting facilities), packing services, loading and unloading services, optional coverage, and personal property transportation.	(Bunker J, 2014)
passenger service, business reputation, billing, and Considerations include price, communications, information system, and payment.	(Geetika & Nandan, 2010)

Considerations include passenger service, billing, merchandise, promotions, service fees, performance and dependability, and more.	(Time, 2014)
The overall environment, employee behavior, basic amenities, and ease of use.	(Of et al., 2005)
cleanliness, traffic, information technology, and security.The physical state of bus stops, staff friendliness, and personnel security are all important considerations.	(Eboli & Mazzulla, 2009) TCRP Report 100

Table 2 provides a summary of research on the factors affecting customer satisfaction with various services in terms of service quality. A strong theoretical framework is developed for the current study using the various service contexts in order to identify significant common characteristics of service quality both inside and outside the setting.

CHAPTER 3

METHODOLOGY

3.1 Introduction

This study is unique in nature and employs a case study methodology to support its assertions. Numerous features are essential for different services in terms of passenger satisfaction, according to the literature review. Additionally, researchers in Bangladesh have not looked into how satisfied customers are with road station services and how good those services are. An effort is made to learn more about how consumers view the caliber of services provided on road platforms. In the specific context of Bangladesh, a case study approach is used in conjunction with the findings of a fast check to determine the factors that influence customer satisfaction with this highly significant public mileage.

3.2 Survey and Sampling

The study's macrocosm comprised both all Bangladeshis and callers from other nations. Among the carefully crafted questionnaires used in the research to gather primary data, a five-point Likert scale from "least satisfied" to "most satisfied" was employed. The primary objective of the questionnaires was to measure client satisfaction with particular criteria. The researchers used a Likert scale to gauge opinion-based responses because they believed it was appropriate for reducing compliance bias due to its balanced keying, which includes an equal number of positive and negative items. To evaluate the elements affecting passenger satisfaction on the train platform, the survey has 17 categories (appendix-1). Two sizable train stations—Kamalapur Railway Station and Ishwardi Railway Station—were chosen as samples for the study.

Bangladesh's largest and most important railway station is Kamalapur. Situated within the Motijheel Thana in the capital city of Dhaka, it is an essential transportation hub. Dhaka Railway Station is the official name of the station. Kamalapur handles thousands of passengers every day on its seven tracks and eight platforms. Around the station, a multimodal transportation hub is presently being built, with completion anticipated in 2030.

Ishwardi Railway Station in the Pabna District serves as the second sample location. It is a crucial node in the nation's rail system and one of the main intersections in western Bangladesh. On the vital rail line that connects the northwest and southwest, the station is located. This station is frequently used by trains from Dhaka, Rajshahi, Khulna, Dinajpur, and Chilahati. Numerous intercity trains, including the Padma Express, Silk City Express, Dhumketu Express, and Lalmoni Express, serve the crucial Kamalapur to Ishwardi railway line, ensuring regular connectivity between the nation's capital and its northern regions. This route's dual-gauge tracks allow for both broad gauge and meter train service.

Multiple platforms, a footbridge, ticket counters, waiting areas, and freight handling facilities are all part of the Ishwardi station infrastructure. It has many daily commuters and is essential

to the transportation of both passengers and freight. Ishwardi, which has a history connected to the growth of Bangladesh's western railway lines, is still an important railway hub.

The study looked at the distance between the platforms of Ishwardi and Kamalapur railway stations. The distance and geographic relationship between these two stations are depicted on the Google map below.

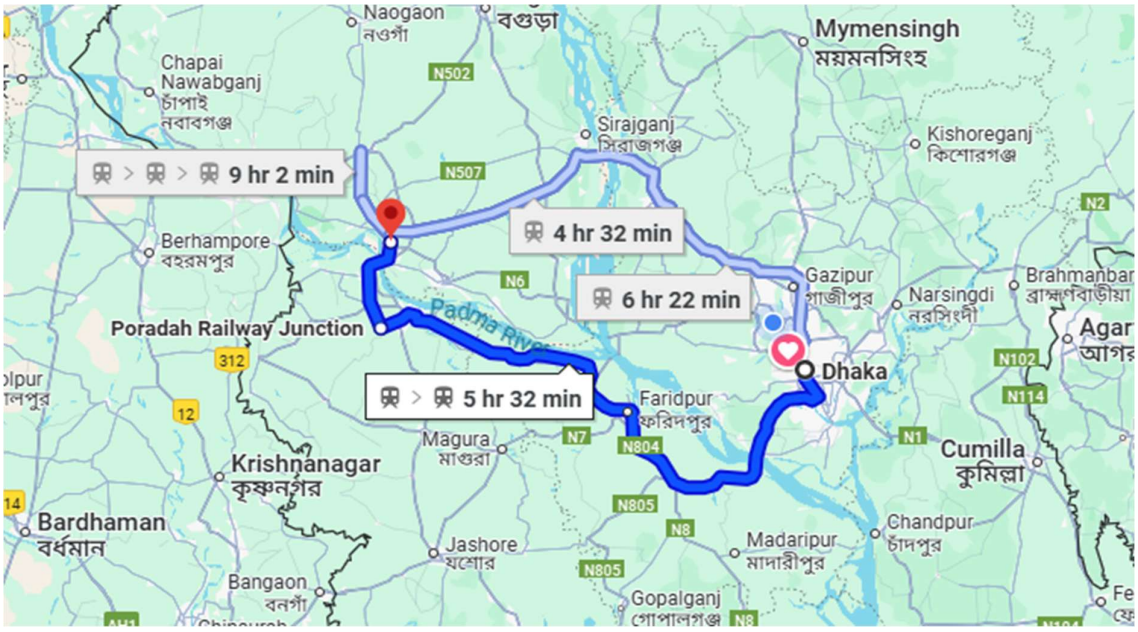

Figure 1: Selected Study Route.

A total of 300 samples were included in the survey, 115 from Ishwardi railway station and another 185 from Kamalapur railway station. The samples were collected while people were waiting for trains on platforms between November 15, 2024, and December 5, 2024.

3.3 Methodology

The study concluded that none of the available instruments should be used because the determinants varied by service. Even though the work was difficult, it was necessary to achieve the study's objectives. An instrument was developed using the body of existing literature, observations, a pilot study, and professional opinion. The variables related to passenger satisfaction and perception—two facets of Bangladesh Railways' service quality—were developed through evaluations and exploratory research. Interviews with frequent travelers were conducted to find out what factors affected their enjoyment. Broad measures of passenger satisfaction for train stops were developed using these early surveys and evaluations. These standards were partially confirmed by the literature review. Afterwards, they were modified to create a question.

Passengers' satisfaction with the caliber of the services they received was measured using the following 17 variables in these surveys.

Table 3: Factors affect passengers satisfaction with the service quality of Bangladesh's Railway Platforms.

Code	Variables
V1	Travel frequency
V2	Way of ticketing
V3	Train category
V4	Displays reservation charts & accurate announcements
V5	Train schedule
V6	Quality of Refreshment
V7	Lighting
V8	Fans
V9	Food quality & pricing
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

3.4 Definition of Variables

- **Ticket Counter:** In light of passenger service, the number of ticket counters in the stations and the caliber of the ticketing service have been discussed.
- **Reservation Chart Display:** Stations are equipped with LED monitors to help passengers understand train departure times and which train is currently waiting to leave. in an effort to prevent passengers from missing any trains. This is meant to be an illustration of a reservation chart.
- **Timing and scheduling:** Whether the train leaves the station and reaches the platform at the appointed time are examples of timing and scheduling. Because sometimes the train arrives late and leaves late.
- **Announcement Accuracy:** The accuracy of the announcement is determined by using the station's speakers to announce when a train leaves. The passengers immediately got on the train after the news was announced. Nevertheless, passengers will be unable to identify which train is now leaving if the announcement is not heard clearly.
- **Availability of Refreshments:** A train station's availability of refreshments includes a range of seating options, enough designated waiting areas for long-waiting passengers, and a sufficient number of cafeterias.
- **Refreshment Quality:** This refers to how the waiting areas are set up, including First Class, Shovan Chair, Shovan, and so forth. Additionally, it depends on the type of tickets that are still pending. In this section, the standard chairstyle chairs at the stations are also covered.
- **Lighting:** Lighting refers to how well the platform is illuminated for passengers at night. Sometimes the lack of light leads to snatching, theft, and other unpleasant activities at the stations.
- **Fans:** The word "fan" refers to the number of fans the station has.
- **Easily accessible food:** This describes the excellent food offered in the station at a price that passengers can afford.
- **Sanitary Arrangement:** Passengers must have access to clean drinking water and sanitary facilities on the platform.
- **Cleanliness of restrooms and compartments:** This describes how spotless the station's restrooms and waiting areas are.
- **Baggage security:** Passengers carry their bags to the platform in order to travel to other destinations. Occasionally, when the platform's security is insufficient, luggage is stolen. for there to be major challenges for traveling. This refers to demonstrating the level of luggage safety that passengers can ensure on the Bangladesh Railway Authority platform.
- **Passenger security:** The railway authorities are aware of the degree of protection that can be given to passengers on the platform. Parking Management: Whether or not there are passenger parking spaces at the stations has been explained.
- **Platform Height:** The platform height is the distance between the floor and the platform that you can stand on. On platform steps, working from the platform height is safe.

- **Train police and TT behavior:** Porters remain at the station to transport passengers' luggage. This demonstrates the treatment of the porters at the station and their interactions with the travelers.
- **Conduct of ticket counter agents:** Nevertheless, what matters most in preserving your services is paying attention to their issues, demonstrating empathy, honoring your commitments, and being proactive in your communications. Be sure to remain understanding and patient even when dealing with demanding clients.

CHAPTER 4

ANALYSIS & RESULT

4.1 Introduction

Using factor analysis, the elements of excellent retail service were determined. In order to determine what factors influence train passengers' enjoyment, Hsu et al. (www.academic-papers.org) and Agarwal (2008) used the same technologies to identify factors that affect customer satisfaction when making online purchases (Rahaman & Rahaman, 2009). Determine the factors that influence passengers' satisfaction with the caliber of services offered by train platforms (Hossain, 2013). This study used the same approach to determine the factors influencing passenger satisfaction. Factor analysis was used to identify the factors that influence passenger satisfaction on train platforms and test the hypothesis that these factors influence passenger satisfaction. The data was analyzed using SPSS 25.

Each of the 17 attributes was given a five-point rating by the passengers based on their personal experiences. Passengers responded at a fairly good rate. The data's validity was evaluated using Bartlett's test of sphericity and the Kaiser-Meyer-Ohlin (KMO) sample adequacy measure. The KMO statistic has a 0–1 range. While a score of 0 suggests that factor analysis is unlikely to yield distinct and reliable factors, a score of 1 suggests that factor analysis should yield distinct and reliable components (Ul Hadia et al., 2016). You should either collect more data or reevaluate which variables to include if the results fall short of this threshold. Additionally, Lapierre et al. (1996) state that values between 0.5 and 0.7 are considered average, those between 0.7 and 0.8 are considered good, those between 0.8 and 0.9 are considered outstanding, and values above 0.9 are considered extraordinary. The Bartlett's Test and the Kaiser-Meyer-Ohlin Test are shown in Table 4.21.

Table 4: 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
Ishwardi Railway Station		115	115	

Respondents carefully answered the questionnaires they were given at the time. When they were unable to understand a question, they came to us. col In this way, we collected data one by one while taking our time. is why our data is free of noise.

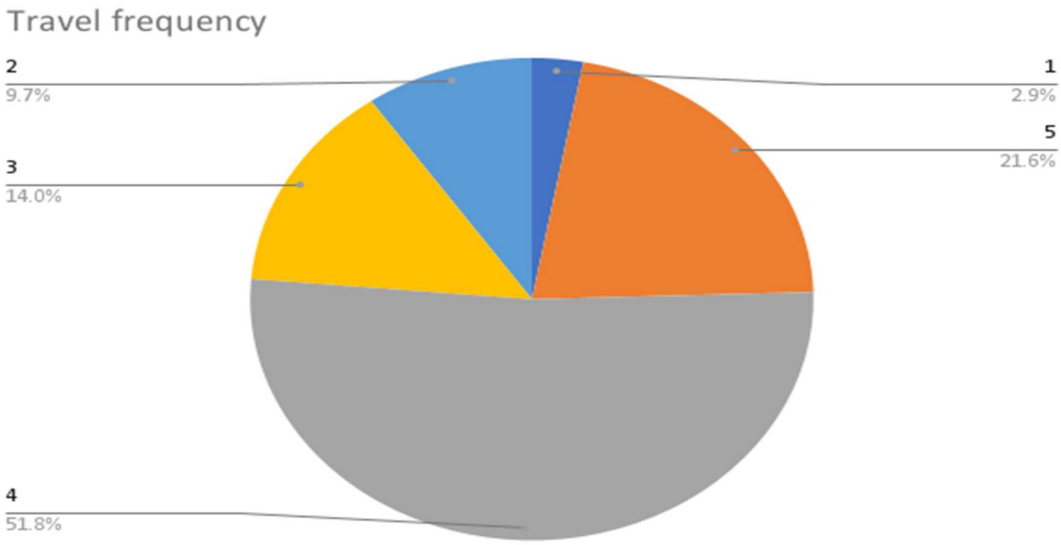

Figure 2: The percentage of respondents by travel frequency.

Over half of the participants are frequent travelers, as shown by the fact that the largest percentage of respondents (51.8%) in Figure 2 are those who travel four times or more. ThiNext in line are those who travel five times (21.6%) and three times (14.0%).7% oJus Compared to those who had traveled twice, 2.9% of respondents claimed to have only taken one trip.tern suggests that most respondents are regular train users, which may reflect a strong reliance on railway transport in their daily lives.

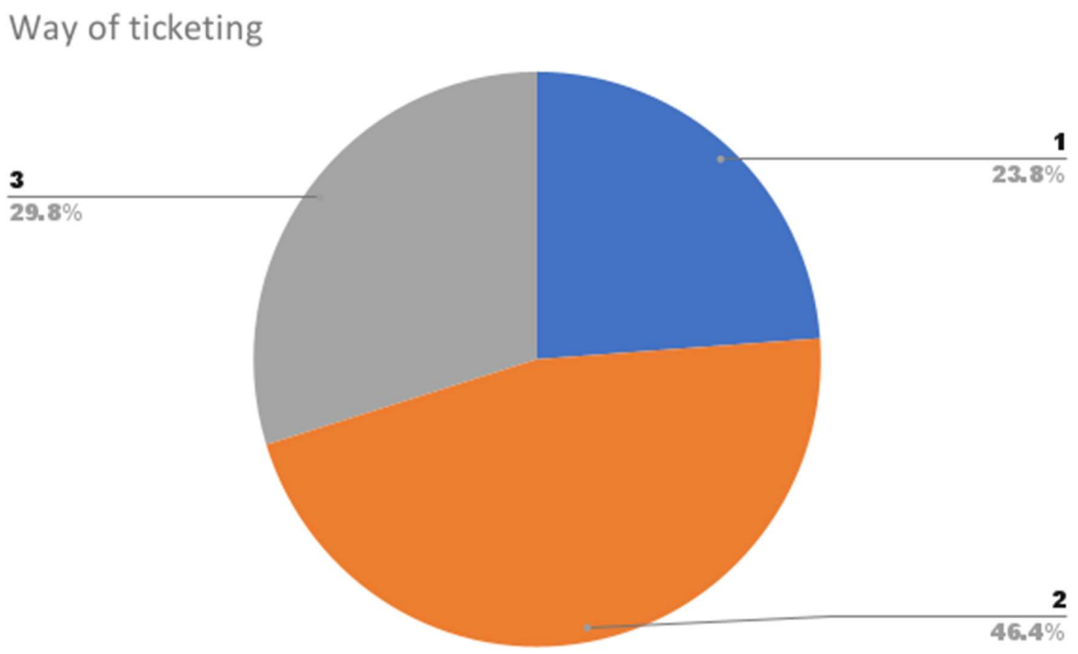

Figure 3: The percentage of respondents by way of ticketing.

Option 2 is the most popular ticketing method among respondents, being used by 46.4% of participants, as illustrated in Figure 3. Options 1 and 3 were chosen by 23.8% and 29.8% of respondents, respectively. These findings show that almost half of the passengers favor option 2, which might be a reflection of contemporary techniques like online or mobile ticketing and point to a move in railway operations toward digital services.

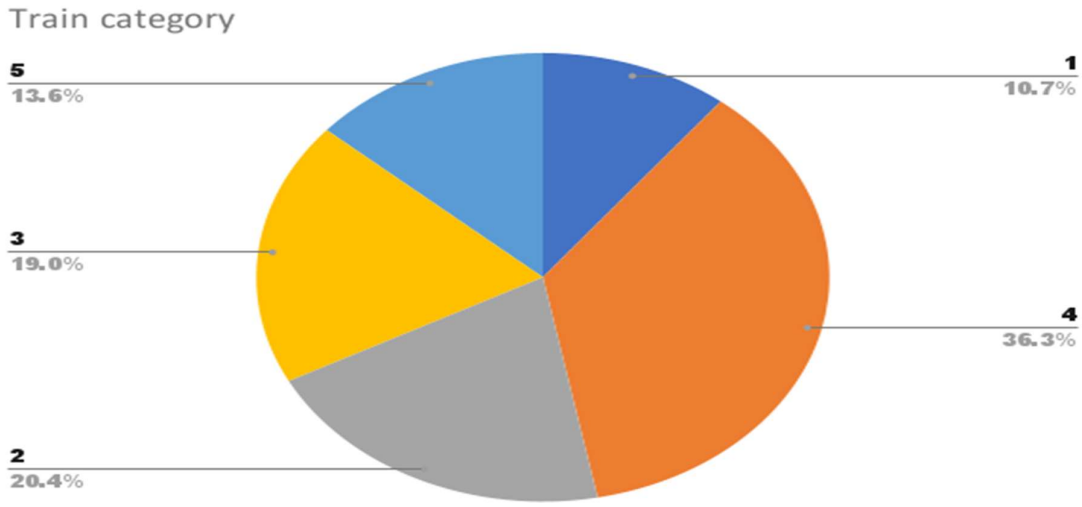

Figure 4: The percentage of respondents by train category.

Train category 4 is the most popular option, with 36.3% of respondents preferring it (Figure 4). 19.0% of respondents chose category 3, compared to 20.4% who chose category 2.

Furthermore, 10.7% of participants chose category 1, and 13.6% chose category 5. Category 4 is preferred because it might provide better comfort, timing, or service quality than the other options.

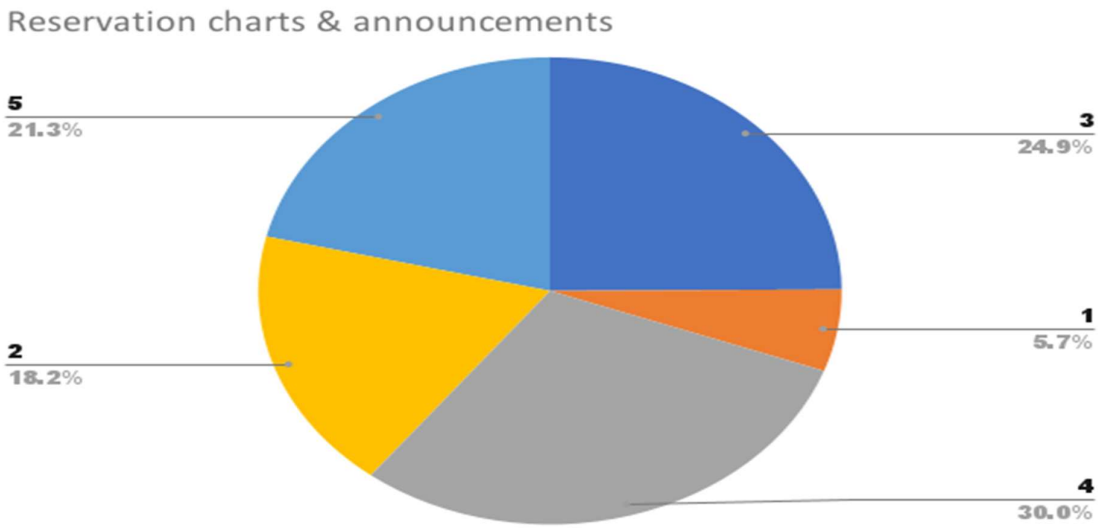

Figure 5: The percentage of respondents by satisfaction with reservation charts & announcements.

Respondents' thoughts on reservation charts and announcements are shown in Figure 5. 30% of respondents gave their satisfaction a level 4 rating, which denotes a generally favorable experience. 24.9% of respondents selected level 3, indicating a moderate degree of satisfaction. While 18.2% of respondents chose level 2, indicating some dissatisfaction, 21.3% of respondents chose level 5, indicating high satisfaction. The lowest percentage of participants, 5.7%, gave it a level 1 rating. The majority of respondents tended toward higher satisfaction levels, according to the results, which generally indicate a positive trend.

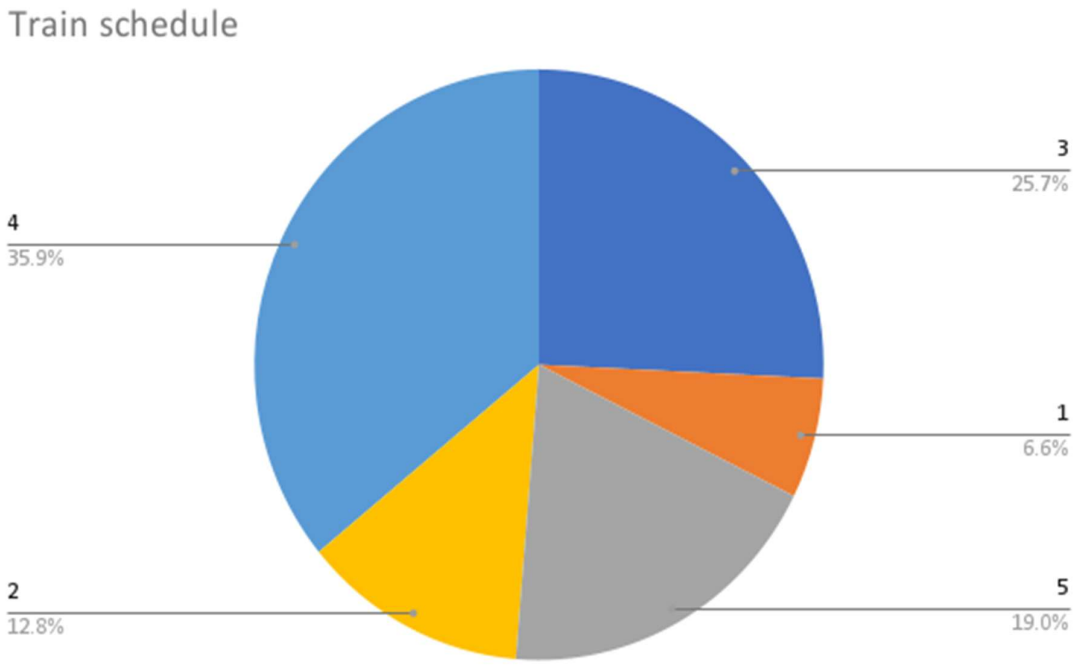

Figure 6: The percentage of respondents by satisfaction with train schedule.

How satisfied the respondents were with the train schedule is depicted in Figure 6. Level 4 was chosen by the majority, 35.9%, suggesting a comparatively high degree of satisfaction. Level 3 was selected by 25.7% of respondents, indicating a moderate level of satisfaction. Level 5 was chosen by 19.0% of respondents, indicating strong satisfaction, while level 2 was chosen by 12.8% and level 1 by 6.6%, indicating dissatisfaction. In general, the Findings indicate that while there is potential for improvement, the majority of users are happy with the train schedule.

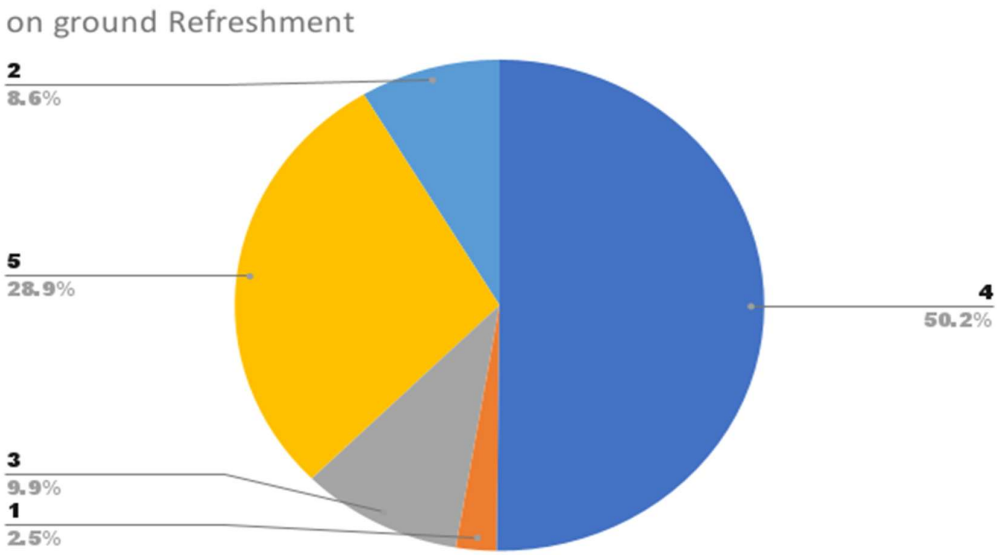

Figure 7: The percentage of respondents by satisfaction with on-ground refreshment.

The degree of satisfaction that respondents had with on-ground refreshment services is shown in Figure 7. 40.2% of respondents gave their satisfaction a level 4, which indicates that they had a generally good experience. 28.9% of respondents chose level 5, indicating high satisfaction, after this. 8.6% selected level 2, while 9.9% selected level 3, indicating a moderate level of satisfaction. By choosing level 1, just 2.5% of respondents indicated the least amount of satisfaction. Overall satisfaction with the on-ground refreshment facilities is high, according to the results.

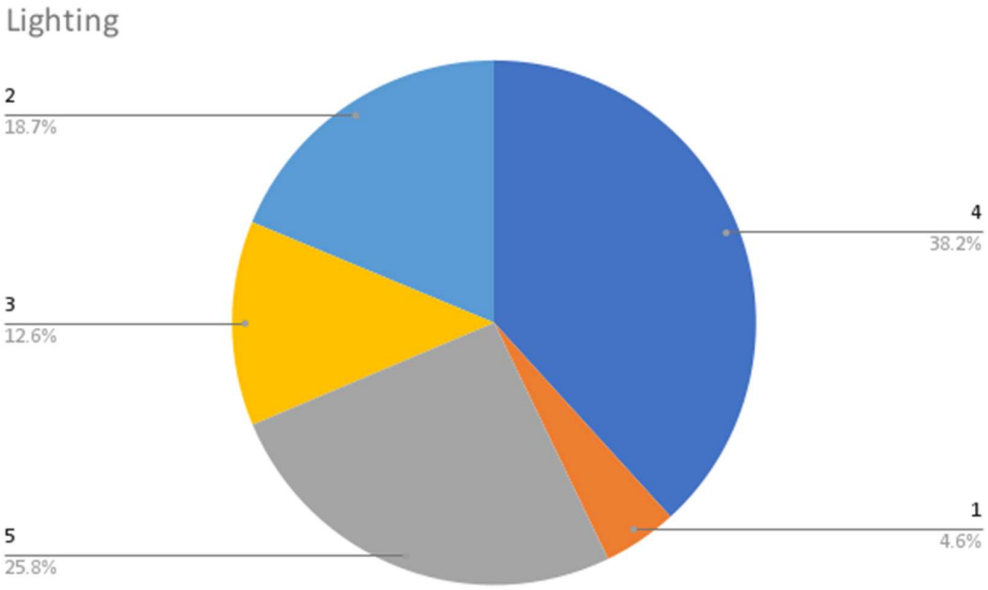

Figure 8: The percentage of respondents by satisfaction with lighting.

The respondents' degree of satisfaction with the lighting at the train stations is shown in Figure 8. 38.2% of respondents gave it a level 4 rating, indicating overall satisfaction. A high degree of satisfaction was indicated by the 25.8% who selected level 5. There was some dissatisfaction as 18.7% of participants chose level 2, while 12.6% chose level 3. Level 1, the least satisfied level, was chosen by just 4.6% of respondents. The majority of passengers appeared to be content with the lighting on the platforms, based on the responses received.

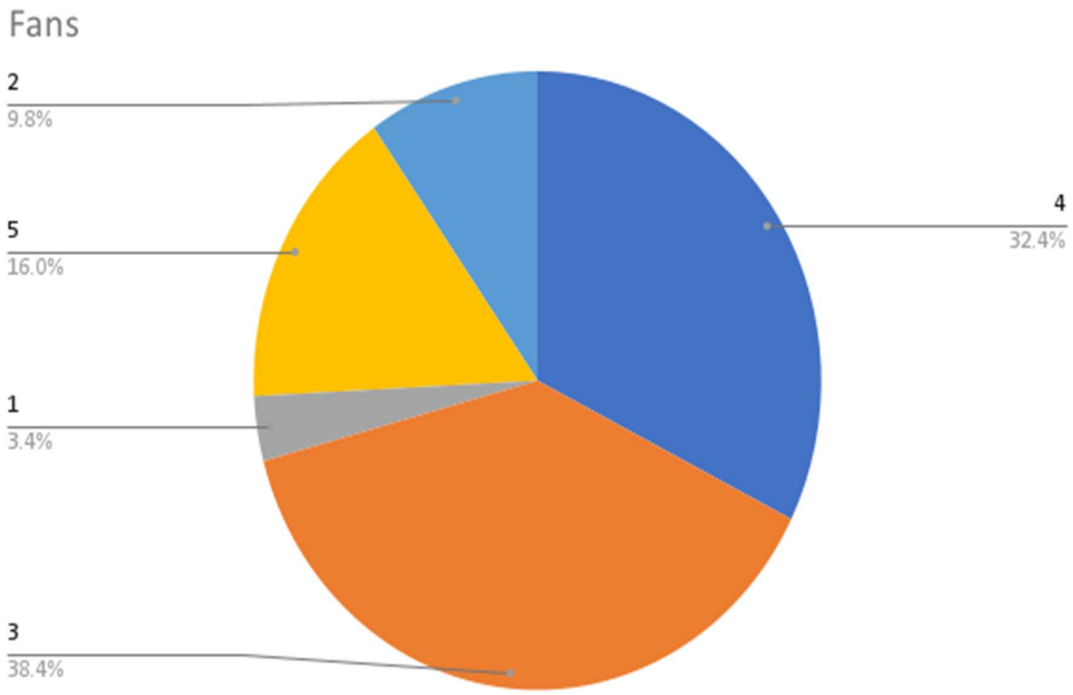

Figure 9: The percentage of respondents by satisfaction with fans.

The respondents' satisfaction levels with the station's fan performance and availability are shown in Figure 9. 38.4% of respondents gave it a level 3 rating, indicating moderate fulfillment. While 16.0% chose level 5, indicating high satisfaction, 32.4% chose level 4, indicating good satisfaction. Only 3.4% assigned the lowest satisfaction rating of level 1, while 9.8% gave it a level 2 rating at the lower end. These findings suggest that while the majority of respondents expressed some degree of satisfaction with fan facilities, improvement is still possible.

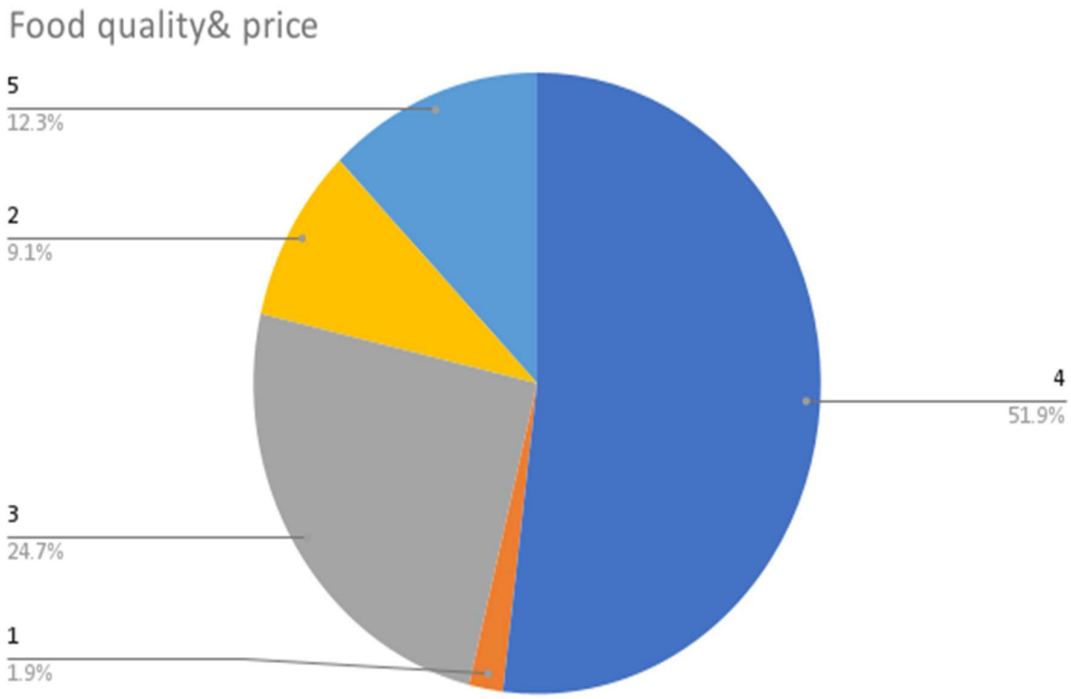

Figure 10: The percentage of respondents by satisfaction with food quality and price

Respondents' perceptions of the station's food quality and cost are displayed in Figure 10. Overall positive feedback was indicated by the largest percentage, 32.4%, who gave their satisfaction a level 4 rating. 24.7% of respondents chose level 3, indicating a moderate level of satisfaction. 16.0% of respondents selected level 5 and expressed high satisfaction. However, 9.1% gave it a level 2 rating, and 1.9% chose level 1, indicating the least amount of satisfaction. These results imply that although a large number of travelers are generally happy with the food services, both the quality and the cost could be raised.

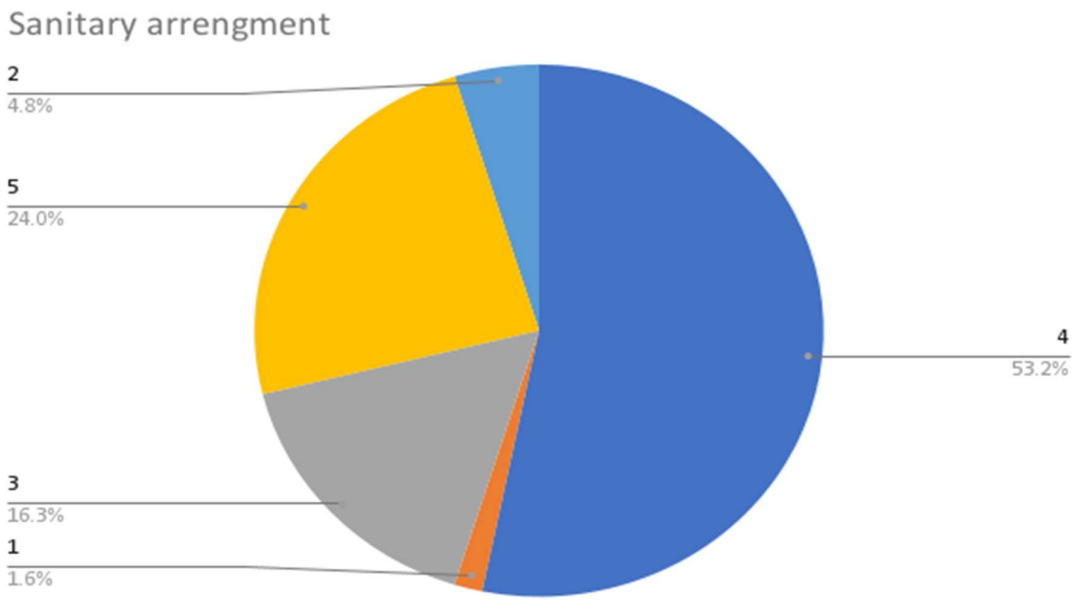

Figure 11: The percentage of respondents by satisfaction with sanitary arrangement.

The degree to which respondents were satisfied with the station's hygienic conditions is shown in Figure 11. A high degree of approval was indicated by the majority's level 4 rating of 53.2% for satisfaction. 24.0% of respondents chose level 5, indicating extremely high satisfaction, after this. Furthermore, 16.3% of respondents gave it a level 3 rating, indicating a moderate level of satisfaction. Conversely, just 1.6% of respondents were least satisfied with level 1, and 4.8% selected level 2. These findings imply that the majority of travelers were content with the platform's hygienic amenities.

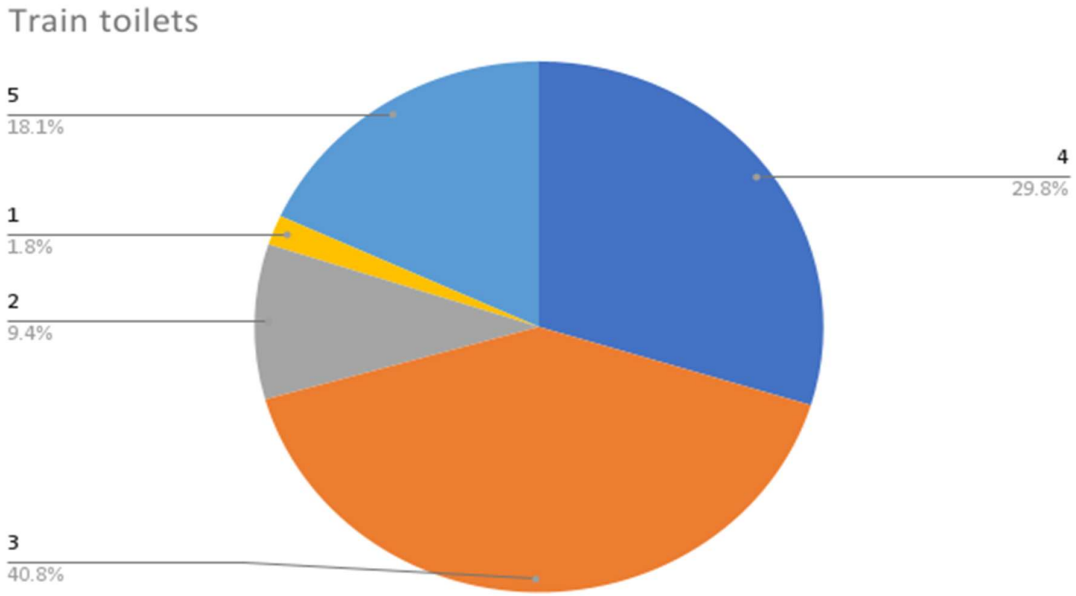

Figure 12: The percentage of respondents by satisfaction with train toilets.

The degree to which respondents were satisfied with the train's restrooms is shown in Figure 12. Only moderately or averagely satisfied, 40.8% of respondents, the largest segment, rated their experience as level 3. Positive feedback was indicated by the fact that 29.8% of passengers selected level 4, while 18.1% of passengers gave it the highest satisfaction rating of level 5. However, 1.8% expressed the least amount of satisfaction by selecting level 1, and 9.4% were less satisfied by choosing level 2. Despite the fact that many passengers thought the restrooms were adequate, these results imply that cleanliness and upkeep could be improved.

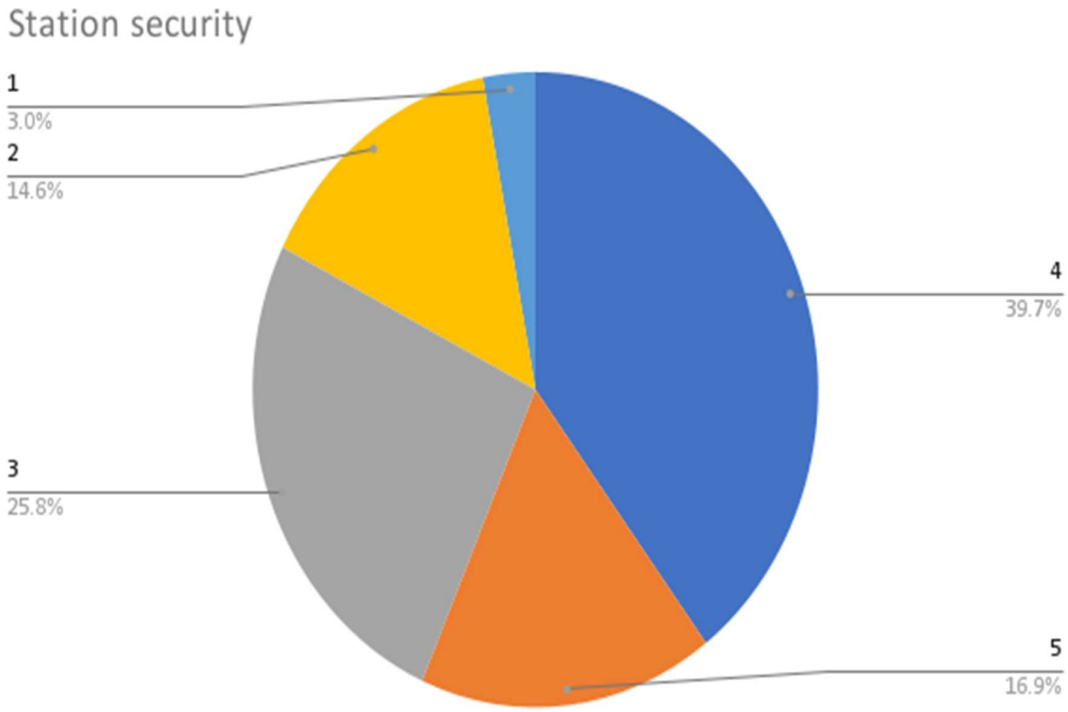

Figure 13: The percentage of respondents by satisfaction with station security.

Figure 13 shows how satisfied respondents were with the level of security at the train station. 39.7% of respondents said they were generally secure, giving them a level 4 satisfaction rating. Level 3 was selected by 25.8% of respondents, indicating a moderate level of satisfaction. In the meantime, 16.9% of respondents chose level 5 and expressed great satisfaction. Level 2 was rated by 14.6% of respondents, while level 1 was chosen by 3.0% of respondents, who expressed the least amount of satisfaction. Although the majority of passengers felt safe at the station, a sizable portion still thought security could be improved, according to the data.

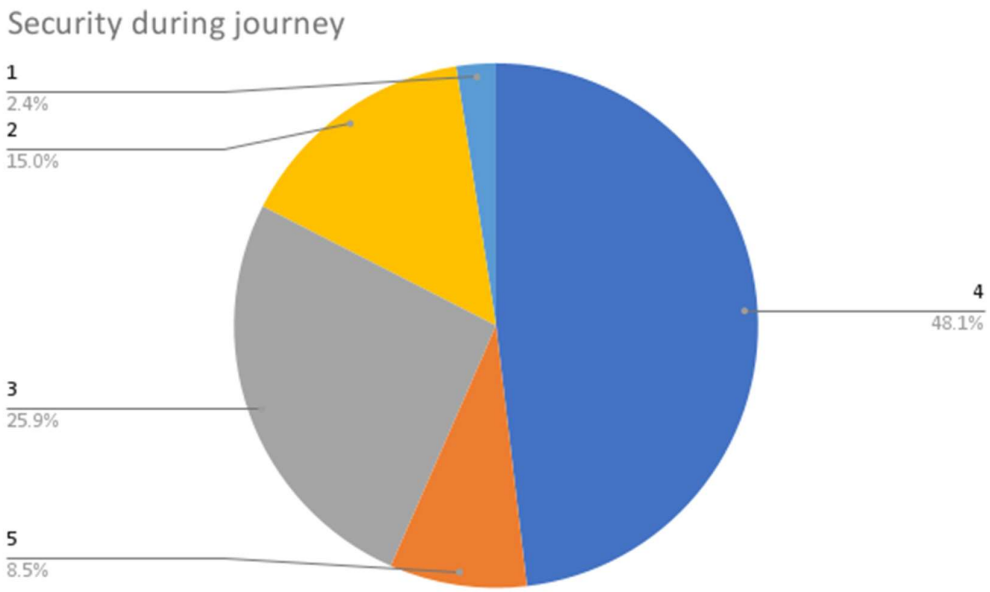

Figure 14: The percentage of respondents by satisfaction with security during journey.

Respondents' perceptions of security on trains are shown in Figure 14. With 48.1% rating their level of satisfaction at 4, the largest percentage indicated that they felt reasonably safe while traveling. 25.9% of respondents chose level 3, indicating a neutral or moderate degree of satisfaction, after this. In contrast, 2.4% selected level 1, and 15.0% selected level 2, indicating discontent among a smaller passenger base. Level 5 was chosen by just 8.5% of respondents, who expressed complete satisfaction. According to these findings, a sizable portion of passengers think onboard security could be strengthened, even though many feel reasonably safe while traveling.

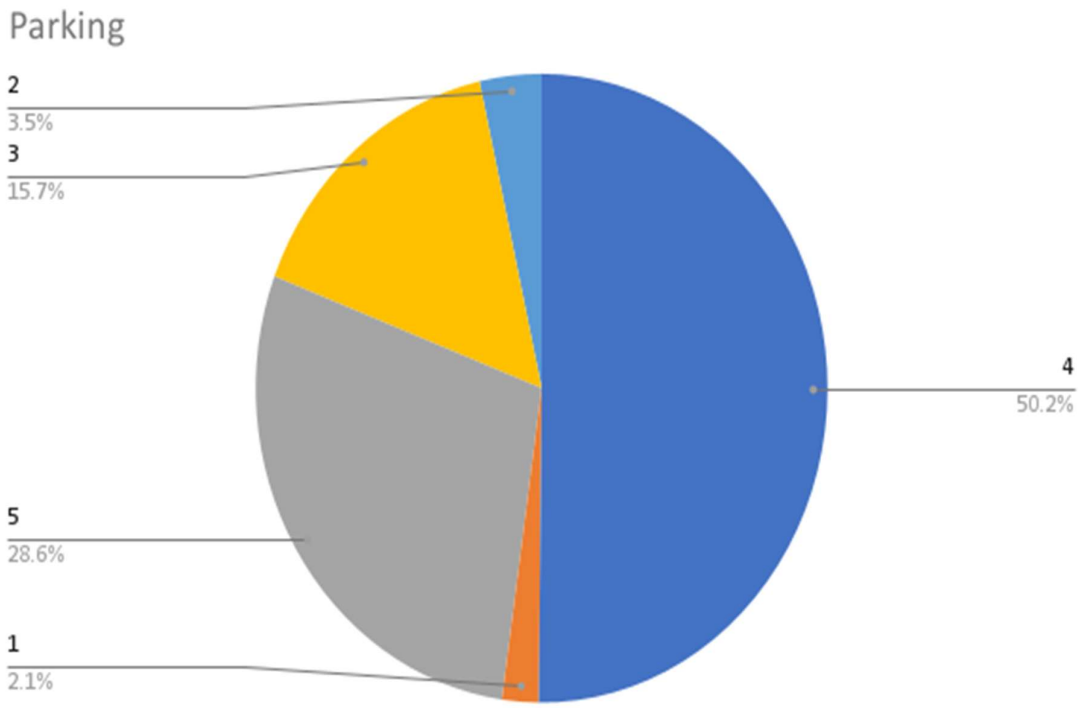

Figure 15: The percentage of respondents by satisfaction with parking facilities.

The satisfaction levels of respondents with regard to the parking facilities at the train stations are displayed in Figure 15. A sizable percentage, 50.2%, gave the available parking a level 4 rating, indicating high levels of satisfaction. A further indication that many passengers thought the parking facilities were excellent is the level 5 rating, which was given by 28.6% of respondents. However, 3.5% and 2.1% of respondents chose levels 2 and 1, respectively, indicating minimal dissatisfaction, while 15.7% chose level 3, indicating moderate satisfaction. According to the data, most passengers appear to be happy with the station parking options overall.

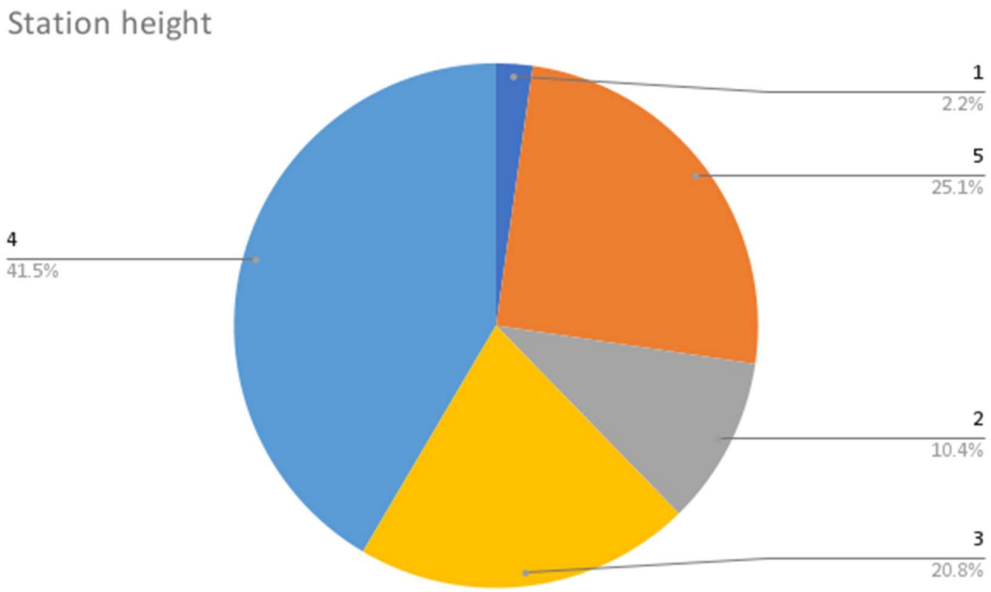

Figure 16: The percentage of respondents by satisfaction with station height.

Regarding the station's height, respondents' satisfaction levels are displayed in Figure 16. High levels of satisfaction with the station height were indicated by the large percentage (41.5%) who gave their satisfaction a level 4 rating. Furthermore, level 5, the highest rating, was given by 25.1% of respondents, indicating that many passengers thought the station height was excellent. However, 10.4% and 2.2% chose levels 2 and 1, respectively, indicating some dissatisfaction, while 20.8% chose level 3, indicating moderate satisfaction. The majority of passengers appear to be content with the station height, according to the data.

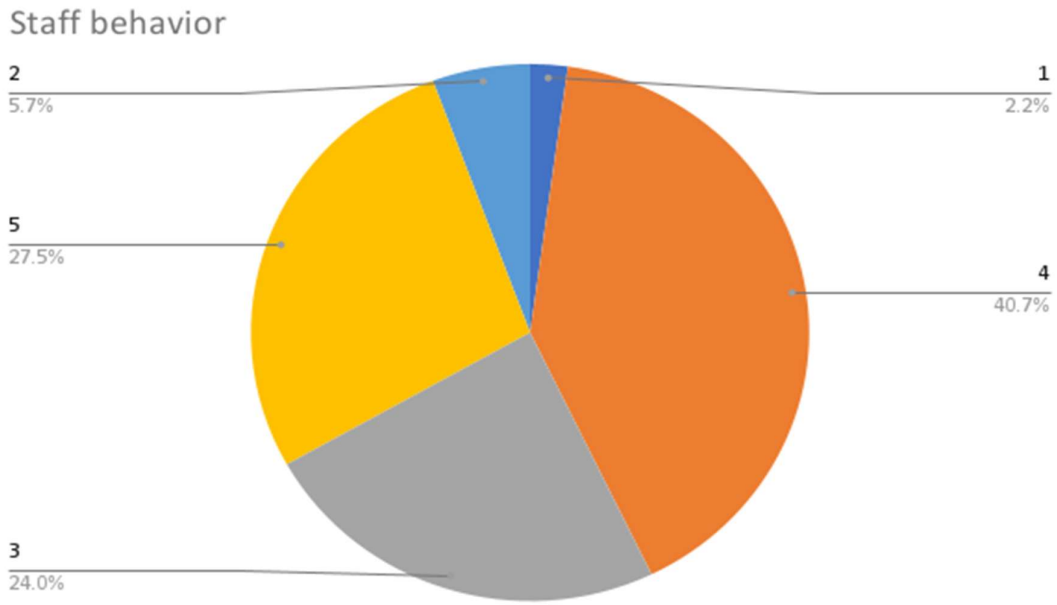

Figure 17: The percentage of respondents by satisfaction with staff behavior.

The respondents' satisfaction levels with the station staff's conduct are displayed in Figure 17. 40.7% of respondents gave the staff's behavior a level 4 rating, which indicates that they were very satisfied. Furthermore, level 5, the highest rating, was given by 27.5% of respondents, indicating that many passengers thought the staff behaved excellently. Although 5.7% and 2.2%, respectively, selected levels 2 and 1, indicating some dissatisfaction, 24.0% chose level 3, indicating moderate satisfaction. According to the data, the majority of passengers appear to be content with the conduct of the station's employees.

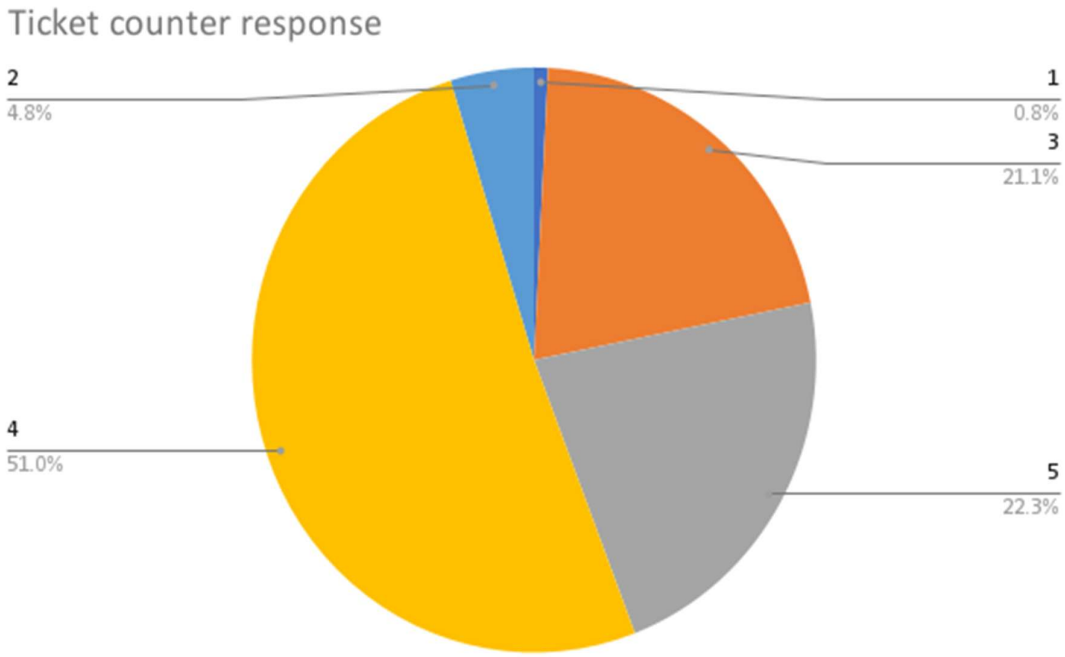

Figure 18: The percentage of respondents by satisfaction with ticket counter response.

Regarding the response at the ticket counter, respondents' satisfaction levels are displayed in Figure 18. A significant majority (51.0%) gave the ticket counter response a level 4 rating, indicating high satisfaction. In addition, 22.3% of respondents rated the ticket counter response as excellent, which is the highest rating possible. However, 4.8% and 0.8% chose levels 2 and 1, respectively, indicating some dissatisfaction, while 21.1% chose level 3, indicating moderate satisfaction. The majority of passengers, according to the data, appear to be happy with the assistance they receive at the ticket counter.

Table 5: Kaiser-Meyer-Ohlin Measure and Bartlett's Test.

KMO Measure of Sampling Adequacy	0.667	
	Approx. Chí-Square	410.901
	df	136
	Sig.	0.000

4.2 Data and Analysis

Using the principle 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 6).

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 similar 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 6.

Table 6: 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 6 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%.

Factor 6

Following a careful analysis using statistical methods, elements were ranked in order of importance among the deciding factors. Table 7 displays how various variables were ranked.

Table 7: Factor Ranking.

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

Source: Appendix 5(Hightest is First)

Factor 1 (Ticket service & Reservation Chart Display) is ranked the first in Table 7. 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.

4.3 Passenger's Satisfaction Model

A model of passenger satisfaction on railway platforms is suggested in Figure l, 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.

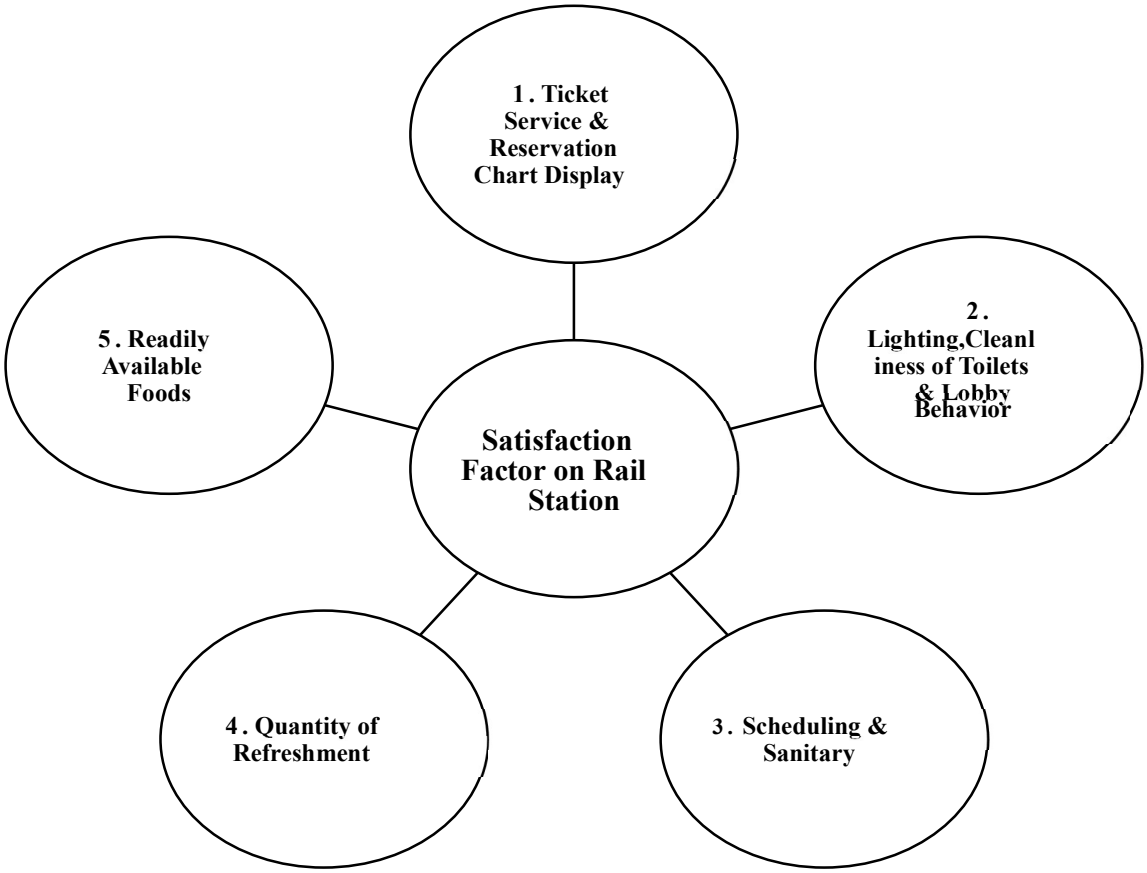

Figure 19: Determinants of Passenger Satisfaction on Railway Platforms Research Model.

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 Ishwardi 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	Travel frequency	3.37	1.204	300
2	Way of ticketing	1.76	.732	300
3	Train category	2.56	1.298	300
4	Displays reservation charts & accurate announcements	2.87	1.269	300
5	Train schedule	2.91	1.288	300
6	Quality of Refreshment	3.52	1.221	300
7	Lighting	3.04	1.331	300
8	Fans	3.09	1.171	300
9	Food quality & pricing	3.33	1.059	300
10	Sanitary arrangement	3.63	1.055	300
11	Cleanliness of toilets & compartment	3.19	1.050	300
12	Security of luggage	3.10	1.150	300
13	Security of self (passengers)	3.09	1.056	300
14	Parking Management	3.66	1.109	300
15	Platform height	3.29	1.222	300
16	Behavior of train police and TT	3.49	1.137	300
17	Behavior of ticket counter representatives	3.65	.953	300

Appendix-2

Variables	V1	V2	V3	V4	V5	V6	V7	V8	V9	V 10	V 11	V 12	V 13	V 14	V 15	V 16	V 17
V1	1.000	0.738	0.849	0.687	0.115	0.241	0.186	0.703	0.560	0.599	0.349	0.763	0.719	0.390	0.414	0.370	0.586
V2	0.738	1.000	0.550	0.776	0.563	0.511	0.437	0.632	0.744	0.593	0.265	0.561	0.028	0.351	0.174	0.501	0.931
V3	0.849	0.550	1.000	0.496	0.728	0.539	0.515	0.696	0.199	0.576	0.385	0.452	0.207	0.444	0.744	0.440	0.740
V4	0.687	0.776	0.496	1.000	0.560	0.488	0.223	0.182	0.649	0.530	0.249	0.461	0.510	0.273	0.748	0.355	0.652
V5	0.115	0.563	0.728	0.560	1.000	0.644	0.559	0.420	0.867	0.418	0.502	0.507	0.434	0.434	0.623	0.080	0.555
V6	0.241	0.511	0.539	0.488	0.644	1.000	0.734	0.494	0.407	0.504	0.334	0.712	0.294	0.499	0.239	0.323	0.643
V7	0.186	0.437	0.515	0.223	0.559	0.734	1.000	0.252	0.393	0.445	0.810	0.721	0.591	0.632	0.410	0.588	0.797
V8	0.703	0.632	0.696	0.182	0.420	0.494	0.252	1.000	0.581	0.187	0.449	0.378	0.457	0.506	0.633	0.541	0.559
V9	0.560	0.744	0.199	0.649	0.867	0.407	0.393	0.581	1.000	0.335	0.773	0.426	0.352	0.455	0.668	0.379	0.517
V10	0.599	0.593	0.576	0.530	0.418	0.504	0.445	0.187	0.335	1.000	0.337	0.408	0.530	0.558	0.577	0.459	0.464
V11	0.349	0.265	0.385	0.249	0.502	0.334	0.810	0.449	0.773	0.337	1.000	0.505	0.818	0.690	0.611	0.700	0.596
V12	0.763	0.561	0.452	0.461	0.507	0.712	0.721	0.378	0.426	0.408	0.505	1.000	0.509	0.609	0.469	0.429	0.496
V13	0.719	0.028	0.207	0.510	0.434	0.294	0.591	0.457	0.352	0.530	0.818	0.509	1.000	0.620	0.472	0.776	0.618
V14	0.390	0.351	0.444	0.273	0.434	0.499	0.632	0.506	0.455	0.558	0.690	0.609	0.620	1.000	0.554	0.320	0.030
V15	0.414	0.174	0.744	0.748	0.623	0.239	0.410	0.633	0.668	0.577	0.611	0.469	0.472	0.554	1.000	0.305	0.318
V16	0.370	0.501	0.440	0.355	0.080	0.323	0.588	0.541	0.379	0.459	0.700	0.429	0.776	0.320	0.305	1.000	0.676
V17	0.586	0.931	0.740	0.652	0.555	0.643	0.797	0.559	0.517	0.464	0.596	0.496	0.618	0.030	0.318	0.676	1.000

Appendix-3

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	2.853	16.785	16.785	2.227	13.100	13.100	1.640
2	1.607	9.455	26.240	.988	5.814	18.914	1.514
3	1.502	8.833	35.073	.834	4.906	23.820	1.457
4	1.244	7.317	42.389	.640	3.766	27.586	1.072
5	1.182	6.952	49.341	.519	3.054	30.640	.959
6	1.106	6.508	55.849	.465	2.737	33.377	1.000
7	.954	5.613	61.462				
8	.919	5.408	66.871				
9	.853	5.017	71.888				
10	.802	4.715	76.603				
11	.746	4.388	80.991				
12	.666	3.920	84.911				
13	.637	3.747	88.658				
14	.547	3.218	91.877				
15	.530	3.115	94.991				

16	.452	2.662	97.653				
17	.399	2.347	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

	1	2	3	4	5	6
Travel frequency	.329	.536		.332		
Way of ticketing		.412				
Train category	.471					
Reservation charts & announcements	.358					
Train schedule	.466					
on ground Refreshment	.439				-.472	
Lighting	.376					
Fans						
Food quality& price			.359			.350
Sanitary arrengment	.312					
Train toilets			.518			
Station security	.438	-.446				
Security during journey	.368					
Parking	.405					
Station height						-.303
Staff behavior	.625					
Ticket counter response	.332			-.403		

Extraction Method: Principal Axis Factoring.

a. Attempted to extract 6 factors. More than 25 iterations required. (Convergence=.004).

Extraction was terminated.

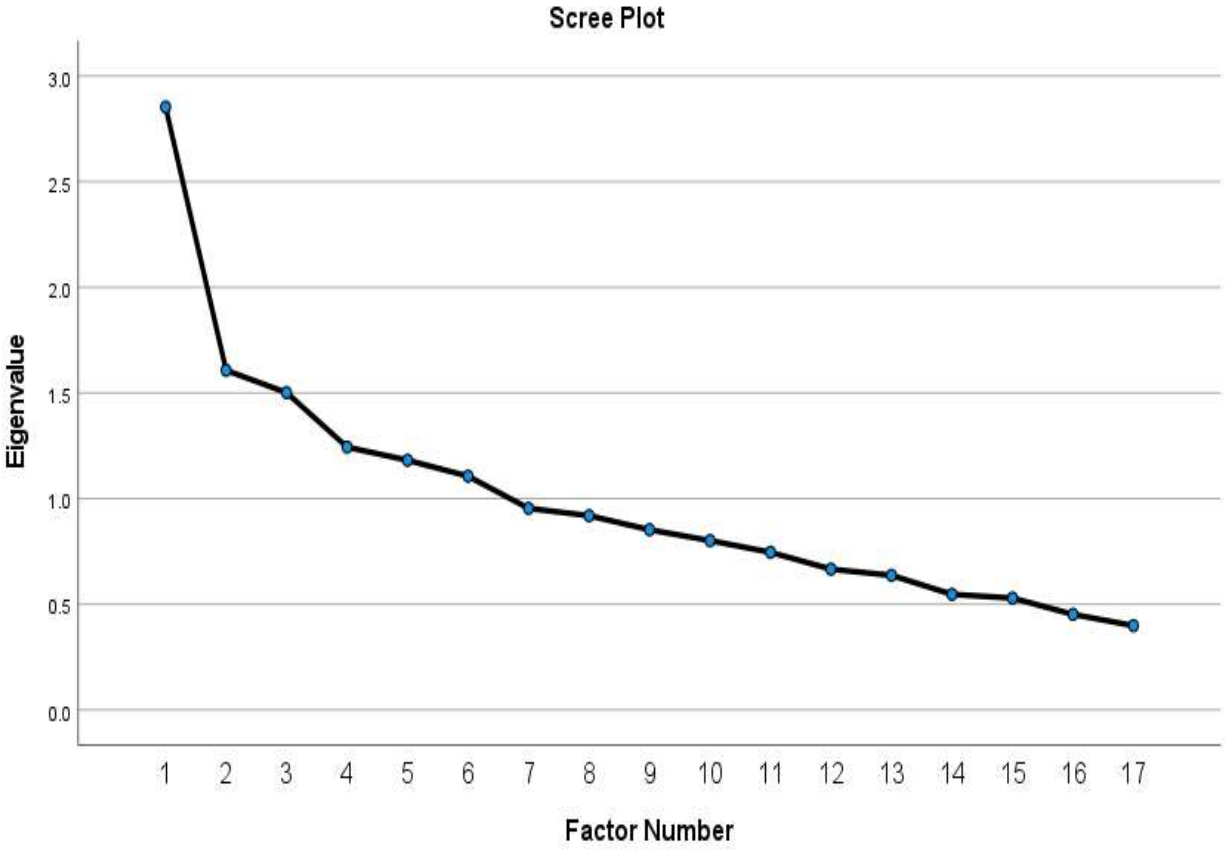
Extraction Method: Principal Axis Factoring Rotation Method: Varimax with Kaiser Normalization (a) Rotation converged in 8 iterations

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

Appendix-6


Scree Plot
Eigenvalue
3.0
2.5
2.0
1.5
1.0
0.5
0.0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
Factor Number

Appendix-7

Questionnaires

I am a student at Daffodil International University conducting research on the quality of passenger services at the platform and its impact on passenger satisfaction. Your thoughtful participation in this study would be greatly appreciated.

(Please **use Tick** on your **choosing boxes; please don't use doubled)**

Gender: Male/Female Profession: Age:

18-25
26-35
36-45
46+

1. How often you travel with railway?

Daily	Weekly	Monthly	Biannual	Annually

2. Which way of ticketing is more suitable according to you?

Counter	Online	Black markets	*	*

3. Which train category do you often travel in railway?

Intercity	Local mail	Shuttle	Commuter	International

4. The rail station prominently displays reservation charts & accurate announcements.

Agree	Strongly Agree	Neutral	Disagree	Strongly Disagree

5. The train schedule arrives & departs on time .

Agree	Strongly Agree	Neutral	Disagree	Strongly Disagree

6. The rail station offers satisfactory quality of seating area, prayer hall, breastfeeding area & Drinking water facility.

Agree	Strongly Agree	Neutral	Disagree	Strongly Disagree

7. The rail station has an ample lighting system.

Agree	Strongly Agree	Neutral	Disagree	Strongly Disagree

8. The platform at the rail station is sufficiently equipped with fans.

Agree	Strongly Agree	Neutral	Disagree	Strongly Disagree

9. The station provides food of consistently high quality at a reasonable price point.

Agree	Strongly Agree	Neutral	Disagree	Strongly Disagree

10. The sanitary arrangements at the railway station are adequate and clean.

Agree	Strongly Agree	Neutral	Disagree	Strongly Disagree

11. Compartments and toilets are clean.

Agree	Strongly Agree	Neutral	Disagree	Strongly Disagree

12. The rail station ensures sufficient security for luggage & passengers .

Agree	Strongly Agree	Neutral	Disagree	Strongly Disagree

13. Railway security ensures safety and punctuality during journey.

Agree	Strongly Agree	Neutral	Disagree	Strongly Disagree

14. There are enough parking spaces at the rail station.

Agree	Strongly Agree	Neutral	Disagree	Strongly Disagree

15.The platform height at the rail station is sufficient.

Agree	Strongly Agree	Neutral	Disagree	Strongly Disagree

16. The behavior of train police and TTs is polite and professional.

Agree	Strongly Agree	Neutral	Disagree	Strongly Disagree

17.Behavior of ticket counter representatives.

Agree	Strongly Agree	Neutral	Disagree	Strongly Disagree

201-47-325

by Md.rakibul Islam

Submission date: 24-Jun-2025 01:12PM (UTC+0600)
Submission ID: 2705200540
File name: Thesis_goo_1.docx (601.04K)
Word count: 10935
Character count: 61727

DECLARATION

This is to certify that the following students worked on the thesis under my direct supervision titled **"Analysis of Railway Passengers' Satisfaction with Service Quality: A Case Study from Kamalapur to Ishwardi Railway Station."**

Signature of the candidates

_____

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_____

Name: MD Rakibul Islam

Student ID: 201-47-325

This thesis titled **"Analysis of Railway Passengers' Satisfaction with Service Quality: A Case Study from Kamalapur to Ishwardi Railway Station."** submitted by MD Sadman Sakib Anam, Student ID: 201-47-331, has been accepted as satisfactory in Partial Fulfillment of the Requirements for the Degree of Bachelor of Science in Civil Engineering on 20th November 2024

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DEDICATION

I would like to dedicate this work to my parents and beloved teachers, who raised and guided me in every single moment of my life.

ABSTRACT

Train platforms play a vital role in the rail transport system. A range of platform-related services available at railway stations contribute significantly to passenger satisfaction. This research utilized survey questionnaires at Kamalapur and Khulna railway stations to assess how content passengers were with these amenities. The study employed factor analysis as its analytical method to identify the primary factors that influence passengers' satisfaction with service quality. Data collection was conducted through an econometric analysis involving passenger surveys. Findings were based on passenger responses regarding service quality across seventeen major categories. The study revealed that key factors—such as the availability of refreshments and food, ticketing services, reservation chart visibility, lighting, restroom hygiene, staff behavior, schedule accuracy, and overall cleanliness—collectively accounted for 51.102% of the explained variance in satisfaction levels. A satisfaction model was developed, leading to conclusions and discussions on both theoretical and practical implications. This model is expected to be a valuable resource for policymakers in formulating strategies to improve facilities on railway platforms.

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CHAPTER 1

INTRODUCTION

1.1 General

Customers rarely have a thorough understanding of a service's technical components. Functional quality becomes the most important criterion for determining service quality (Donabedian, 1983). Passengers' satisfaction with service quality is frequently measured using technical and functional attributes. Service quality, in terms of service delivery, refers to an organization's ability to meet its customers' expectations. Improving and assessing service quality may boost a company's profits and reputation. Service quality, regardless of industry, can have a direct impact on an organization's ability to meet customer demands while maintaining a competitive edge. Recommendations, individual needs, and previous experiences all have an impact on a passenger's expectations for a specific service. There could be a disparity between expected and perceived service levels. The service quality model, developed in 1985, highlights the key requirements for providing exceptional service quality. A. Parasuraman, Valarie A. Zeithaml, and Len Berry developed a service quality model in 1990 using the expectancy-disconfirmation paradigm (Czepiel). Some distinguished scholars have proposed a diverse set of service quality criteria. Customers' perceptions of a service's ability to meet or exceed their expectations can be used to assess quality (Czepiel, 1990). (Ekinci and others, 2018). Passenger satisfaction is the result of assessing the quality of services. The degree of service can be evaluated based on the customer's impression, expectations, satisfaction, and attitude, Verma and Sachdev (2004). As a result, rail passengers prioritize service quality. Passengers will be satisfied if they only receive the best (100%) service. Consequently, there is a relationship between service quality and passenger satisfaction. Passengers will be more satisfied as service quality improves, whereas customers will be less satisfied as service quality declines. Railways are one of Bangladesh's main modes of transportation. The Bangladesh Railway transported 42 million passengers in the 2005 fiscal year (Bangladesh Railway, 7 December 2009, retrieved 15 December 2009). Intercity services account for more than 70% of Bangladesh Railway's revenue (2007, retrieved December 15, 2009). The railroad owned 312 wide-gauge and 1,164 meter-gauge carriages in 2014.

The railway was divided into East and West zones for the same reason. Two general managers oversee the railway and report to the director general of Bangladesh Railway. On August 12, 1995, the ministry delegated day-to-day management of the railway to a director general, who was appointed as a railway professional. The nine-member Bangladesh Railway Authority (BRA), which was established to provide policy guidance, is led by the minister of communications. The Additional Director General and Joint Director General assist the Director General with all administrative and policy-making duties.

The two zones' general managers are supported by a large number of specialized departments in charge of maintenance, operations, and finance. Each zone has two divisions that serve as the primary operational units. Divisional officers from various specialized departments, including manpower, transportation, business, finance, mechanical, way and works, signaling and telecommunication, electrical, and medical, support the division, which is led by a divisional railway manager. Pahartoli and Syedpur both have their own divisional supervisors for their respective workshop divisions. Furthermore, each zone has its own workshop area. Furthermore, both BG and MG locomotives can be maintained at a Parbatipur locomotive workshop run by the chief executive.

The Rector of Bangladesh Railways also supervises a planning unit headed by a chief planning officer. A chief controller of stores-led stores department and an additional director general/finance-led accounts department will supervise and advise 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. The majority of its customers are from the lower to middle classes, and they are generally unaware of the issues with service quality. Rails make travel convenient, accessible, and affordable. Because of its monopolistic market structure, the Bangladesh Railway may overlook issues such as customer satisfaction, product marketing, and service quality. Currently, the Bangladesh Railway Department is A lack of administrative and technical resources, as well as widespread dissatisfaction with the quantity and quality of all railway services, has resulted in financial losses. Most recently, authorities halted several railway routes due to low passenger volume and budgetary concerns.

1.2 Objectives of Study

The paper consciously investigates how passengers evaluate the platform services provided by Bangladesh Railway. Customer satisfaction is clearly an indicator of total service quality (George & Kumar, 2013; Ekinci et al., 2018; Czepiel, 1990). This study's objective is to

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

1.3 Statement of the Problem

A large number of people travel by train in Bangladesh each year. People are forced to ride on the train's rooftop on some occasions due to the size of the throng..However, passengers experience a variety of problems for a variety of reasons at a variety of times on railroad station platforms. There aren't enough seats, for instance, and there are security measures for luggage, personal safety, sanitary facilities, and more. The railway services in Bangladesh can be categorized into three groups.

- Ticketing.
- Onboard Service.
- Platform Facilities.

In busy train stations, people typically have to wait in line to purchase tickets. In an attempt to lessen the suffering of passengers, officials at Bangladesh Railway decided to use online ticketing. There is now an app that lets users buy train tickets from the convenience of their homes. Nevertheless, a number of news organizations have noted that users of this program have experienced a range of problems. Passengers have reported the train platform as a residential zone of violation on a regular basis. As a result, passengers never feel safe leaving their belongings at the station. Many investigations into Bangladesh Railway's engineering capabilities and operations have already commenced. There are several explanations for this circumstance. However, the current study discovered that customers' requests for platform service and their persistence may be reduced by investigating train platforms and offering the relevant tangible proof as part of the service marketing mix. To what degree customer satisfaction with service quality at the railway station has been examined.

1.4 Outline of Thesis

Our thesis paper's introduction is its first chapter. In this introductory chapter, we outlined the importance of our thesis and the reasoning behind the choice of topic. The second chapter is titled A Literature Review. The thesis papers that we examined and determined were relevant to our thesis topic are summarized here. These are the introduction and the review of the literature. A comprehensive review of the literature is necessary for a thesis paper. We go over the methodology of the study in our third chapter. This chapter contains the techniques, sample and survey, and introduction. Here, we covered our data collection, processing, tool usage, and other related topics. The fourth chapter is called "Analysis and Results."

Our thesis paper begins with an introduction in the first chapter. The importance of our thesis and the reasoning behind our topic choice were covered in this introductory chapter. The title of the second chapter is "A Literature Review." Below is a list of the thesis papers that we examined and found to be relevant to our thesis topic. The literature review and the introduction are these. A comprehensive review of the literature is necessary for a thesis. In chapter three, we go over the methodology of the study. The methods, sample and survey, and introduction are all included in this chapter. Here, we talked about the techniques we employed to gather the data, examine it, select the instruments we employed, etc. The fourth chapter is titled "Analysis and Results."

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

Without introducing anything new, a review of the literature evaluates and summarizes the most recent discoveries in a field. The fact that they are predicated on existing knowledge helps the researchers even determine the study subject. The literature review identifies potential avenues for future research to be successful. To The significance of a literature review in a scientific paper may be reduced to an analytical feature to allow for its wide use. It increases the research's credibility in multiple ways:

- 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

Many academics have studied various levels of service quality in terms of technical, functional, and reputational aspects (Grönroos, 1984; Lehtinen, 1991). (Lapierre and others, 1996) Think about the business, physical, and social aspects; focus on your ability and willingness to assist, as well as your physical and mental availability.

Researchers discovered that eight distinct service quality attributes—such as waiting arrangements, station information space for passengers to move on, station staff behavior, station security, train environment, and train waiting time—have an effect on overall service satisfaction when creating the basic service quality model (Rahaman & Rahaman, 2009).

Numerous traits, including the consultant's perceived level of expertise and attitude toward the passengers during the service production process, have been identified in studies on passengers' satisfaction with consultant services (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)

Geetika & Nandan (2010) state that people's satisfaction with train platforms is influenced by five factors. Security, basic amenities, behavior, the effectiveness of the information system, and refreshments are the most crucial. According to Hossain (2013), passenger behavior, security, refreshments, illumination, information, and basic amenities (clean drinking water and sanitary facilities) are the six factors that have the biggest impact on people's satisfaction with train stations.

Eboli and Mazzulla in 2009 A number of factors, including bus stop shelters and benches, cleanliness, crowding, information systems, safety, and personal security, as well as staff helpfulness and the physical state of the bus stop, were taken into consideration when assessing the level of passenger satisfaction with bus service (Bunker J., 2014). A bus station's shelter, waiting areas and seating, doors, stairways, escalators, signage, and passenger amenities are all important components for efficient service.

(2009) Nandan and Geetika Six elements of passenger satisfaction with electric providers were evaluated in the survey: city areas, billing and payment, corporate image, pricing, customer service, and power quality and dependability. In order to measure passenger satisfaction with dial-up and high-speed internet service, five criteria were employed (Rintyarna et al., 2022). These included cost of service, passenger service, advertising, performance and reliability, and billing and offering.

According to the review of the literature, researchers have discovered specific quality attributes in connection with various services. The entire measured or perceived performance of transit service as viewed from the passenger's point of view is transit quality, according to the Transit Cooperative Research Plan (Bunker J., 2014). Five categories are defined in Chapter 2 of TCRP Report 88 (TCRP Report 100): 1. The ease of access to public transportation; 2. The length of the trip; 3. Service monitoring; 4. Security and safety of passenger travel; and 5. Maintenance and construction activities.

In 2008, Stephen and Vannarajan Based on a variety of factors, such as responsiveness, empathy, tangibles, assurance, and dependability, passengers assess the quality of Indian Railways' services. The passengers were found to be only moderately satisfied with this dimension. According to Agarwal (2008), the most significant predictor of passengers' satisfaction with Indian Railway service is personnel conduct. Customers ranked service quality as the most important factor when choosing a bank in an online banking survey (Geetika & Nandan, 2010). Another study on passengers' satisfaction with banking services found that staff behavior, the atmosphere of the bank, convenience, and traditional (basic) facilities were all important factors. In 2005, Of et al.

The packing service, insurance damage claims, optional coverage, the estimated process, the loading and unloading of items, and the transportation of goods were among the factors that influenced customers' satisfaction levels with full-service moving companies. According to Annamalah et al. (2011), this implies that satisfaction was impacted by the quality of auxiliary facilities and basic amenities.

Table 2.2 Summary of the Literature Review on Passenger Satisfaction

Factors Considered for Passenger's Satisfaction	Authors
Quality of service	(Geetika & Nandan, 2010)
Adaptability, constancy, assurance, and empathy.tangible items.	(Jackson, 1981) (Annamalah et al., 2011) (Vanniarajan & Stephen, 2008)
Considerations include trip duration, transit service availability, maintenance and construction, safety and security, and service monitoring.	TCRP Report 88, 100
other elements, like employee behavior.	(Agarwal, 2008)
Insurance/damage claims (basic facilities, various supporting facilities), packing services, loading and unloading services, optional coverage, and personal property transportation.	(Bunker J, 2014)
passenger service, business reputation, billing, and Considerations include price, communications, information system, and payment.	(Geetika & Nandan, 2010)
Considerations include passenger service, billing, merchandise, promotions, service fees, performance and dependability, and more.	(Time, 2014)
The overall environment, employee behavior, basic amenities, and ease of use	(Of et al., 2005)
cleanliness, traffic, information technology, and security.The physical state of bus stops, staff friendliness, and personnel security are all important considerations.	(Eboli & Mazzulla, 2009) TCRP Report 100

Table 2.2 provides a summary of research on the factors affecting customer satisfaction with various services in terms of service quality. A strong theoretical framework is developed for the current study using the various service contexts in order to identify significant common characteristics of service quality both inside and outside the setting.

CHAPTER 3

THE STUDY'S METHODOLOGY

3.1 Introduction

This study is unique in nature and employs a case study methodology to support its assertions. Numerous features are essential for different services in terms of passenger satisfaction, according to the literature review. Additionally, researchers in Bangladesh have not looked into how satisfied customers are with road station services and how good those services are. An effort is made to learn more about how consumers view the caliber of services provided on road platforms. In the specific context of Bangladesh, a case study approach is used in conjunction with the findings of a fast check to determine the factors that influence customer satisfaction with this highly significant public mileage.

3.2 Survey and Sampling

The study's macrocosm comprised both all Bangladeshis and callers from other nations. Among the carefully crafted questionnaires used in the research to gather primary data, a five-point Likert scale from "least satisfied" to "most satisfied" was employed. The primary objective of the questionnaires was to measure client satisfaction with particular criteria. The researchers used a Likert scale to gauge opinion-based responses because they believed it was appropriate for reducing compliance bias due to its balanced keying, which includes an equal number of positive and negative items. To evaluate the elements affecting passenger satisfaction on the train platform, the survey has 17 categories (appendix-1). Two sizable train stations—Kamalapur Railway Station and Ishwardi Railway Station—were chosen as samples for the study.

Bangladesh's largest and most important railway station is Kamalapur. Situated within the Motijheel Thana in the capital city of Dhaka, it is an essential transportation hub. Dhaka Railway Station is the official name of the station. Kamalapur handles thousands of passengers every day on its seven tracks and eight platforms. Around the station, a multimodal transportation hub is presently being built, with completion anticipated in 2030.

Ishwardi Railway Station in the Pabna District serves as the second sample location. It is a crucial node in the nation's rail system and one of the main intersections in western Bangladesh. On the vital rail line that connects the northwest and southwest, the station is located. This station is frequently used by trains from Dhaka, Rajshahi, Khulna, Dinajpur, and Chilahati. Numerous intercity trains, including the Padma Express, Silk City Express, Dhumketu Express, and Lalmoni Express, serve the crucial Kamalapur to Ishwardi railway line, ensuring regular connectivity between the nation's capital and its northern regions. This route's dual-gauge tracks allow for both broad gauge and meter train service.

Multiple platforms, a footbridge, ticket counters, waiting areas, and freight handling facilities are all part of the Ishwardi station infrastructure. It has many daily commuters and is essential to the transportation of both passengers and freight. Ishwardi, which has a history connected to the growth of Bangladesh's western railway lines, is still an important railway hub.

The study looked at the distance between the platforms of Ishwardi and Kamalapur railway stations. The distance and geographic relationship between these two stations are depicted on the Google map below.

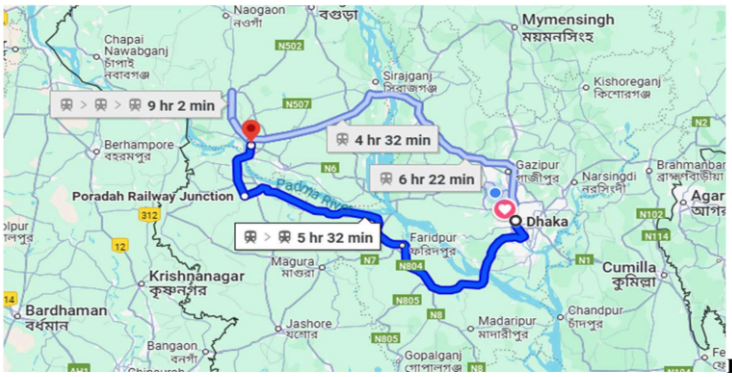


Fig. 1.1 Selected Study Route

A total of 300 samples were included in the survey, 115 from Ishwardi railway station and another 185 from Kamalapur railway station. The samples were collected while people were waiting for trains on platforms between November 15, 2024, and December 5, 2024.

3.3 Methodology

The study concluded that none of the available instruments should be used because the determinants varied by service. Even though the work was difficult, it was necessary to achieve the study's objectives. An instrument was developed using the body of existing literature, observations, a pilot study, and professional opinion. The variables related to passenger satisfaction and perception—two facets of Bangladesh Railways' service quality—were developed through evaluations and exploratory research. Interviews with frequent travelers were conducted to find out what factors affected their enjoyment. Broad measures of passenger satisfaction for train stops were developed using these early surveys and evaluations. These standards were partially confirmed by the literature review. Afterwards, they were modified to create a question.

Passengers' satisfaction with the caliber of the services they received was measured using the following 17 variables in these surveys.

Table 3.4 Determine which factors affect passengers' satisfaction with the service quality of Bangladesh's Railway Platforms.

Code	Variables
V1	Travel frequency
V2	Way of ticketing
V3	Train category
V4	Displays reservation charts & accurate announcements
V5	Train schedule
V6	Quality of Refreshment
V7	Lighting
V8	Fans
V9	Food quality & pricing
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

3.4 Definition of Variables

- **Ticket Counter:** In light of passenger service, the number of ticket counters in the stations and the caliber of the ticketing service have been discussed.
- **Reservation Chart Display:** Stations are equipped with LED monitors to help passengers understand train departure times and which train is currently waiting to leave. in an effort to prevent passengers from missing any trains. This is meant to be an illustration of a reservation chart.
- **Timing and scheduling:** Whether the train leaves the station and reaches the platform at the appointed time are examples of timing and scheduling. Because sometimes the train arrives late and leaves late.
- **Announcement Accuracy:** The accuracy of the announcement is determined by using the station's speakers to announce when a train leaves. The passengers immediately got on the train after the news was announced. Nevertheless, passengers will be unable to identify which train is now leaving if the announcement is not heard clearly.
- **Availability of Refreshments:** A train station's availability of refreshments includes a range of seating options, enough designated waiting areas for long-waiting passengers, and a sufficient number of cafeterias.
- **Refreshment Quality:** This refers to how the waiting areas are set up, including First Class, Shovan Chair, Shovan, and so forth. Additionally, it depends on the type of tickets that are still pending. In this section, the standard chairstyle chairs at the stations are also covered.
- **Lighting:** Lighting refers to how well the platform is illuminated for passengers at night. Sometimes the lack of light leads to snatching, theft, and other unpleasant activities at the stations.
- **Fans:** The word "fan" refers to the number of fans the station has.
- **Easily accessible food:** This describes the excellent food offered in the station at a price that passengers can afford.
- **Sanitary Arrangement:** Passengers must have access to clean drinking water and sanitary facilities on the platform.
- **Cleanliness of restrooms and compartments:** This describes how spotless the station's restrooms and waiting areas are.

- **Baggage security:** Passengers carry their bags to the platform in order to travel to other destinations. Occasionally, when the platform's security is insufficient, luggage is stolen. for there to be major challenges for traveling. This refers to demonstrating the level of luggage safety that passengers can ensure on the Bangladesh Railway Authority platform.
- **Passenger security:** The railway authorities are aware of the degree of protection that can be given to passengers on the platform. Parking Management: Whether or not there are passenger parking spaces at the stations has been explained.
- **Platform Height:** The platform height is the distance between the floor and the platform that you can stand on. On platform steps, working from the platform height is safe.
- **Train police and TT behavior:** Porters remain at the station to transport passengers' luggage. This demonstrates the treatment of the porters at the station and their interactions with the travelers.
- **Conduct of ticket counter agents:** Nevertheless, what matters most in preserving your services is paying attention to their issues, demonstrating empathy, honoring your commitments, and being proactive in your communications. Be sure to remain understanding and patient even when dealing with demanding clients.

CHAPTER 4

ANALYSIS & RESULT

4.1 Introduction

Using factor analysis, the elements of excellent retail service were determined. In order to determine what factors influence train passengers' enjoyment, Hsu et al. (www.academic-papers.org) and Agarwal (2008) used the same technologies to identify factors that affect customer satisfaction when making online purchases (Rahaman & Rahaman, 2009). Determine the factors that influence passengers' satisfaction with the caliber of services offered by train platforms (Hossain, 2013). This study used the same approach to determine the factors influencing passenger satisfaction. Factor analysis was used to identify the factors that influence passenger satisfaction on train platforms and test the hypothesis that these factors influence passenger satisfaction. The data was analyzed using SPSS 25.

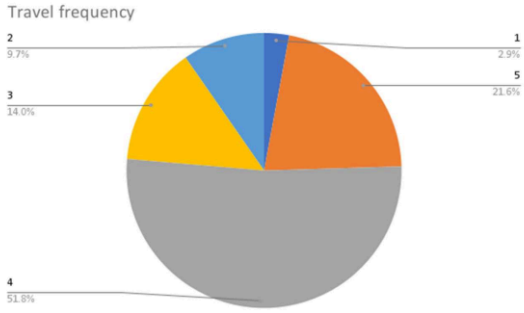
Each of the 17 attributes was given a five-point rating by the passengers based on their personal experiences. Passengers responded at a fairly good rate. The data's validity was evaluated using Bartlett's test of sphericity and the Kaiser-Meyer-Ohlin (KMO) sample adequacy measure. The KMO statistic has a 0–1 range. While a score of 0 suggests that factor analysis is unlikely to yield distinct and reliable factors, a score of 1 suggests that factor analysis should yield distinct and reliable components (Ul Hadia et al., 2016). You should either collect more data or reevaluate which variables to include if the results fall short of this threshold. Additionally, Lapierre et al. (1996) state that values between 0.5 and 0.7 are considered average, those between 0.7 and 0.8 are considered good, those between 0.8 and 0.9 are considered outstanding, and values above 0.9 are considered extraordinary. The Bartlett's Test and the Kaiser-Meyer-Ohlin Test are shown in Table 4.1.

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
Ishwardi Railway Station		115	115	

Respondents carefully answered the questionnaires they were given at the time. When they were unable to understand a question, they came to us. col In this way, we collected data one by one while taking our time. is why our data is free of noise.

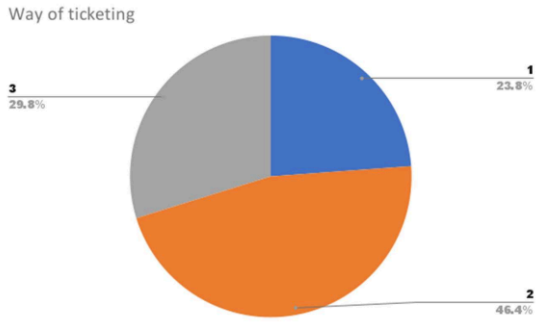
Fig. 4.1 The percentage of respondents by travel frequency



Over half of the participants are frequent travelers, as shown by the fact that the largest percentage of respondents (51.8%) in Figure 4.2 are those who travel four times or more. ThiNext in line are those who travel five times (21.6%) and three times (14.0%).**7%** oJus

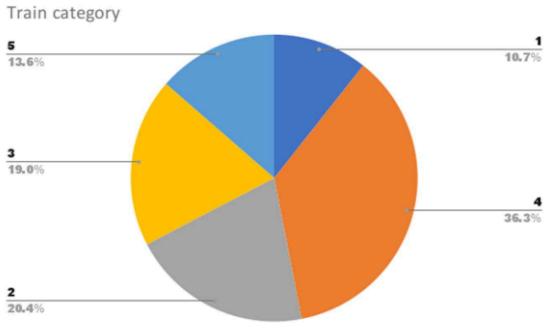
Compared to those who had traveled twice, 2.9% of respondents claimed to have only taken one trip.tern suggests that most respondents are regular train users, which may reflect a strong reliance on railway transport in their daily lives.

Fig. 4.2 The percentage of respondents by way of ticketing



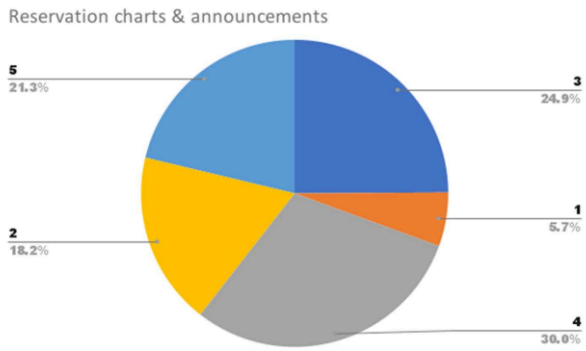
Option 2 is the most popular ticketing method among respondents, being used by 46.4% of participants, as illustrated in Figure 4.3. Options 1 and 3 were chosen by 23.8% and 29.8% of respondents, respectively. These findings show that almost half of the passengers favor option 2, which might be a reflection of contemporary techniques like online or mobile ticketing and point to a move in railway operations toward digital services.

Fig. 4.3 The percentage of respondents by train category



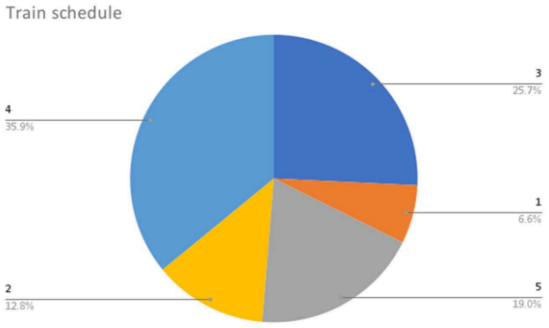
Train category 4 is the most popular option, with 36.3% of respondents preferring it (Figure 4.4). 19.0% of respondents chose category 3, compared to 20.4% who chose category 2. Furthermore, 10.7% of participants chose category 1, and 13.6% chose category 5. Category 4 is preferred because it might provide better comfort, timing, or service quality than the other options.

Fig. 4.4 The percentage of respondents by satisfaction with reservation charts & announcements



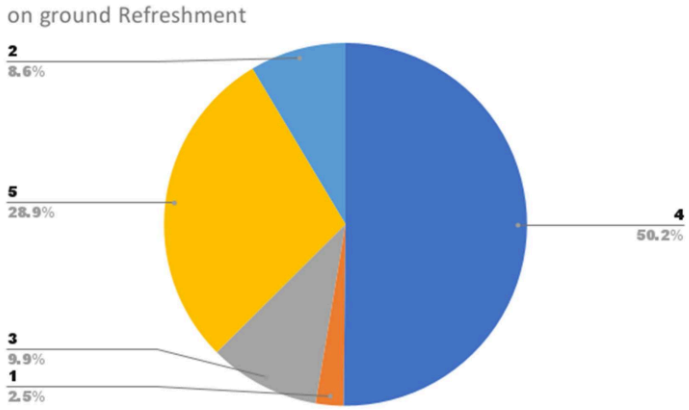
Respondents' thoughts on reservation charts and announcements are shown in Figure 4.5. 30% of respondents gave their satisfaction a level 4 rating, which denotes a generally favorable experience. 24.9% of respondents selected level 3, indicating a moderate degree of satisfaction. While 18.2% of respondents chose level 2, indicating some dissatisfaction, 21.3% of respondents chose level 5, indicating high satisfaction. The lowest percentage of participants, 5.7%, gave it a level 1 rating. The majority of respondents tended toward higher satisfaction levels, according to the results, which generally indicate a positive trend.

Fig. 4.5 The percentage of respondents by satisfaction with train schedule



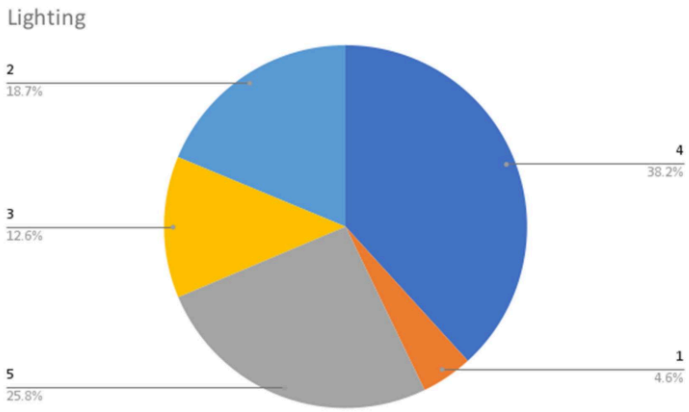
How satisfied the respondents were with the train schedule is depicted in Figure 4.6. Level 4 was chosen by the majority, 35.9%, suggesting a comparatively high degree of satisfaction. Level 3 was selected by 25.7% of respondents, indicating a moderate level of satisfaction. Level 5 was chosen by 19.0% of respondents, indicating strong satisfaction, while level 2 was chosen by 12.8% and level 1 by 6.6%, indicating dissatisfaction. In general, the Findings indicate that while there is potential for improvement, the majority of users are happy with the train schedule.

Fig. 4.6 The percentage of respondents by satisfaction with on-ground refreshment



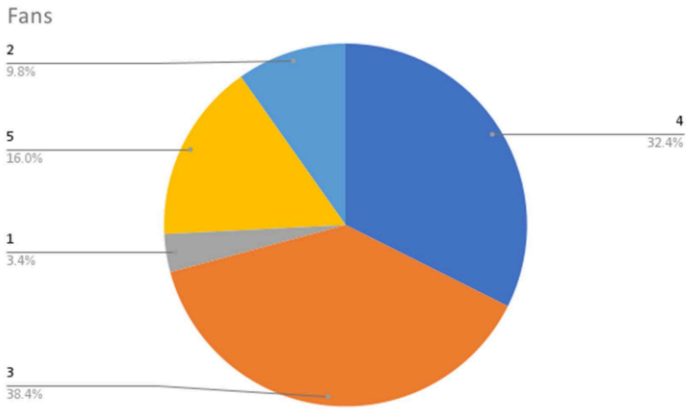
The degree of satisfaction that respondents had with on-ground refreshment services is shown in Figure 4.7. 40.2% of respondents gave their satisfaction a level 4, which indicates that they had a generally good experience. 28.9% of respondents chose level 5, indicating high satisfaction, after this. 8.6% selected level 2, while 9.9% selected level 3, indicating a moderate level of satisfaction. By choosing level 1, just 2.5% of respondents indicated the least amount of satisfaction. Overall satisfaction with the on-ground refreshment facilities is high, according to the results.

Fig. 4.7 The percentage of respondents by satisfaction with lighting



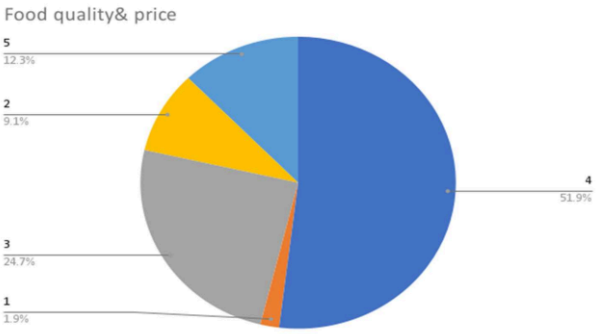
The respondents' degree of satisfaction with the lighting at the train stations is shown in Figure 4.8. 38.2% of respondents gave it a level 4 rating, indicating overall satisfaction. A high degree of satisfaction was indicated by the 25.8% who selected level 5. There was some dissatisfaction as 18.7% of participants chose level 2, while 12.6% chose level 3. Level 1, the least satisfied level, was chosen by just 4.6% of respondents. The majority of passengers appeared to be content with the lighting on the platforms, based on the responses received.

Fig. 4.8 The percentage of respondents by satisfaction with fans



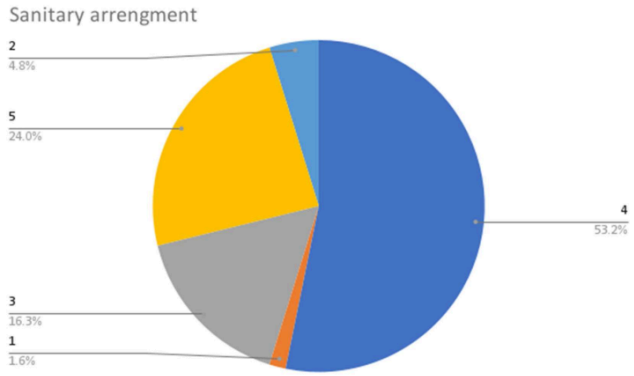
The respondents' satisfaction levels with the station's fan performance and availability are shown in Figure 4.9. 38.4% of respondents gave it a level 3 rating, indicating moderate fulfillment. While 16.0% chose level 5, indicating high satisfaction, 32.4% chose level 4, indicating good satisfaction. Only 3.4% assigned the lowest satisfaction rating of level 1, while 9.8% gave it a level 2 rating at the lower end. These findings suggest that while the majority of respondents expressed some degree of satisfaction with fan facilities, improvement is still possible.

Fig. 4.9 The percentage of respondents by satisfaction with food quality and price



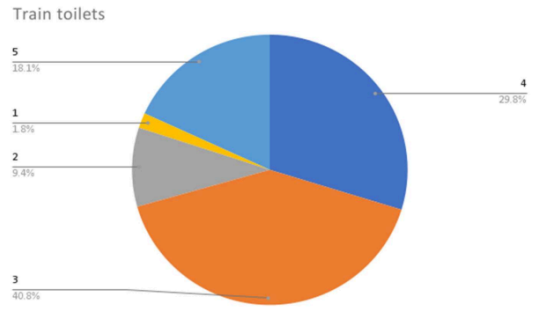
Respondents' perceptions of the station's food quality and cost are displayed in Figure 4.10. Overall positive feedback was indicated by the largest percentage, 32.4%, who gave their satisfaction a level 4 rating. 24.7% of respondents chose level 3, indicating a moderate level of satisfaction. 16.0% of respondents selected level 5 and expressed high satisfaction. However, 9.1% gave it a level 2 rating, and 1.9% chose level 1, indicating the least amount of satisfaction. These results imply that although a large number of travelers are generally happy with the food services, both the quality and the cost could be raised.

Fig. 4.10 The percentage of respondents by satisfaction with sanitary arrangement



The degree to which respondents were satisfied with the station's hygienic conditions is shown in Figure 4.11. A high degree of approval was indicated by the majority's level 4 rating of 53.2% for satisfaction. 24.0% of respondents chose level 5, indicating extremely high satisfaction, after this. Furthermore, 16.3% of respondents gave it a level 3 rating, indicating a moderate level of satisfaction. Conversely, just 1.6% of respondents were least satisfied with level 1, and 4.8% selected level 2. These findings imply that the majority of travelers were content with the platform's hygienic amenities.

Fig. 4.11 The percentage of respondents by satisfaction with train toilets



The degree to which respondents were satisfied with the train's restrooms is shown in Figure 4.12. Only moderately or averagely satisfied, 40.8% of respondents, the largest segment, rated their experience as level 3. Positive feedback was indicated by the fact that 29.8% of passengers selected level 4, while 18.1% of passengers gave it the highest satisfaction rating of level 5. However, 1.8% expressed the least amount of satisfaction by selecting level 1, and 9.4% were less satisfied by choosing level 2. Despite the fact that many passengers thought the restrooms were adequate, these results imply that cleanliness and upkeep could be improved.

Fig. 4.12 The percentage of respondents by satisfaction with station security

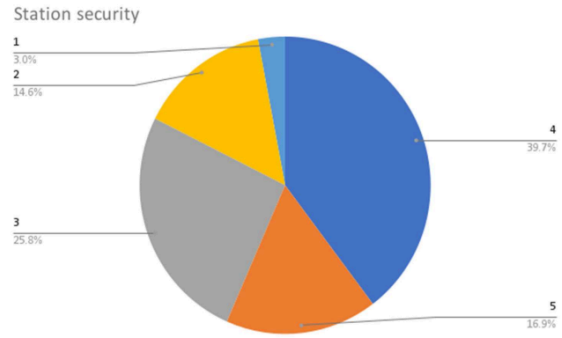
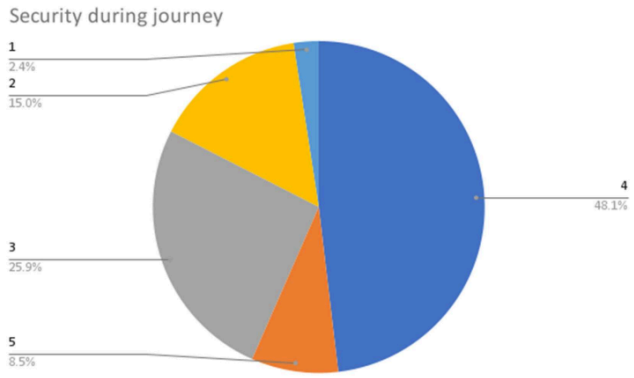


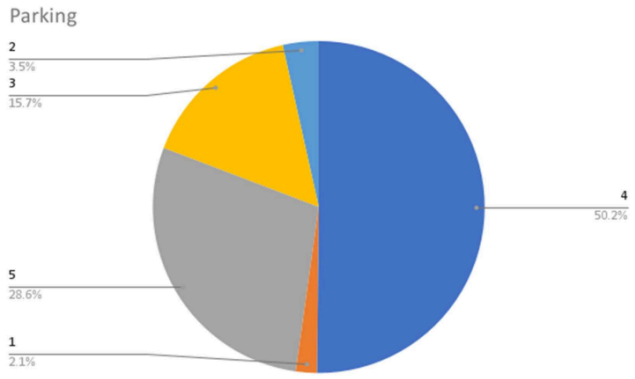
Figure 4.13 shows how satisfied respondents were with the level of security at the train station. 39.7% of respondents said they were generally secure, giving them a level 4 satisfaction rating. Level 3 was selected by 25.8% of respondents, indicating a moderate level of satisfaction. In the meantime, 16.9% of respondents chose level 5 and expressed great satisfaction. Level 2 was rated by 14.6% of respondents, while level 1 was chosen by 3.0% of respondents, who expressed the least amount of satisfaction. Although the majority of passengers felt safe at the station, a sizable portion still thought security could be improved, according to the data.

Fig. 4.13 The percentage of respondents by satisfaction with security during journey



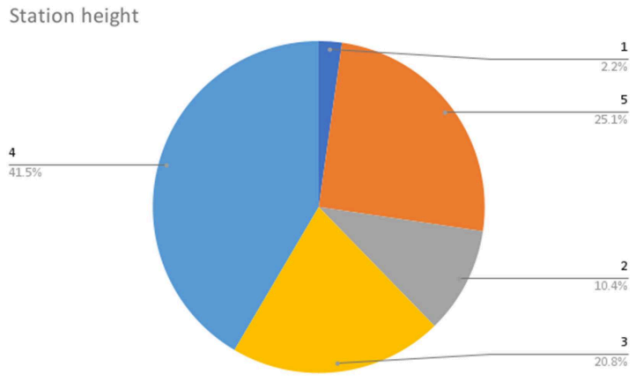
Respondents' perceptions of security on trains are shown in Figure 4.14. With 48.1% rating their level of satisfaction at 4, the largest percentage indicated that they felt reasonably safe while traveling. 25.9% of respondents chose level 3, indicating a neutral or moderate degree of satisfaction, after this. In contrast, 2.4% selected level 1, and 15.0% selected level 2, indicating discontent among a smaller passenger base. Level 5 was chosen by just 8.5% of respondents, who expressed complete satisfaction. According to these findings, a sizable portion of passengers think onboard security could be strengthened, even though many feel reasonably safe while traveling.

Fig. 4.14 The percentage of respondents by satisfaction with parking facilities



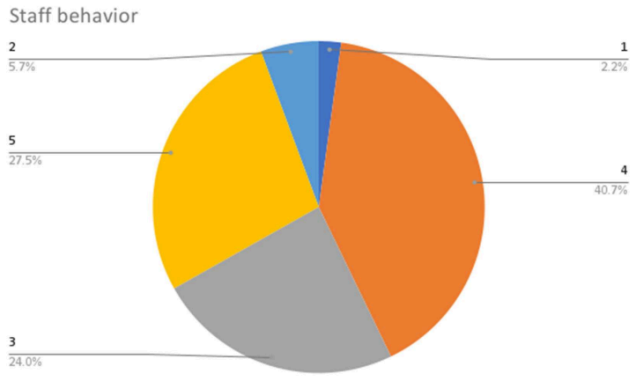
The satisfaction levels of respondents with regard to the parking facilities at the train stations are displayed in Figure 4.15. A sizable percentage, 50.2%, gave the available parking a level 4 rating, indicating high levels of satisfaction. A further indication that many passengers thought the parking facilities were excellent is the level 5 rating, which was given by 28.6% of respondents. However, 3.5% and 2.1% of respondents chose levels 2 and 1, respectively, indicating minimal dissatisfaction, while 15.7% chose level 3, indicating moderate satisfaction. According to the data, most passengers appear to be happy with the station parking options overall.

Fig. 4.15 The percentage of respondents by satisfaction with station height



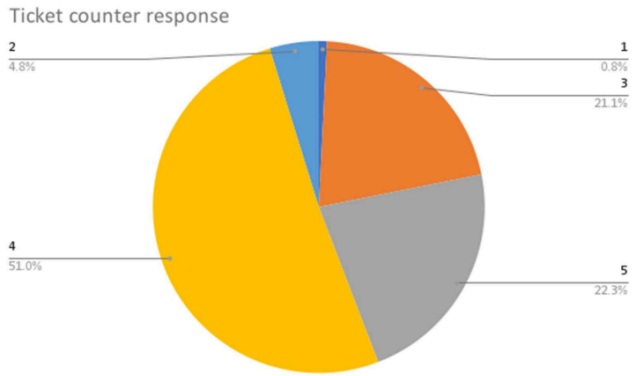
Regarding the station's height, respondents' satisfaction levels are displayed in Figure 4.16. High levels of satisfaction with the station height were indicated by the large percentage (41.5%) who gave their satisfaction a level 4 rating. Furthermore, level 5, the highest rating, was given by 25.1% of respondents, indicating that many passengers thought the station height was excellent. However, 10.4% and 2.2% chose levels 2 and 1, respectively, indicating some dissatisfaction, while 20.8% chose level 3, indicating moderate satisfaction. The majority of passengers appear to be content with the station height, according to the data.

Fig. 4.16 The percentage of respondents by satisfaction with staff behavior



The respondents' satisfaction levels with the station staff's conduct are displayed in Figure 4.17. 40.7% of respondents gave the staff's behavior a level 4 rating, which indicates that they were very satisfied. Furthermore, level 5, the highest rating, was given by 27.5% of respondents, indicating that many passengers thought the staff behaved excellently. Although 5.7% and 2.2%, respectively, selected levels 2 and 1, indicating some dissatisfaction, 24.0% chose level 3, indicating moderate satisfaction. According to the data, the majority of passengers appear to be content with the conduct of the station's employees.

Fig. 4.17 The percentage of respondents by satisfaction with ticket counter response



Regarding the response at the ticket counter, respondents' satisfaction levels are displayed in Figure 4.18. A significant majority (51.0%) gave the ticket counter response a level 4 rating, indicating high satisfaction. In addition, 22.3% of respondents rated the ticket counter response as excellent, which is the highest rating possible. However, 4.8% and 0.8% chose levels 2 and 1, respectively, indicating some dissatisfaction, while 21.1% chose level 3, indicating moderate satisfaction. The majority of passengers, according to the data, appear to be happy with the assistance they receive at the ticket counter.

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

KMO Measure of Sampling Adequacy	0.667	
	Approx. Chi-Square	410.901
	df	136
	Sig.	0.000

4.22 Data and Analysis

Using the principle 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 similar 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%.

Factor 6

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 2 (Cleanliness of Toilets and Lobby & Behavior)	1.30	5
Factor 3 (Scheduling & Sanitary)	1.637	2
Factor 4 (Quantity of Refreshment)	1.46	4
Factor 5 (Readily Available Foods)	1.59	3

Source: Appendix 5(Hightest 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 Figure l, 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.

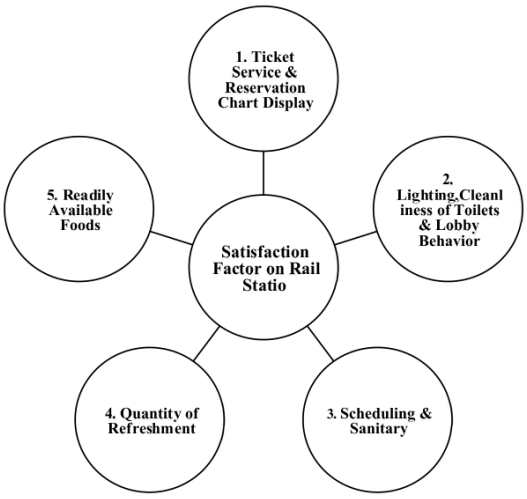


Fig.4.21 Determinants of Passenger Satisfaction on Railway Platforms Research Model

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 Ishwardi 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	Travel frequency	3.37	1.204	172
2	Way of ticketing	1.76	.732	172
3	Train category	2.56	1.298	172
4	Displays reservation charts & accurate announcements	2.87	1.269	172
5	Train schedule	2.91	1.288	172
6	Quality of Refreshment	3.52	1.221	172
7	Lighting	3.04	1.331	172
8	Fans	3.09	1.171	172
9	Food quality & pricing	3.33	1.059	172
10	Sanitary arrangement	3.63	1.055	172
11	Cleanliness of toilets & compartment	3.19	1.050	172
12	Security of luggage	3.10	1.150	172
13	Security of self (passengers)	3.09	1.056	172
14	Parking Management	3.66	1.109	172
15	Platform height	3.29	1.222	172
16	Behavior of train police and TT	3.49	1.137	172
17	Behavior of ticket counter representatives	3.65	.953	172

Appendix-2

Variables	V1	V2	V3	V4	V5	V6	V7	V8	V9	V 10	V 11	V 12	V 13	V 14	V 15	V 16	V 17
V1	1.000	0.738	0.849	0.687	0.115	0.241	0.186	0.703	0.560	0.599	0.349	0.763	0.719	0.390	0.414	0.370	0.586
V2	0.738	1.000	0.550	0.776	0.563	0.511	0.437	0.632	0.744	0.593	0.265	0.561	0.028	0.351	0.174	0.501	0.931
V3	0.849	0.550	1.000	0.496	0.728	0.539	0.515	0.696	0.199	0.576	0.385	0.452	0.207	0.444	0.744	0.440	0.740
V4	0.687	0.776	0.496	1.000	0.560	0.488	0.223	0.182	0.649	0.530	0.249	0.461	0.510	0.273	0.748	0.355	0.652
V5	0.115	0.563	0.728	0.560	1.000	0.644	0.559	0.420	0.867	0.418	0.502	0.507	0.434	0.434	0.623	0.080	0.555
V6	0.241	0.511	0.539	0.488	0.644	1.000	0.734	0.494	0.407	0.504	0.334	0.712	0.294	0.499	0.239	0.323	0.643
V7	0.186	0.437	0.515	0.223	0.559	0.734	1.000	0.252	0.393	0.445	0.810	0.721	0.591	0.632	0.410	0.588	0.797
V8	0.703	0.632	0.696	0.182	0.420	0.494	0.252	1.000	0.581	0.187	0.449	0.378	0.457	0.506	0.633	0.541	0.559
V9	0.560	0.744	0.199	0.649	0.867	0.407	0.393	0.581	1.000	0.335	0.773	0.426	0.352	0.455	0.668	0.379	0.517
V10	0.599	0.593	0.576	0.530	0.418	0.504	0.445	0.187	0.335	1.000	0.337	0.408	0.530	0.558	0.577	0.459	0.464
V11	0.349	0.265	0.385	0.249	0.502	0.334	0.810	0.449	0.773	0.337	1.000	0.505	0.818	0.690	0.611	0.700	0.596
V12	0.763	0.561	0.452	0.461	0.507	0.712	0.721	0.378	0.426	0.408	0.505	1.000	0.509	0.609	0.469	0.429	0.496
V13	0.719	0.028	0.207	0.510	0.434	0.294	0.591	0.457	0.352	0.530	0.818	0.509	1.000	0.620	0.472	0.776	0.618
V14	0.390	0.351	0.444	0.273	0.434	0.499	0.632	0.506	0.455	0.558	0.690	0.609	0.620	1.000	0.554	0.320	0.030
V15	0.414	0.174	0.744	0.748	0.623	0.239	0.410	0.633	0.668	0.577	0.611	0.469	0.472	0.554	1.000	0.305	0.318
V16	0.370	0.501	0.440	0.355	0.080	0.323	0.588	0.541	0.379	0.459	0.700	0.429	0.776	0.320	0.305	1.000	0.676
V17	0.586	0.931	0.740	0.652	0.555	0.643	0.797	0.559	0.517	0.464	0.596	0.496	0.618	0.030	0.318	0.676	1.000

Appendix-3

Total Variance Explained

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	2.853	16.785	16.785	2.227	13.100	13.100	1.640
2	1.607	9.455	26.240	.988	5.814	18.914	1.514
3	1.502	8.833	35.073	.834	4.906	23.820	1.457
4	1.244	7.317	42.389	.640	3.766	27.586	1.072
5	1.182	6.952	49.341	.519	3.054	30.640	.959
6	1.106	6.508	55.849	.465	2.737	33.377	1.000
7	.954	5.613	61.462				
8	.919	5.408	66.871				
9	.853	5.017	71.888				
10	.802	4.715	76.603				
11	.746	4.388	80.991				
12	.666	3.920	84.911				
13	.637	3.747	88.658				
14	.547	3.218	91.877				

15	.530	3.115	94.991				
16	.452	2.662	97.653				
17	.399	2.347	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

	1	2	3	4	5	6
Travel frequency	.329	.536		.332		
Way of ticketing		.412				
Train category	.471					
Reservation charts & announcements	.358					
Train schedule	.466					
on ground Refreshment	.439				-.472	
Lighting	.376					
Fans						
Food quality& price			.359			.350
Sanitary arrengment	.312					
Train toilets			.518			
Station security	.438	-.446				
Security during journey	.368					
Parking	.405					
Station height						-.303
Staff behavior	.625					
Ticket counter response	.332			-.403		

6

Extraction Method: Principal Axis Factoring.

a. Attempted to extract 6 factors. More than 25 iterations required. (Convergence=.004). Extraction was terminated.

27

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

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