

An Empirical Study on Service Quality Assessment of Railway Transit: Rajshahi Railway Station as the Case

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Abstract

The railway is a significant public transportation that is reliable for commuters who want to travel safely and avoid hassle. In recent times, the dependency has increased much more for the fear of accidents, long-time road repair and maintenance, and mismanagement. However, the commuters do not get the required facilities and support in most stations in Bangladesh. Moreover, the station authority shows apathy and gives little concern for the improvement of the services and other facilities, and the lack of monitoring from the central authority makes the situation more complex. In this context, the study aims to develop a study framework from published literature and subsequently assess the service quality of a particular station based on the theoretical framework. For this, the Rajshahi Railway Station (RRS) is chosen as the case, which is the most efficient station in Bangladesh considering its modern facilities and serving the Northern part. The mixed method study used a questionnaire survey, non-participation observation, and mapping for primary data collection. The thematic and descriptive procedures followed for data analysis. The study showed availability of services in the station is significant for ensuring user satisfaction which influences reliability. Although the government took numerous development projects related to existing station remodeling with modern service and train coach improvement, the study revealed regular passengers were deprived of required service due to a lack of regular monitoring. The findings will further help authorities to evaluate user satisfaction periodically and provide the required facilities.

Keywords: Rajshahi Railway Station, Station Facilities, passengers, service, train

1 Introduction

Railway Transit (RT) is one of the most effective means of public transportation for any country, developed or developing. Considering the challenges of urban living, this public transportation has essential benefits and reduces traffic congestion (Litman 2007). In Bangladesh, recent high-speed mobility without following road acts, bad road conditions, and frequent accidents on long routes push people to use railway transportation. However, the service quality and overall environment are not improved as much as required. As well as the popularity of 21st-century diverse moods and the availability of air services are the reasons for the reluctance to use the RT. Moreover, the use of personal vehicles increased more than ever since the last decade, which put pressure on road traffic. In this case, recent studies have emphasized attributes and determinants that affect user satisfaction. The user's/customers' benefits and satisfaction with public transport systems directly affect traveling. In the study of platform satisfaction measuring, the author developed a model considering six factors, which covered security, information, and refreshment (Hossain and Islam 2013). The management authority's task is to provide services for user satisfaction and also responsible for assessing and evaluating the efficiency for further improvement (Aydin, N., Celik, E., & Gumus, A. T. 2015). Some authors argue inclusion of future demands and unmet services is needed to consider for the improvement the service quality.

Bangladesh is one of the most highly paced urbanized countries with opportunities. The cities are experiencing high population growth and a center for economic generation, which put various pressures on the city environment. Planned and efficient transportation systems are prerequisites for facing this socio-economic and physical growth. Bangladesh Railway Transit (BRT) is the only state-owned public transport system that has started the journey since colonial times. Subsequently, the sector expanded quickly to improve regional connectivity and goods transportation, which enhanced economic growth. However, the demand increased rapidly after the independence, but service quality did not improve as much as required. Many studies since the last decade have highlighted service quality issues and user satisfaction with railway transportation along with the physical design elements and service facilities. Considering these, the Government has initiated a station redevelopment project under prime minister funding (Khan, Nisha, et al.). Following the conceptual model, most

studies provide discrete guidelines rather than a comprehensive framework for measuring and updating facilities according to user needs.

To this end, the study explores significant factors affecting railway service satisfaction following a comprehensive framework developed from the in-depth literature review. The Rajshahi Railway Station (RRS), from both functional and aesthetical perspectives, is one the finest station in Bangladesh. The almost 100 year's old railway station was remodeled with modern facilities and equipment in 2003; subsequently, it became the most aesthetically pleasing railway station. Along with basic services accommodation has been included in the new design. The rest of the study organizes into three sections; first illustrates about detailed study framework following an in-depth literature review. The comprehensive model further directs primary and secondary data collection. The second section thoroughly describes the findings and analysis according to each attribute set in previously. Finally, the study concludes with critical observations and recommendations which would help further service development.

2 Study design

The exploratory study started with the pilot survey of RRS aiming at an in-depth understanding of users' movements, behaviors, and attitudes towards railway services. Non-participant observation was adopted in the pilot survey for getting actual scenarios. The overall study divides into two phases; firstly, review the national and international studies investigating the user satisfaction analysis to rail services. The context relevant studies have given prioritized for better understanding of local attributes and factors. The study parameters organize under three (3) broad categories physical attributes, management and others. In total, seven (7) indicators have been identified under these three (3) categories that further extended to twenty two (22) sub-indicators (Table 1). Different data collection methods were adopted according to sub-indicators for primary data collection. Non-participant observation, it's a data collection method concerning human attitude and behavior towards different services. For doing this, different days and times of a week have been considered along with peak-off-peak hours. The questionnaire session of commuters has been done to identify their opinions regarding available services and their needs. Purposive sampling conceived for questionnaire session. Additionally, discussions with passengers, surrounding people, and authority personnel were performed to identify challenges related to service attributes. The Likert scale was used for questionnaire feedback. Thematic and simple percentile procedures follow to analyze and summarize field data.

Table 1. Details of indicator and Sub-indicator

Category	Indicator	Sub-indicator
Physical attributes	Equitable movement	Ramp, Lift
	Waiting facilities	Sitting provision, Toilet, Drinking water,
	Platform	Height (Platform-Train coach), Signage, Luggage carrying, Flooring materials
Management	Ticketing	Ticketing system, Number of counters,
	Security & Cleanliness	Security personnel, Behavior of staff, Lighting, Cleanliness
	Information system	Display screen, Booth, Announcement
Others	Amenities	Accommodation, Parking, Refreshment

3 Study context

Rajshahi Railway Station (RRS) is the historically significant means of communication for the Northern Zone. Established in 1930, from then, the RT became the most essential to connecting the Rajshahi with Dhaka and the Southern part of Bangladesh. In 2003, considering the growth and future needs, the



Figure 1. Location of the Rajshahi Railway Station and the surroundings

station was redeveloped with modern facilities and became the finest station in the country. After the completion the station finally the train started running in 2006. Along with physical appearances (aesthetical views), the spatial quality serves functional needs efficiently. The oblique entry approach appeared with open parking facilities; after entry to the station, a user facilitates with an information desk, ticket counter, lounge, toilet, book and food shops, prayer space, and accommodation on the 2nd floor.

Located in the heart of the city and near the Shiroli bus stand, the station becomes busy all day long and served as a transportation hub. The road side commercial development makes the area vibrant. However, after the inauguration of the new station, the lack of monitoring and updating of services according to needs makes it inefficient.

4 Findings and Discussion

Identifying the physical elements of equitable access or movement is the most critical for public facility design. Importantly, these components ensure accessibility for all people including physically challenged and elderly persons. For the case of RRS, an entry ramp has been included in the design for ensuring universal accessibility. However, during the discussion, the users said the width was insufficient to move conveniently, and even the slope was not user-friendly and did not follow the standard 1:12/20 ratio. The absence of a railing makes the movement more difficult for many. Sitting beside the entry ramp creates further disturbance (Figure 2).

The 3-story station building is designed without a lift or ramp (for vertical circulation), which affects the right to access the upper floor for physically challenged and elderly persons. The prayer space on the 1st floor and accommodation on the 2nd floor are designed, which is difficult to use without the lift and ramp. Even people with large luggage face problems traveling from ground to the accommodation floor.



Figure 2. (Left) The position of ramp without railing; (Middle) People sit on the floor with mat; (Right) Discrete sitting arrangements within the station building.

Adequate sitting is mandatory along a defined waiting area for passengers. Generally, various types of waiting are designed separately in the public station, such as VIP, general and common outdoor. In the RRS, a waiting area with sittings and a toilet has been designed near the ticket counter. An air-conditioned VIP lounge designed with a toilet for administrative or other authorized personnel. The physical survey found the sitting provision is not adequate, and people need to sit on the floor (Figure 2). Even many come with portable plastic sheets or floor mats for sitting. The discrete sittings arrangement is not adequate to meet the needs. During the discussion, the user mentioned during vacation, the station becomes full of commuters which causes many problems, particularly for aged and differently able people. Further, commuters have to suffer due to insufficient numbers of toilets. However, the toilet zones are clean but need the numbers to maintain the excessive passenger pressure. The platform is vital for any railway station that distributes passengers to their destination. Studies of station platforms in Bangladesh found various issues that suffer the passengers. Even during the survey, most commuters were unsatisfied with the height variation between the train coach and the platform. It is usual for maximum stations in Bangladesh. Recently some are initiated redevelopment projects to uplift the platform according to train coaches. The physical survey found a 150mm-200mm height difference that disrupted ups and downs. People with large luggage also face difficulties with this variation. Proper signage on the platform helps commuters to find their coach quickly and conveniently. Hanging from the ceiling or fixing with columns are two practices. The figure shows the signage hanging from the roof and organized according to Bengali font, but commuters seldom find it accurately (Figure 3). Most of them claim they suffer during finding the appropriate coach when traveling. A commuter shared, Last time, I faced a critical situation while traveling with family and kids. For the wrong sign indication, I got into the other coach and lost my wife with kids. After the train left the station almost 30 minutes later, I found them. This is the most terrible experience in my entire life.

The convenient flooring materials of the station and platform are crucial for easy carriage of luggage and differently able person movement. People do not face any difficulties carrying luggage at present flooring, although the considerations of physically challenging people are ignored. No tactile or colored floor materials

have been used for visually impaired persons. Moreover, no signage was found during the survey, which could assist those people.

Inadequate, absence, or unable to use luggage carts for syndicate are the common reasons that commuters struggle to carry the luggage. For example, in Khulna Railway Station (KRS), dedicated station porters possess the carts and demand excessive charges for the luggage or business products. The passengers do not get a single trolley for carrying baggage by themselves. The same thing is experienced in the RRS also, and commuters claim to improve the condition and increase the number of carts.



Figure 3. (Left) The coach indication signage; (Middle) Unorganized installation of digital display board; (Right) Different stationary shops with snacks and foods.

For ticketing, the RRS follows the conventional process of a counter system, where people need to wait in line. During the survey, respondents mentioned to get a ticket becomes difficult on any public vacation due to crowds. Online and mobile app systems have been launched to make the process easier. Furthermore, regular monitoring and an increase in the number of lines could be effective for the improvement of the present condition; as well as, the adoption of advanced machines for auto ticketing would further facilitate commuters and make the process easier. Security in public places ensures the spontaneous participation of types of people. In the RRS, the security system is quite good, and commuters feel safe with luggage and other stuff. However, many respondents emphasize the installation of Closed-circuit television (CCTV) for better monitoring of every aspect.

The behavior of security personnel towards the passenger is satisfactory for the RRS. They are very helpful and well-mannered. A police help center and railway security force establish two booths near the station entry. People could communicate at any time for assistance from the responsible person. The lighting within the station building is good, although the platform condition is poor. Passengers said when arriving at night, the lack of lighting on the platform creates fear and panic. The number of security lights needs to increase and provide extra security, particularly at night.

A digital display board and information booth provide all information regarding the trains. Maximum-time representatives are not available in the information booth. The figure shows there have many digital display boards installed for advertising purposes, which sometimes creates problems in obtaining information (Figure 3). Respondents mentioned the display board should large and installed in a place that is visually connected to the entry and waiting areas. A specific zone can provide for these advertising purposes. The announcement at the railway station is significant because that gives all information related to train arrival and departure. The poor sound quality creates problems at the platform and station area. Many expect the railway authority would be aware of the issue.



Figure 4. (Left) The parking space; (Middle) Drinking water and hand wash facility; (Right) Security booth within the station building.

Overall, the amenities in the RRS are satisfactory, and people get the required refreshments within the compound. Firstly, the parking facility at the front is enough for moving public and private vehicles. Some crowd has generated when the train arrives at the station but creates problems. The accommodation facility is also good in terms of facility and rent. There have different types of AC and Non-ac rooms with service facilities. The physical survey found the room environment was not good, and only a few pieces of furniture facilitated the guest. These need to be improved for enhancing user satisfaction. On the ground of the station building, there have a number of bakery and stationery shops that are owned privately (Figure 3). Along with a cafeteria, these shops provide refreshments to the commuters. The adequate parking facilities, drinking water and security booths influence the overall service quality of the station (Figure 4).

5 Discussion and Conclusion:

Rail Transit (RT) is the most significant mode of transportation for managing movement of a large number of commuters in developing regions, which on the one hand, reduces traffic congestion and, on the other hand, minimizes traveling costs. Additionally, can play an effective role in ensuring sustainable growth from an environmental and economic perspective. However, a high level of user satisfaction is needed for using the transportation. Practically, the user satisfaction analysis of different public transportations system is rare due to a lack of interest, administrative complexity, and overall absence of a comprehensive evaluation framework. Studies of public stations around the world already showed the significance/importance of periodic evaluation of user satisfaction for improving service quality.

The user satisfaction assessment in this study has been done following a framework developed from an in-depth review of national and international cases. Under three broad categories, the indicators and sub-indicators are organized, and set the questions accordingly. Located at a strategic location in the divisional city, the Rajshahi Railway Station (RRS) plays a vital role in the development of the economic growth of this region. The historic station was remodeled in 2003 and became the finest station in the country, functionally and aesthetically. The figure shows respondents gave an overall 3.6 score to physical attributes of the RRS and 4.1 and 4.5 to management and amenities, respectively.

During the survey, in the case of design attributes, respondents marked ramp and lift are more vital than ensuring the right to everyone access. The entry ramp width is inadequate for movement, and the absence of a lift is unable physically challenge people to use the upper floor. The Bangladesh

National Building Code (BNBC) illustrates universal accessibility and emphasizes its inclusion in public station. From entry to every function the considerations of physically challenge people should include. Even a person, who wants to live in the railway hotel faces difficulties carrying their luggage to the second floor. The flooring materials are not convenient for visually impaired persons. According to the user, the sitting facilities need to improve along with the toilets. Platform height must uplift according to the coach, and the signage rearranged accordingly. The score of management shows satisfactory, but authority should concern with some specific issues; for example, the ticketing system, display board, and announcement system. Most respondents suggested that the updated technological systems for a better ticketing system. A large display board with an automatic announcement system can be installed. However, the amenities comparatively are in good condition. The refreshments and parking are adequate to serve the commuters but require regular monitoring to make the system efficient. Overall the mismanagement and present road conditions push people to use railway transit. Last several years the passenger pressure rapidly increasing but the service quality does not improve as much as required. Focusing only on the case findings of the study suggested necessary functions need to improve to attract commuters and ensure quality services. Following the user satisfaction model, regular monitoring further improvement the station condition and provides efficient services. Although, more cases need to be assessed and develop the model according to make it comprehensive.

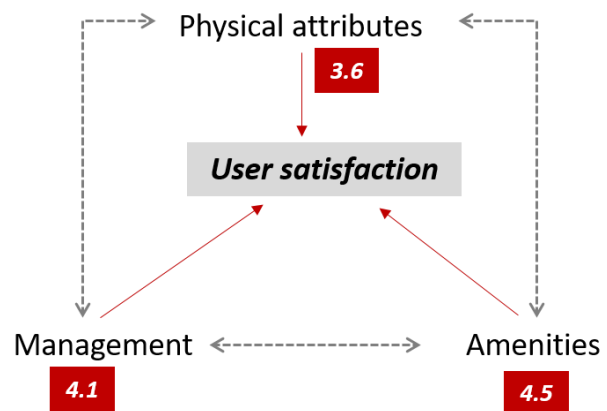


Figure 5. The diagram shows score of each factor is given by the respondents and interconnectivity within the components.

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