EXPLORING PUBLIC PERCEPTION ON RAIL TRANSIT SERVICE OF BANGLADESH

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ABSTRACT

Public transportation system is one of the most essential components required for the development of any country. It provides the most effective and efficient way for transporting a significant amount of people, particularly in areas where rapid urbanization has resulted in an increased number of populations. With the growing rate of population, public transport demand is also increasing. Consequently railway transportation has to play a vital role to meet this increasing demand of transport in Bangladesh. Traveling by train is cheaper and convenient compared to other available modes of transport in Bangladesh. This paper aims to explore public perception on rail transit service quality (SQ) of Bangladesh. A broad face to face questionnaire survey was conducted at Kamalapur Railway Station in Dhaka city to 1037 respondents. The questionnaire was well structured which included 25 service attributes regarding train service quality. Findings from the survey indicates that passengers are moderately satisfied with security inside train, air ventilation inside train, waiting place condition of railway station, food facilities in train, toilet facility for commuters, behavior of train's staff, compartment condition of train, compartment arrangement of train and cleanliness of train. From the survey report it has been found that most (67%) of the respondents' are moderately satisfied with the overall train service quality in Bangladesh. Outcomes of this study can be utilized by Bangladesh Railway (BR) to improve the overall service quality of rail transit service of Bangladesh.

Keywords: *Public perception, rail transit service, service quality*

1. INTRODUCTION

Public transport is a vital component of any developing city which offers several facilities to individuals, societies and local economy playing a crucial role for the growth and development of a city by meeting the increased number of mobility demand due to rapid urbanization. Effective and efficient public transportation system improves living condition in a city by increasing mobility, reducing pollution and benefiting the community financially. Several types of public transport are available according to capacity and mobility in different countries. Among the available different modes of public transport, train is the popular choice for developing and developed countries. Because train as a mode of transport not only carries great amount of passengers and goods but also it causes less environmental damage compared to motorized road traffic. Thus train can play a vital role in reducing pollution, congestion, and fatalities.

For a densely populated country like Bangladesh, rail service as a means of transport is very effective. Compared to other available services, rail service is considerably faster. It is also very reliable as it is least influenced by weather conditions and traffic jam. In case of capacity and time, railway transport can carry larger volume of goods and passengers over greater distance in much quicker time which is making it more economical compared to motorized road traffic. So, rail has to play a potential role in mass transit for Bangladesh which is experiencing a rapid increase in motorized traffic.

Rail transit service is a popular mode of public transport in Bangladesh as it is affordable and cheaper compared to other available modes of transport. It is operated and run by the government of Bangladesh which is commonly known as Bangladesh Railway (BR). BR has a total route of 2,877.10 km where 1,648.24 km is meter gauge, 659.33 km is broad gauge and 569.53 km is dual gauge. Covering 458 stations spreading all over the country, BR is providing facilities to freight services and passengers (Length contents, 2014). BR provides train service around the country by dividing it into two zones; namely East Zone (EZ) and West Zone (WZ). BR currently operates 86 intercity trains, 135 Local/Mixed/P&V trains, 4 International trains and other 64 trains comprising of Commuter, Mail Express and DEMU (Passenger Trains in BR, 2017). Over the last few years the participation of private sector in railway operations has gradually increased which includes the leasing out of commercial functions for passenger trains. For the development, maintenance, operation, expansion and provision of telecommunication services in railway, BR signed private sector contracts. The involvement of private sector has been found greatly successful resulting in improved service and increased revenue. Currently, railways play an important role in case of connectivity across and within regions of the country.

Compared to the expansion and improvement of road network, rail network has not received any significant consideration and attention. Due to lack of sufficient funds for maintenance of rail tracks and supporting infrastructures, the rail sector is in a dreadful condition, resulting in poor performance of Bangladesh Railway (Abdullah, 2012). The quality of service reduces with the increase of age of public transport organizations and the public is compelled to accept what is offered to them as they don't have any alternative (Andreassen, 1994). Therefore, such a situation arises when it becomes necessary to introduce or reintroduce the concept of quality back into public transportation to meet the quality expectations of the public (Ancarani & Capaldo, 2001).

In spite of service quality being a crucial aspect in the field of public transport, inadequate research has been done to study this concern, especially in government run rail service in Bangladesh. To fulfil public demand and attract more passengers, public transport must ensure high service quality (Stradling, Anable & Carreno, 2007). It is important to find out satisfaction and dissatisfaction level of customer about public transport, so that the system can be made further attractive and demandable. As rail is a popular mode of public transport, it requires regular assessment to improve its service quality and satisfy its users.

2. LITERATURE REVIEW

Public Transport (PT) serves a significant role as a medium of movement of users' from one place to another, especially in urban areas. Several types of public transports are used worldwide, such as bus, taxi, light rail transit (LRT), monorail, paratransit, commuter rail, tram, subway, mass rapid transit (MRT) etc. PT increases the quality of life having a direct effect on the national economy of a country (Henry & Litman, 2006). PT provides a cheap, convenient and rapid mobility service to function for the society (Das, Ladin, Ismail & Rahmat, 2013). The service that is provided by public transport was found to be affordable and highly reliable due to long term experience over decades (Stelzer, Englert, Hörold & Mayas, 2006). Public transport is also a better solution to reduce air pollution, traffic congestion and limited parking problems (Das, Ladin, Ismail & Rahmat, 2013). On the other hand, PT can pay to the three scopes of sustainable development, namely social, environmental and economic (Morton, Caulfield & Anable, 2016). Public transport users' in developed countries have flexibility to change their travel schedule including route and mode if they are dissatisfied with the existing service quality (Joewono, Tarigan & Susilo, 2016). People in the developing countries, such as Bangladesh, are less enthusiastic to use public transport since it provides poor quality service (Borhan, Ibrahim, Syamsunur, & Rahmat, 2019). Existing service condition provides an impression of uncertainty among users to change to more accessible and reliable modes of transport (e.g bicycle, motorcycle).

In general, service quality is defined as the overall assessment by customer toward performance of service provider (Lien, Wu, Chen & Wang, 2014). Service quality is a measurement of how well the service is provided according to consumer needs (Lai & Chen, 2011). Consequently, the service quality of public transport reflects the overall satisfaction level of public transport users respecting to the overall service provided by public transport authority. Many authors have supported the theory that 'customers are the sole judges of service quality' (Berry, Zeithaml & Parasuraman, 1990). Customer satisfaction refers to the overall evaluation of service quality in terms of the provided service met or exceeds their expectation or not (Lee, Lee, & Feick, 2001). Affording a high quality public transportation service that meets passengers' expectation and travel needs is important in creating a reliable, safe, attractive and comprehensive urban transport system. Hence, nowadays the importance of public transport service quality has been widely assessed by researchers or experts in the field of public transport. For example, Users' perception on public transport service quality was assessed by qualitative method (Beirão & Cabral, 2007). In addition, some researchers also focused on identification of the most significant elements of travel satisfaction of users' with public transport service quality (Abenoza, Cats & Susilo, 2017). Besides, Stradling, Anable & Carreno (2007) focused on service quality of public transport in their studies. The aim of this study is to explore public perception on rail transit service of Bangladesh.

In the past few years, several studies regarding the users' satisfaction and ways to improve service quality have been conducted worldwide. Several researchers suggested that strong efforts should be taken to improve comfort level and cleanliness (Dell'Olio, Ibeas & Cecin, 2011). Service quality could be significantly improved by performing combined management strategies of rail transit (Diab and El-Geneidy, 2012). The important criteria that influence the service quality of high-speed rail transit are the comfortable air conditioning, cleanliness of vehicles, employees' neat outlook, employees' service attitude and punctuality (Chou, Lu & Chang, 2014). Aydin, Celik & Gumus (2015) have used hierarchical framework to explore passenger satisfaction of rail transit service. The organizational forms do have an impact on the passenger satisfaction of public transport service (Zhang, Juan, Lu & Xiao, 2016). A systematic information integration method was used to improve the service quality of high speed rail stations by maximizing the capacity utilization of waiting room and minimizing the walking distance of passengers, which are closely related to achieving passenger satisfaction (Lai & Chen, 2011). Xiaoqiang, Lang & Jin (2017) found that attractive price is useful to improve customer satisfaction and expand ridership of rail transit service. Thus, a dynamic pricing method was proposed for passenger groups to appreciate passengers, thereby increasing the revenue. Farajpour, Kisomi & Bagheri (2017) used SERVQUAL and KANO methods to investigate the crucial factors that affect service quality and passenger satisfaction of rail transit. The study showed that

travel passes for passengers, modern fittings inside the train, on-time service, and staff's willingness are important to achieve the passenger satisfaction level and improve service quality.

3. METHODOLOGY

3.1 Data Collection

A comprehensive questionnaire survey was conducted face to face among the passengers at Kamalapur Railway Station situated in Dhaka which is the largest railway station in the country. It is one of the most important terminals for Dhaka and other parts of Bangladesh. The survey was conducted from 10th to 20th March 2017. The respondents were asked about 25 service attributes regarding their overall satisfaction on present condition of train service. To evaluate the rail service quality the passengers were asked to rate the service attributes according to their perception on a five point likert scale ranging from 1 to 5 (1, 2, 3, 4, 5 represents "Very Bad", "Bad", "Moderate", "Good", and "Very Good" respectively). Total 1037 respondents were interviewed by seven surveyors.

Table 1: General characteristics of respondents

Charateristics	Statistics
Gender	Male (74%), Female (26%)
Age	11~20 Years old (22%), 21~30 Years old (53%), 31~40 Years old (17%), 41~50 Years old (7%), 51~60 Years old (1%), >60 Years old (0%)
Occupation	Student (26%), Service Holder (29%), House Wife (7%), Worker (17%), Businessman (21%)
Reason of using intercity train	Captive rider (4%), Economical (11%), Comfortable (25%), Safer (57%), Others (3%)
Will choose alternative mode due to delay time	More than 1 hour (6%), More than 2 hours (22%), More than 3 hours (46%), More than 4 hours (18%), More than 5 hours (8%)

3.2 Data Analysis

Majority (34%) of the respondents said that they travel by train 1-2 times per 3-4 month while 30% respondents travel 1-2 times per six month and 18% respondents travel 2-4 times per month. Only 4% users travel 2 times per week as shown in Figure 1. About 31% trains delay 10-15 minutes while 11% trains delay15-20 minutes and only 19% trains provide service without any delay as shown in Figure 2.

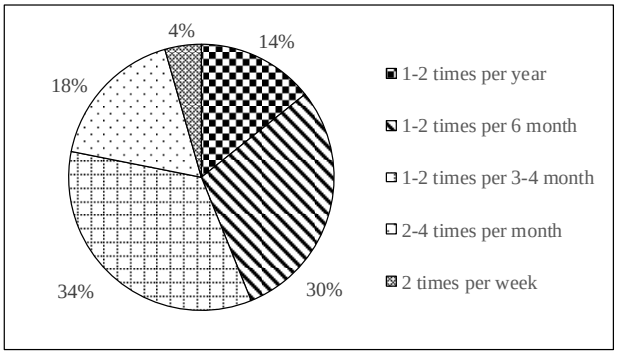

Figure 1: Frequency of travel

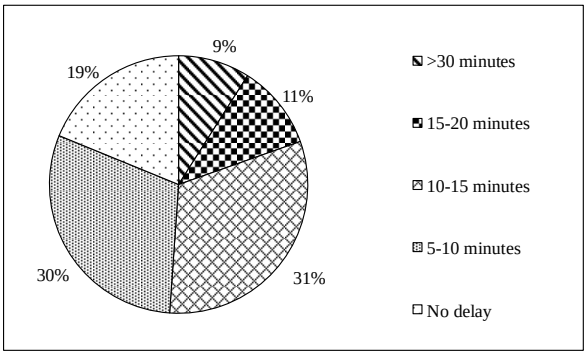

Figure 2: Delay occurred by train

Figure 3 shows a comparison between online ticketing system and counter ticketing system. More than half (56%) of the commuters said that online ticketing system is moderately preferable while 32% users replied that online ticketing system is preferable. Only 2% users answered that online ticketing system is not preferable. Majority (65%) of the respondents said that counter ticketing

system is moderately preferable while 17% users replied that it is preferable but not satisfactory. Only 4% users have found counter ticketing system as preferable and satisfactory.

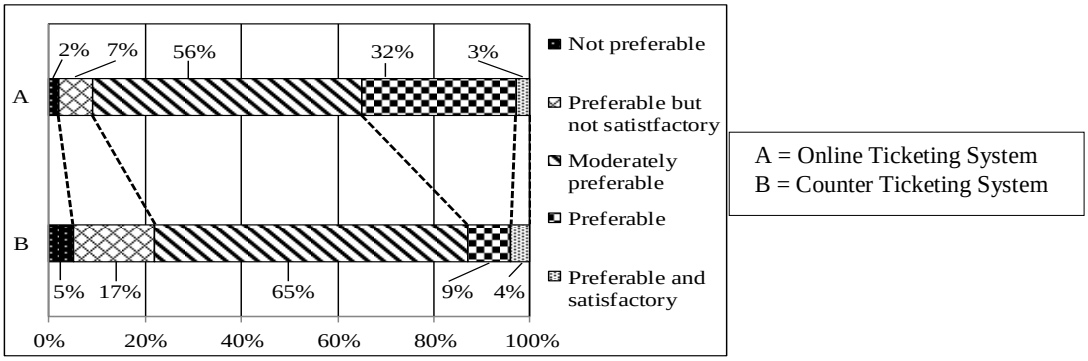

Figure 3: Comparison between online ticketing system and counter ticketing system

In case of ticket cost, majority (79%) of the passengers replied that ticket cost is fair while 16% users said that it is costly and 5% users said that it is cheap as shown in Figure 4. Figure 5 shows that 53% of the respondents have found first class ticket of train available to purchase in chair coach only. Among respondents, only 5% passenger didn't get any first-class ticket available to purchase at anywhere.

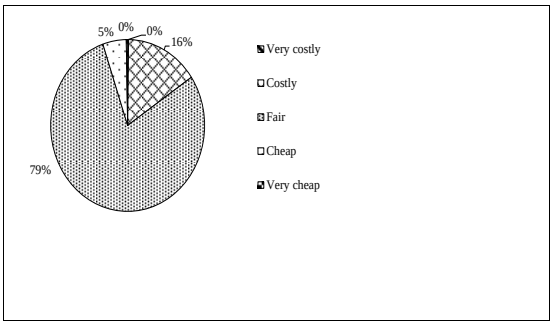

Figure 4: Ticket cost of train

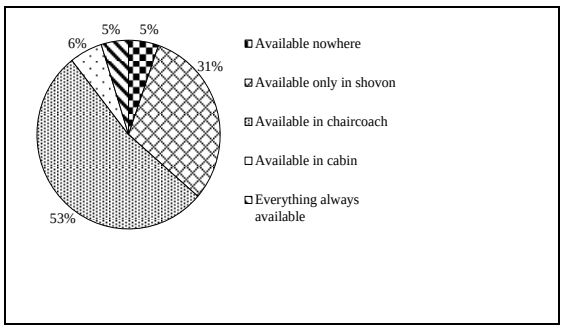

Figure 5: First class ticket availability of train

For 44% users, it takes 6-8 hours to reach their destination while 37% users reach their destination within 4-6 hours. In case of 4% users only, the travel time is 10-12 hours as shown in Figure 6. If trains' ticket is unavailable, majority (81%) of the passengers travel by bus as an alternative to train while 7% passengers travel by taxi or rent a car and another 7% travel by plane. Surprisingly 5% of the passengers cancel their trip which means they don't travel if trains' ticket is unavailable as shown in Figure 7.

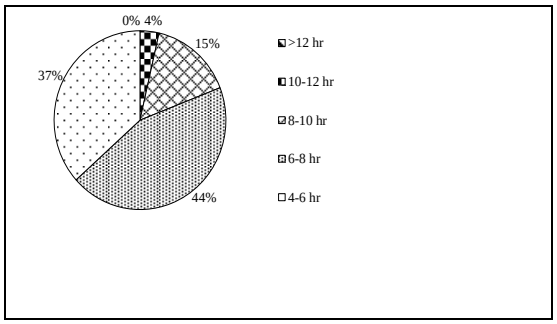

Figure 6: Time required to reach destination

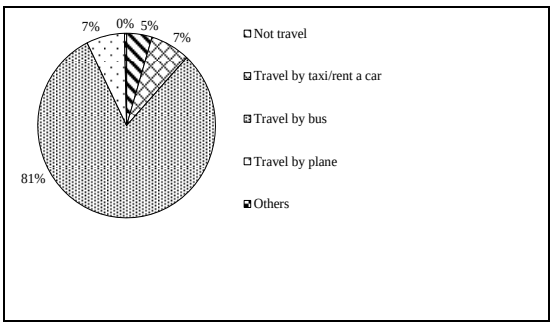

Figure 7: Alternative mode of transport if trains' ticket is unavailable

71% of the respondents said that compartment arrangement of train is moderate as it takes a little time to find out their desired compartment while 22% of the respondents said that it is good as they found compartments to be serially arranged as shown in Figure 8. Majority (73%) of the respondents replied that conditions of compartments are moderate while 19% said that it is good. Only 6% of the respondents experienced old and broken compartments; so they rated it as bad as shown in Figure 9.

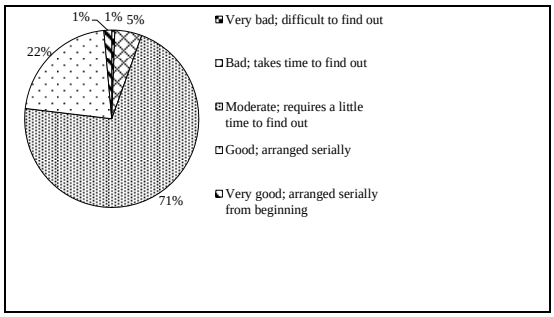

Figure 8: Compartment arrangement of train

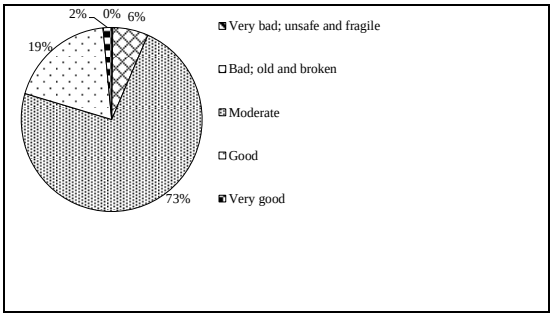

Figure 9: Condition of compartments

In case of comfort level in journey by train, majority (60%) of the respondents said that it is comfortable in chair coach while 16% said that it is comfortable in shovon. Only 1% replied that it is not comfortable to travel by train as shown in Figure 10. For 51% of the respondents, the noise level of train was tolerable. 14% of the respondents said that it was intolerable whereas 26% found less noise on train as shown in Figure 11.

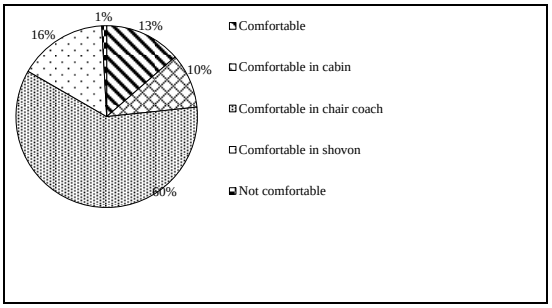

Figure 10: Comfort level in journey by train

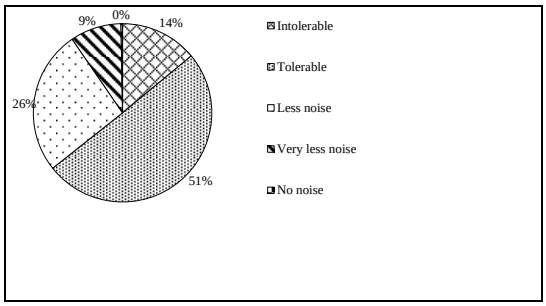

Figure 11: Noise level of train

Figure 12 shows that respondents are moderately satisfied with almost all of the service attributes. Respondents perceived that security inside the train (68%), air ventilation inside the train (60%), waiting place condition of railway station (61%), food facilities in train (67%), toilet facility for commuters (56%), behaviour of train's staff (58%) and cleanliness of train (66%) were moderate.

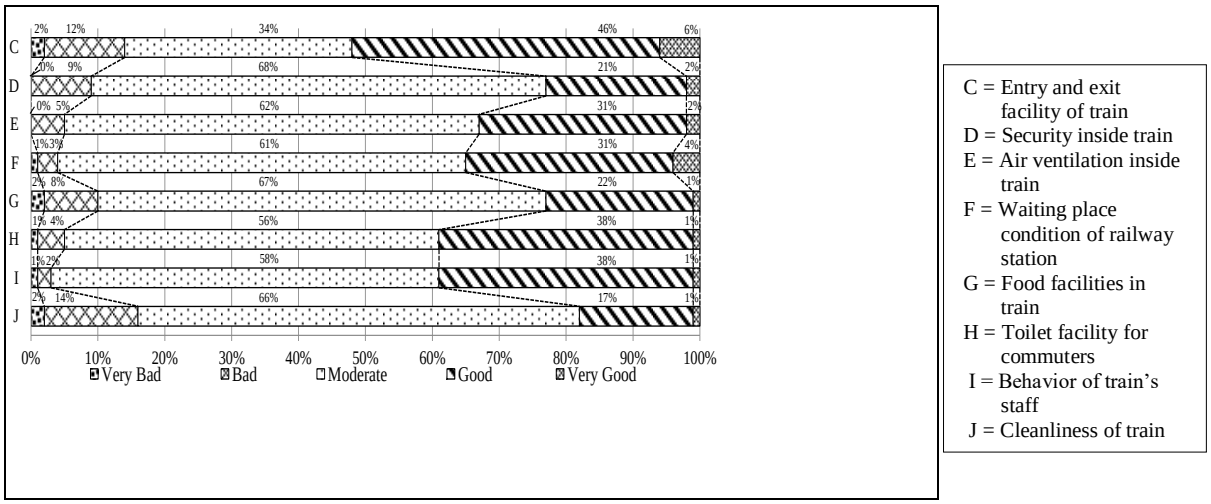

Figure 12: Users' perception about different service attributes

Entry and exit facility of train is the only attribute which has mostly been rated as "Good (46%)" among the service attributes shown in Figure 12. It reveals that respondents are much satisfied with the entry and exit facility of train. Also 38% respondents rated toilet facility for commuters and behaviour of train's staff as "Good".

More than half (56%) of the respondents said that sometimes people travel on trains' roof while 25% said that people travel once in a while as shown in Figure 13. Majority (60%) of the commuters said that females are harassed sometimes while only 4% said that females are regularly harassed and 9% commuters said that female harassment never occurs inside train as shown in Figure 14.

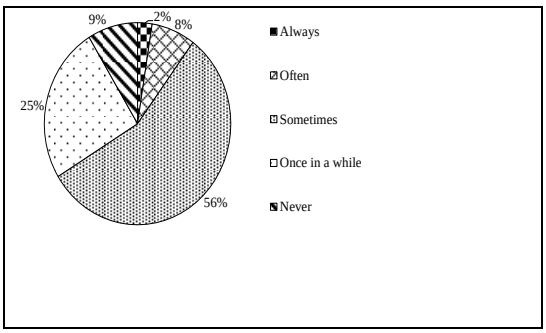

Figure 13: Frequency of traveling on trains' roof

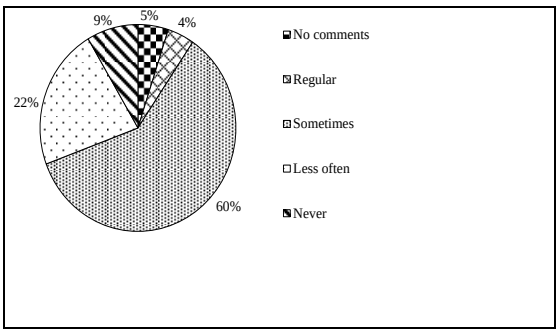

Figure 14: Female harassment inside train

Majority (71%) of the users expressed that necessary steps taken by government are not sufficient while 5% passengers said that no necessary step has been taken by government and 5% passengers had no idea about it. 16% passengers said that steps taken to improve service equality are sufficient but there is no implementation of these steps taken as shown in Figure 15. About 40% respondents agreed to pay (+100 BDT) extra money for quality development. Only 1% commuters agreed to pay more than (+500 BDT) for quality development as shown in Figure 16.

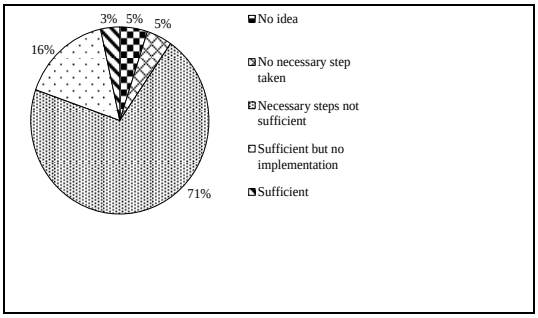

Figure 15: Adequacy of steps taken by government to improve service quality

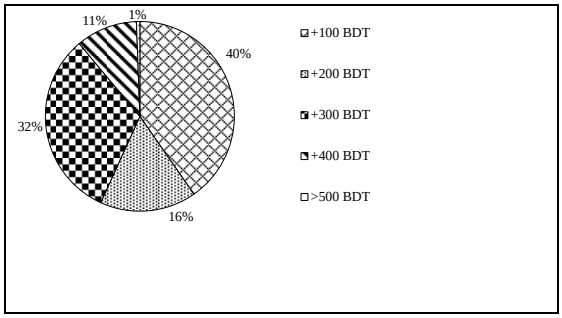

Figure 16: Willing to pay extra cost for quality developmentsufficient

Majority (67%) of the respondents are moderately satisfied with overall service quality of train in Bangladesh. 26% respondents said that the overall service quality is good and only 5% respondents said that overall service quality is bad as shown in Figure 17.

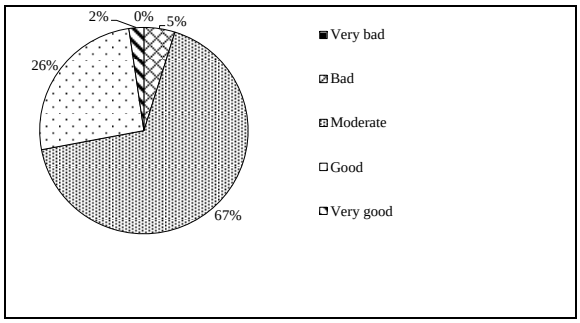

Figure 17: Overall service quality of train in Bangladesh

4. RESULTS

This study evaluates the overall service quality of train as a mode of transport in Bangladesh where 25 service attributes regarding train service quality were considered. Respondents from Kamalapur Railway Station were asked to give their opinion on these service attributes according to their perception of service. About 34% users travel 1-2 times per 3-4 month and 30% users travel 1-2 times per six month. Survey result indicates that about 31% train delay 10-15 minutes from the assigned time of departure. For 44% users it takes 6-8 hours and for 37% users it takes 4-6 hours to reach their destination respectively. 56% of the respondents said that online ticketing system is moderately preferable whereas 65% users said that counter ticketing system is moderately preferable for purchasing ticket. Majority (79%) of the users said that ticket cost of train is fair and 16% users said it is costly. 71% of the respondents said that compartment arrangement of train is moderate as it takes a little time to find their desired compartment. Majority (73%) of the respondents said that conditions of compartments are moderate. 60% users said it is comfortable to journey by train in chair coach. About 46% of users said entry and exit system of the train is good and 12% commuters said it is bad. Majority (68%) of the passengers said that security inside the train is moderate and 21% users said it is good. Majority (61%) of the users said that waiting place condition of railway station is moderate. 51% of the respondents said that noise level of train is tolerable. Majority (66%) of the users said that the cleanliness of train is moderate. So, overall research indicates that majority (67%) of the respondents are moderately satisfied with the service provided by train.

5. CONCLUSIONS

For a densely populated country like Bangladesh, train service can play a significant role in the field of transport by meeting increased mobility demand which will improve the overall transportation system of the country. Moreover, improved transportation system will contribute for overall development of the country. So, a transport system like train which is full of possibilities requires observation and improvement in service quality. This study explores passengers' perception on different service attributes as well as overall service quality of rail transit service of Bangladesh. The research result shows that, passengers are moderately satisfied with rail transit service of Bangladesh. The outcomes of this study offer significant comprehension for improving the train service quality currently being offered by BR and the aspects where greater attention is required. It is expected that the outcome of this research work will be beneficial for further improvement of rail transit service of Bangladesh. Moreover, this study can be utilized by BR to improve train's overall service quality. Though findings of this study offer prompting direction in assessing train service quality, some limitations are also acknowledged. Only one railway station (Kamalapur) in Bangladesh was selected to collect data for this research. More locations should be included in future for better result. The data has a gender bias. Only 26% of the participants were female as they were less enthusiastic in answering the questionnaire. So, more participation from women should be ensured in future. Further variation in samples as adding more variables and increasing the number of data may help to obtain better result.

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