Research Paper

Perceived Service Quality, Customer Satisfaction and Loyalty of Generation Y: An Empirical Investigation on Railway Services of Bangladesh

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Abstract:
For the economic progress of any nation, the transportation sector plays a vital role. The railway transportation is one of the most popular media of transportation in Bangladesh. Because of safety, low cost, and reliability, a considerable number of people prefer railway transport instead of other medium of transportation. The study aims to investigate the dimensions of service quality affecting customer satisfaction and also the effect of customer satisfaction on the loyalty of the railway service among the Gen-Y passengers in Bangladesh. This research adopted an extended SERVQUAL model to develop the research model. By adopting a purposive sampling technique primary data was collected from Gen-Y passengers of the Bangladesh railway. Applying PLS-SEM statistical technique, the empirical results of this study reveal that tangibility, comfort, assurance, and empathy and responsiveness have a significant positive impact on building customer satisfaction. Besides, convenience and reliability have not significantly influence overall customer satisfaction. Furthermore, overallsatisfaction resulting customer loyalty for Gen-Y passengers of Bangladesh railway. The findings of the study have both theoretical and practical contributions in many folds.
Keywords: *SERVQUAL, Generation-Y, Railway, Services, Bangladesh, PLS-SEM.*

I.   Introduction:

For the movement of mass people, public transportation networks have been playing a crucial role worldwide, especially in densely populated areas (Bhatnagar & Ram, 2021; Do & Vu, 2020; Eboli & Mazzulla, 2012b; Kuo & Tang, 2013). Among the various means of public transportation, railway transportation has been considered as one of the most popular and cost-effective transport mediums all around the world (Bešinović, 2020; Do & Vu, 2020). Thus, providing a higher standard of service to passengers is a crucial agenda for the authorities of railway service providers all over the world (Eboli & Mazzulla, 2012b).

Service quality defines as the "*function of the difference between service expected and customer's perceptions of the actual service delivered*" (Farooq, Salam, Alain, Jaafar, & Ayupp, 2018; Parasuraman, Zeithaml, & Berry, 1988). With the rise of advanced technology, the need for assuring service quality, especially in the service sector, getting prioritized by many companies to attract new customers and retain the existing ones (Irfan, Mui, & Shahbaz, 2011; Shafiq, 2019). For customer satisfaction, customers' future intentions and loyalty perspective, service quality has been considered as the prime determinant for organizations all around the world (McDougall Gordon, 2000; Nandan, 2010). Without maintaining a better quality service, it is challenging to sustain in the market in the long run (Parasuraman et al., 1988). Different researchers all around the world measured service quality in various industries applying several dimensions (Nandan, 2010). Among them, Parasuraman, Zeithaml, and Berry (1985)'s SERVQUAL model is one of the

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most popular models for measuring service quality (Roslan, Wahab, & Abdullah, 2015; Shafiq, 2019). Various dimensions (i.e., assurance, responsiveness, reliability, empathy, and tangible) of the SERVQUAL model measure the service quality in an unprecedented manner. Different researchers modified and extended the original SERVQUAL model in many folds, and applied in several industries to measure service quality (Cavana Robert, 2007; Miranda, Tavares, & Queiró, 2017). Again, service quality is directly linked with customer satisfaction, future intention and loyalty related aspects. According to Kotler and Caslione (2009) satisfaction denotes *"to a person's feeling of pleasure or disappointment resulting from comparing a product's performance in relation to his or her expectations"*. Satisfaction from service quality generally evaluated in terms of technical and functional quality perspective (Gronroos, 1984). As all the customers does not have that much in-depth knowledge on technical aspects, that's why, functional aspects of service quality remains the major criteria to form perceived service quality (Nandan, 2010). If the passengers are satisfied with the railway service quality, then the probability of future traveling by train of the passengers will be increased (Eboli, Fu, & Mazzulla, 2016). On the other hand, customers' future intention and loyalty ultimately lead by the level of satisfaction and is a vital aspect of making a long-lasting relationship with the customer. A stable and robust bonding, positive word of mouth and reduce opportunism produce a positive outcome to the organization which is especially needed for the service providing organizations (Jose Sanzo, 2007).

Generation Y (Gen-Y) is a group of people born between 1980 to 2000 roughly (Cavagnaro, 2018). However, some of the researchers pointed out the year range between 1978 to 1994 (Kelan & Lehnert, 2009; San, Omar, & Thurasamy, 2015) or between 1978 to 1994 (Thambiah, 2015). Different scholars termed the people born in these year ranges as "millennials" (Kelan & Lehnert, 2009). Right now, Gen-Y people constitute a significant number of populations around the world and expect to form more than 75% of the total population of the world by 2030 (Naim & Lenkla, 2016; Shafiq, 2019). As shortly, Gen-Y people drive the world's economy all around the world; thus, this group of people's perspectives has been considered very seriously by different researchers and policymakers all around the world.

Bangladesh is one of the developing countries having steady economic growth for the last couple of decades. For sustainable economic development, the need for better connectivity is a must. Along with different forms of transportation medium, the railway has been considered as one of the most frequently used and cost-effective means of transportation in Bangladesh (Rahman, 2019). Thus, the standard of railway service should be up to the mark. On this backdrop, the study aims to investigate the dimensions of service quality affecting customer satisfaction and also the effect of customer satisfaction on the loyalty status for the railway service of Bangladeshis especially among the Gen-Y people using this service. For this, an extended SERVQUAL model was employed to investigate the study objectives. The remaining article is arranged in the following sections. The literature review, conceptual framework and hypotheses development, research method, results, discussion and managerial implication, and conclusion sections presented successively. The article ended with the limitation and future research direction section.

II.   Literature review:

With the rise of the service sector all around the world, the need for measuring service quality is becoming a concern for organizations. Several studies have measured different service quality dimensions and found direct links with customer satisfaction and loyalty (Howat, Crilley, & McGrath, 2008; Parasuraman et al., 1988). Due to the multi-dimensional nature of the service, the measurement of service quality is tough than measuring physical product quality (Attri, 2014; Giannakos, Pateli, & Pappas, 2012). For measuring service quality, several models have been considered and applied by different researchers. Seth, Deshmukh, and Vrat (2005) compiled different models for measuring service quality. Among the models for measuring service quality, the SERVQUAL model is the most dominant and widely used models all around the world. Initially, the SERVQUAL model was developed considering ten dimensions, but later on, ten aspects were merged into five factors namely, reliability, assurance, tangibles, empathy, and responsiveness (Nandan, 2010; Parasuraman et al., 1985). From different studies adopted the SERVQUAL model; it is found that different dimensions of service quality have a significant impact on customer satisfaction.

Several studies have also been carried out by different researchers on service quality in the public transportation sector. Ngatia, Toshiyuki, and Fumihiko (2009) studied public transport services' attribute on overall satisfaction on passengers in Nairobi. With this study, they identified that unobserved characteristics such as service quality, safety, and travel cost have a significant influence on the level of satisfaction. Eboli and Mazzulla (2007) measured the passengers' satisfaction among bus service users. Numerous factors, like, shelter and benches at bus stops, cleanliness, overcrowding, information system, personnel security, safety, the physical condition of bus stops and helpfulness of personnel were taken into consideration. They found a significant influence on customer satisfaction. Again, Khanh (2017) examined service quality in the airline industry in Vietnam and found that service quality dimensions have a direct influence on customer satisfaction and with the increase of better customer service, the satisfaction level can be increased in the airline sector. Similarly, Farooq

et al. (2018) researched on airline industry by applying a customized SERVQUAL model called AIRQUAL model and identified that, the factors of the model has a great influence on building customer satisfaction and corporate image.

Eboli and Mazzulla (2012a) studied the railway service quality of Northern Italy. They found that consistent regularity and punctuality and the frequency of the train schedule have a significant impact on railway service quality. Barabino, Deiana, and Tilocca (2012) applied the SERVQUAL model to access the customers' perception and expectations and found negative gaps between customer perceptions and expectations and suggested some guidelines accordingly. Again, Eboli et al. (2016) examined railway service quality by applying Fuzzy theory and found that, in general, service quality has a significant influence on overall satisfaction. Agarwal (2008) studied the overall customer satisfaction of railway service in a specific city in India. By applying factor analysis, the study revealed that the behavior of the employee has a significant impact on customer satisfaction. In this sequence, Rahaman and Rahaman (2009) measured the railway passengers' satisfaction level in some specific areas of Bangladesh and found a strong association between service quality and customer satisfaction. Miranda et al. (2017) measured railway service quality by applying the dimensions of the SERVQUAL model and explored that, overall consumer satisfaction entirely depends on comfort, connection, and convenience. By combining connection and comfort, customer satisfaction can be enhanced in the railway. By applying the SERVQUAL model in the railway sector, Hundal and Kumar (2015) found that different kinds of determinants that affect the satisfaction on the service quality of the railway and suggest the improvement aspect that needs to take care of the better service quality of this sector. Hanna and Drea (1998) investigated the underlying factors for choosing railway service by the passengers and found that, the railway should focus more on the competition is the area of comfort, traveler flexibility, and cost. Again, Irfan et al. (2011) studied passengers' perception on railway service quality in Pakistan. By applying SERVQUAL model, they found that, only tangibles have a positive and significant impact on passenger satisfaction.

Based on the previous literature, it seemed that no research work had been carried out in the railway sector of Bangladesh applying extended SERVQUAL model, primarily concentrating on Gen-Y. There exists a research gap in this sector to measure service quality, satisfaction, and loyalty, focusing on Gen-Y. Thus, this research work got the validity to carry out the study which will be a supporting tool for the policymakers as well as the academicians to take decisions related to railway transportation according to the research findings.

III. Conceptual framework and hypotheses development:

To attain operational excellence and business development, ensuring the strategic means of quality is a must (Jain & Gupta, 2004). It is an essential aspect for not all the sectors, especially in the service sector. With the increasingly competitive environment, the need for improvement of service is becoming a burning issue for all kinds of service-oriented businesses to make the service distinct from the competitors (Morrison Coulthard, 2004). To measure service quality, different researchers developed and validated several models (Seth et al., 2005). Among the models, the SERVQUAL model is a broadly used model for measuring service quality (Morrison Coulthard, 2004; Woo & Lam, 1997). Some researchers modified the original model and applied it in different industries across the world (Al-Borie & Damanhouri, 2013; Alnsour, Tayeh, & Alzyadat, 2014; Awan, Syed Khuram, & Iqbal, 2011; Bhat, 2012; Donnelly, 2006; Lai, 2007). Originally developed and modified SERVQUAL model used to attain maximum potentials and insights score (Monica & Ramanaiah, 2018; Morrison Coulthard, 2004; Parasuraman et al., 1985; Parasuraman et al., 1988). For this study purpose, a revised SERVQUAL model was used to meet the study objectives, which was adopted from Cavana Robert, Corbett Lawrence, and Lo (2007) and Miranda et al. (2017). The dimensions of the modified SERVQUAL model and the proposed model for this study illustrated in Figure 1.

Tangibility and overall satisfaction:

Tangibility includes the physical facilities of the service, which is directly associated with the service delivery process (Shafiq, 2019). Applications of tangibility differ from industry to industry. For the railway service quality measurement, tangibility is associated with the neat and cleanliness of the train, station, modern looking and upgraded service of the train, restroom and washroom facilities, equipment, and the adequacy of the train (Miranda et al., 2017). Based on the perspective, a hypothesis can form:

H_1: Tangibility dimensions of the railway service has a significant impact on overall satisfaction

Comfort and overall satisfaction:

For the public transportation perspective, comfort has been considered as one of the most significant aspects of measuring service quality (Cavana Robert et al., 2007; Miranda et al., 2017). From the perspective of railway service, the level of comfortability in the seat, the ventilation system, easy access to the washroom and prayer room inside the train, etc. are the considering factors. Based on these, H_2 can be formulated:

H₂: Comfortability dimensions of the railway service has a significant impact on overall satisfaction

Convenience and overall satisfaction:
Convenience is related to the easiness of booking and gaining the ticket, getting information from different sources to travel through the train. Convenience has been considered as one of the essential factors for measuring service quality of railway service. Thus, the following hypothesis can form:

H₃: Convenience dimensionality of the railway service has a significant impact on overall satisfaction

Assurance and overall satisfaction:
Assurance refers to understanding, ability, and courtesy of the service providers as they directly engaged with customers for delivering services (Giannakos et al., 2012). From the perspective of railway service, assurance is related to the accuracy of information provided by the railway staff, the safety and security in the train and station both at day and night time. Thus, the following hypothesis can form:

H₄: Assurance dimensionality of the railway service has a significant impact on overall satisfaction
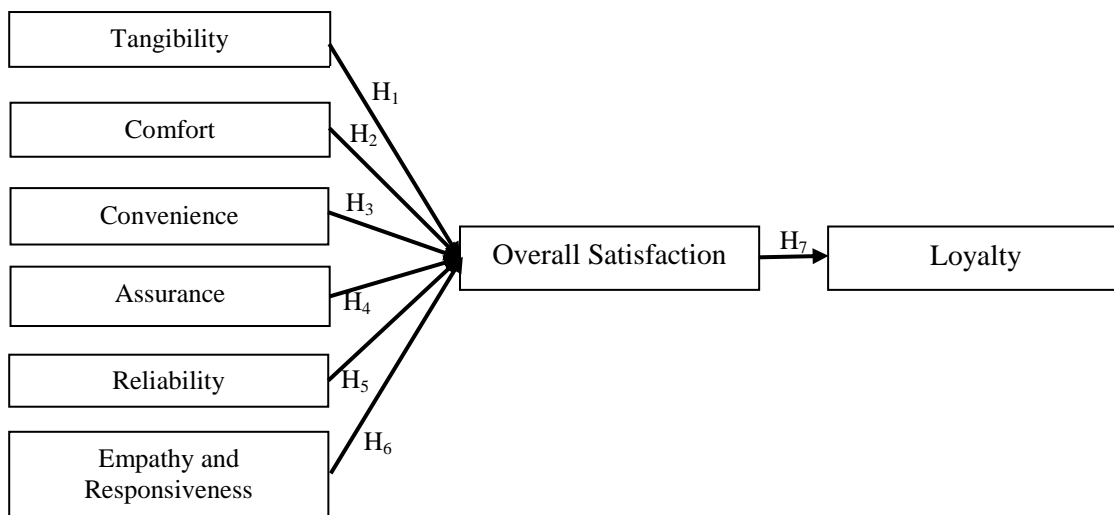

Figure 1: Research model

Reliability and overall satisfaction:
        Offering committed services dependably and accurately is related to reliability. In general, reliable service means the organization will provide accurate service and keep its promise on service providing, delivery, pricing, and problem-solving related issues (Lee & Johnson, 1997; Wilson, Zeithaml, Bitner, & Gremler, 2016). In the railway service, reliability is associated with the frequency of train services according to the predetermined schedule, price of the train ticket and associated services, etc. Thus, the following hypothesis can form:

H₅: Reliability dimensions of the railway service has a significant impact on overall satisfaction

Empathy and responsiveness and overall satisfaction:
Empathy and responsiveness have been considered as one of the essential factors in the SERVQUAL model for measuring service quality. Empathy is related to delivering personalized services to the customer. On the other hand, responsiveness is associated with the willingness of the service provider to provide instant service towards customers (Khan, Lima, & Mahmud, 2018). From the perspective of railway service, all the customers want an empathic and responsive service which ultimately leads towards customer satisfaction. Thus, the following hypothesis can form.

H₆: Empathy and responsiveness dimensions of the railway service has a significant impact on overall satisfaction

Overall satisfaction and loyalty:

Multi-dimensionality of the service has a direct impact on building customer satisfaction, which is acknowledged as one of the prime success issues in the service industries (Azmian, Nasrinahr, & Foroughi, 2012). Different researchers have identified customer satisfaction differently, but the general conscious is that customer satisfaction is the outcome of customer's liking or disliking for any product or services which typically generated after comparing perceived performance and actual service delivery (Kim-Soon, Rahman, & Visvalingam, 2014; Kotler et al., 2017). Therefore, maintaining consistent service quality is one of the prerequisites for customer satisfaction (Kim-Soon et al., 2014). Oliver (1999) defined loyalty as, *"a deeply held commitment to rebuy or patronize a preferred product or service consistently in the future, thereby causing repetitive same-brand or same brand-set purchasing, despite situational influences and marketing efforts having the potential to cause switching behavior."* From previous researches, it is found that satisfaction is one of the significant antecedents of loyalty and service quality in a broader sense (Andreassen & Lindestad, 1998; Bloemer, de Ruyter, &Peeters, 1998; Fornell, Johnson, Anderson, Cha, & Bryant, 1996). Loyalty for service is basically formed on a positive attitude towards service providers. For railway service, if the service provider offers a quality standardized service, then the customers will be satisfied and that level of satisfaction leads them towards loyalty. Based on the above proposition following hypothesis can form:

H_7: Overall satisfaction of railway passengers has a significant impact on loyalty.

IV. Research Methods:

Survey design:

This study employed a structured questionnaire-based survey. By following some stepwise approach, the structured questionnaire was developed. First of all, for determining the measurement items an extensive literature review was carried out keeping the service quality dimensions, satisfaction and loyalty in mind. Based on the summary of the literature review, finally, eight constructs were taken into account (including overall satisfaction and loyalty) for this study. Then the final version of the questionnaire was confirmed by the authors in the English language. With the aid of Bangla language experts, the English version of the questionnaire was then translated into Bangla language. The translation was done for the reason of easy understanding of the questionnaire by the respondents. There are two sections in the final version of the questionnaire. Part-A contained the items related to demographic information of the respondents and Part-B contained the questions regarding eight constructs on the research topic measuring through a 05-point Likert scale from "strongly agree" (1) to "strongly disagree" (5).

Data collection:

All the users taking the railway service of Bangladesh, aging between 25-40 years (generation Y) constitute the population of the study. For choosing the respondents, this study adopted the purposive sampling technique. The purposive sampling technique has been employed, as this study pacts with a specific segment of railway service users from Bangladesh. In this study, Google form and printed copy questionnaires were used to collect data. The data was collected during the month of October and November 2020. A total of 493 filled-up questionnaires were collected (both google form and hard copy). From there, a total of 430 responses were finally selected for further analysis. Sixty-three questionnaires were excluded because of incomplete responses. The minimum sample size of PLS-SEM must be ten times the maximum number of structural paths indicated in a particular latent construction (Hair, Ringle, & Sarstedt, 2011). As table 2 shows that the most significant number of indicators in the measurement model for one construct is six. Therefore, the sample size passes through the minimum criteria stated by Hair et al. (2011).

Data analysis:

For the purpose of data analysis SPSS (v23) and SmartPLS (v3.2.9) were employed. As this study collected data from the primary source that's why the common method variance (CMV) was examined at the first place. For CMV analysis, a factor analysis with a fixed number of factors (one) having no rotation was applied. The CMV analysis indicated that extraction sums of squared loading are 26.81%, which is below 50%, meaning the data was not affected by the problem of CMV (Fuller, Simmering, Atinc, Atinc, & Babin, 2016; Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). After that, a Partial Least Square (PLS) based Structural Equation Modeling (SEM) was applied for testing the hypotheses drawn for the study. Compared to covariance-based structural equation modeling (CB-SEM), PLS-SEM is much preferred (Jöreskog, 1978) as PLS based SEM requires fewer restrictions in data requirements (i.e. data normality and minimum sample size) (Hair Jr, Sarstedt, Hopkins, & Kuppelwieser, 2014; Hair Jr., Hult, Ringle, & Sarstedt, 2014).

V.   Results:

This section illustrates the empirical results of the study. In the first segment, the demographic information of the respondents is provided (section 5.1). The measurement model's reliability and validity are confirmed in section 5.2.1. Lastly, in section 5.2.2, with the assistance of the structural model, the hypotheses developed in sections are being confirmed.

5.1 Demographics:

Table 1: Respondents' demography (n=430)

Category		Percentage (%)
Gender	Male	74.90
	Female	25.10
Age range	25-40 years	100.00
Occupation	Student	68.80
	Job	26.00
	Self-employed/Business	5.10
Education	Higher secondary	20.50
	Bachelor	64.90
	Masters	14.70

Source: Authors' own calculation

The respondents' demographic profile is presented in table 1. From table 1, it is seen that the majority of the respondent are male (74.90 percentage). Among the respondents, 100 percent were in the 25-40 years range because this study only takes Gen-Y respondents as a sample. From the surveyed data, most of the respondents completed their bachelor's and master's degrees. Other demographic data of the respondents are illustrated in table 1.

5.2 Analysis and results:

For the purpose of empirical data analysis and testing of hypotheses a two-step approach recommended by Anderson and Gerbing (1988) was followed. This specifies that there needs to perform reliability and validity analysis of the measurement model before performing the structural model analysis. Thus, to perform the structural model analysis, the PLS-SEM technique was applied.

5.2.1   The measurement model:

To test the strength of the measurement model, the evaluation of reliability, discriminant validity, and convergent validity is being used.

According to Osman and Sentosa (2013), convergent validity is a scale's capacity to load together as a single construct and is being used to examine each loading for each indicator block. The value for each outer loading should be higher than 0.7, indicating the loadings share more variance with their concerned latent variable than with the error variance. Although, 0.7 is considered as standard, lower limit ranging from 0.5 to 0.6 may also acceptable in exploratory research (Chin, 1998). In this analysis, the value of outer loading, illustrated in table 2, meet all the required conditions.

Table 2:Validity Measurement

Construct	Measurement Items	Loadings	VIF	Cronbach's Alpha (α)	Composite Reliability (CR)	Average Variance Extracted (AVE)
Assurance	ASS1	0.69	1.21	0.71	0.82	0.53
	ASS2	0.76	1.81			
	ASS3	0.74	1.71			
	ASS4	0.73	1.22			
Comfort	COM1	0.79	1.39	0.68	0.81	0.52
	COM2	0.76	1.43			
	COM3	0.77	1.35			

	COM4	0.53	1.13			
Convenience	CON1	0.72	1.19	0.62	0.79	0.56
	CON2	0.67	1.23			
	CON3	0.85	1.25			
Empathy and Responsiveness	ER1	0.69	1.52	0.83	0.88	0.55
	ER2	0.74	1.75			
	ER3	0.81	2.30			
	ER4	0.78	2.03			
	ER5	0.69	1.60			
	ER6	0.73	1.69			
Loyalty	LOY1	0.72	1.69	0.89	0.91	0.64
	LOY2	0.82	2.43			
	LOY3	0.84	2.62			
	LOY4	0.79	2.29			
	LOY5	0.82	2.40			
	LOY6	0.79	1.99			
Overall Satisfaction	OS1	0.83	1.53	0.74	0.85	0.66
	OS2	0.80	1.46			
	OS3	0.82	1.46			
Reliability	REL1	0.73	1.60	0.69	0.81	0.51
	REL2	0.78	1.71			
	REL3	0.68	1.29			
	REL4	0.67	1.11			
Tangibility	TAN1	0.73	1.48	0.78	0.85	0.53
	TAN2	0.66	1.32			
	TAN3	0.76	1.65			
	TAN4	0.79	1.87			
	TAN5	0.71	1.53			

Source: SmartPLS v3.2.9 output

For evaluating the severity of collinearity, the Variance Inflation Factor (VIF) is used in a formative measurement model.Hair Jr. et al. (2014) suggested that the value of VIF should be less than 05. Table 2 of this study, indicates that VIF values of measurement items are in the satisfactory range (less than 03).

The value of Cronbach's Alpha (α) is typically used for measuring internal consistency. The range for Cronbach's α is from 0 to 1. With a higher valuerepresenting larger internal consistency (and ultimately reliability).Cronbach's α, less than 0.5 is considered unacceptable. Hair Jr. et al. (2014) identified that Cronbach's Alpha value should be above 0.70, but in exploratory research, a value ranging from 0.6 to 0.7 measured acceptable. From table 2, all the values of Cronbach's Alpha are in a satisfactory range.

For measuring reliability, Composite Reliability (CR) has been considered as another indicator. The value for CR ranging from 0 to 1, where higher values representing greater reliability level. Values greater than 0.7 can be considered as satisfactory(Fornell & Larcker, 1981; Hair Jr. et al., 2014). From table 2, it can be seen that the value for CR is in the acceptable range. The other measurement, Average Variance Extracted (AVE) is a standard measure to determine the convergent validity of the construction level. AVE value of 0.50 or higher specifies that, on average. Conversely, an AVE of less than 0.50 indicates that, on average, more error remains in the items than the variance explained by the construct (Hair Jr. et al., 2014). AVE value calculated for this study illustrated in table 2 which indicates that AVE values of measurement items are in the acceptable range.

Table 3: FornellLarcker Criterion for measuring discriminant validity

	1	2	3	4	5	6	7	8
Assurance	*0.73*							
Comfort	0.41	*0.72*						

Convenience	0.28	0.24	*0.75*					
Empathy and Responsiveness	0.58	0.34	0.41	*0.74*				
Loyalty	0.34	0.40	0.14	0.27	*0.80*			
Overall Satisfaction	0.53	0.45	0.32	0.55	0.51	*0.81*		
Reliability	0.34	0.28	0.43	0.52	0.11	0.44	*0.72*	
Tangibility	0.53	0.41	0.31	0.57	0.20	0.53	0.58	*0.73*

Source: SmartPLS v3.2.9 output

According to Fornell and Larcker (1981), for measuring discriminant validity Fornell-Larcker's criterion is widely used which is a measure that comparisons the square root of each construct's average variance extracted with its correlations with all other constructs in the model (Fornell & Larcker, 1981). According to Hair Jr. et al. (2014) "*the Fornell-Larcker criterion also suggests that the constructs discriminant well because the square root of the AVE of each reflective construct is larger than the correlations with the remaining constructs in the model.*" Hair Jr. et al. (2014) further explained that "*the Fornell-Larcker criterion compares the square root of the AVE values with the latent variable correlations. Specifically, the square root of each construct's AVE should be greater than its highest correlation with any other construct*". From table 3, it is seen that all the constructs met the required criteria.

Table 4: HTMT discriminant validity criteria

	1	2	3	4	5	6	7	8
Assurance								
Comfort	0.57							
Convenience	0.38	0.39						
Empathy and Responsiveness	0.73	0.46	0.56					
Loyalty	0.41	0.49	0.19	0.31				
Overall Satisfaction	0.70	0.62	0.45	0.70	0.63			
Reliability	0.45	0.40	0.66	0.69	0.15	0.59		
Tangibility	0.69	0.58	0.44	0.71	0.25	0.69	0.78	

Source: SmartPLS v3.2.9 output

Discriminant validly is also assessed with the Heterotrait-Monotrait ratio (HTMT) that has high power in detecting validity issues in variance-based SEM(Tak Jie & Mei Ling, 2019). According to Henseler, Ringle, and Sarstedt (2015) all the values of HTMT should be below 0.9 thresholds. From Table 4 it is found that this study fulfills all the required criteria.

5.2.2   *The structural model:*

The hypotheses developed in section 3 statistically analyzed in this section. For performing a structural model, it is essential to meet all the required criteria of the measurement model. The 5.2.1 section represents the measurement model analysis section which indicates that this study passes through all the required criteria. Thus, in this 5.2.2 section, the structural model was tested applying a 5000 sample Bootstrapping test (Tenenhaus, Vinzi, Chatelin, & Lauro, 2005). According to Chin (1998), the crucial criterion for evaluating the structural model is the coefficient of determination (R^2) of the endogenous latent variables. The R^2 must be above 0.2 to be considered moderate. The R^2 value of loyalty and overall satisfaction are 0.259 and 0.448, respectively (0.257 and 0.440 for R^2 adjusted value) which passes through the required minimum criteria (Hair Jr., Hult, Ringle, & Sarstedt, 2017).

The blindfolding procedure was used for the predictive capacity of the model. The predictive relevance of the model was studied through the Stone-Geisser test (Q^2) (Ali, Rasoolimanesh, Sarstedt, Ringle Christian, & Ryu, 2018; Geisser, 1974; Stone, 1974). Which revealed that loyalty and customer satisfaction's Q^2 values are, 0.162 and 0.284 respectively, since $Q^2>0$ and indicative of predictive relevance; 0.02, 0.15, 0.35 for a weak, moderate and robust degree of predictive relevance suggested by Hair Jr. et al. (2017) and Chin (2010).
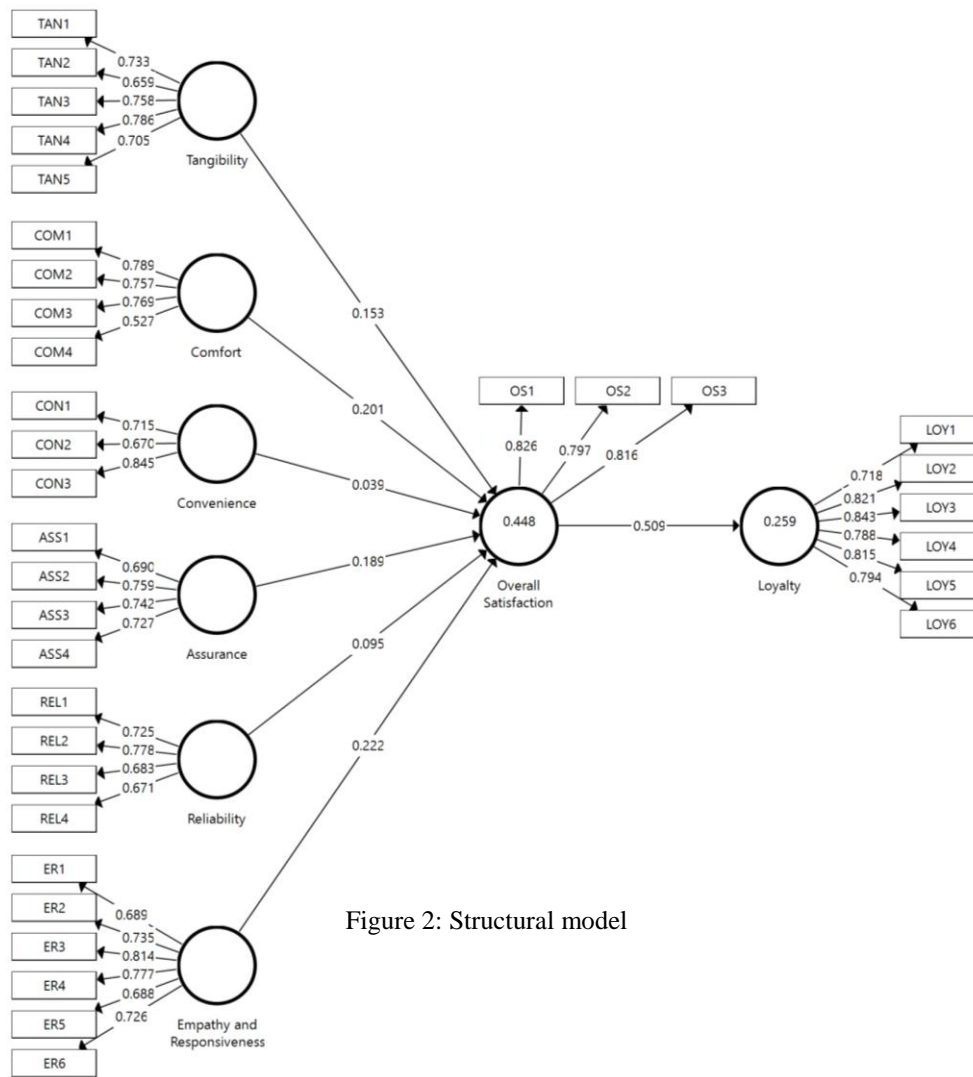
Figure 2: Structural model

Table 5: Hypotheses statistics (bootstrapping) and endogenous constructs assessment (R^2 and Q^2)

Path coefficients and bootstrapping					
Hypotheses	Paths	Beta (β)	T Statistics (|O/STDEV|)	P Values	Decision
H_1	Tangibility -> Overall Satisfaction	0.153	3.098	0.002*	Supported
H_2	Comfort -> Overall Satisfaction	0.201	4.347	0.000**	Supported
H_3	Convenience -> Overall Satisfaction	0.039	0.935	0.350	Not Supported
H_4	Assurance -> Overall Satisfaction	0.189	3.892	0.000**	Supported
H_5	Reliability -> Overall Satisfaction	0.095	1.844	0.065	Not Supported
H_6	Empathy and Responsiveness -> Overall Satisfaction	0.222	4.215	0.000**	Supported
H_7	Overall Satisfaction -> Loyalty	0.509	12.852	0.000**	Supported

[Notes: *p-value < 0.05. **p-value<.001]

[Note: T Statistics (|O/STDEV|) and P Values are computed through bootstrapping procedure with 430 cases and 5,000 samples.]

Endogenous constructs assessment

	R Square	R Square Adjusted	Q Square

| Loyalty | 0.259 | 0.257 | 0.162 |
| Overall Satisfaction | 0.448 | 0.440 | 0.284 |

Source: SmartPLS v3.2.9 output

The result shown in table 5 represents that, among the seven hypotheses, five are supported and the other two hypotheses are not supported - the β value, T Statistics, and P-value for each of the hypotheses illustrated in table 5.

VI.   Discussion and managerial implications:

This study applied the extended SERVQUAL model for identifying the dimensions of service quality affecting customer satisfaction and also the effect of customer satisfaction on the loyalty of the railway service of Bangladesh among Gen-Y. The empirical results show that in terms of tangibility, comfort, assurance, empathy and responsiveness, Gen-Y passengers are satisfied with the existing service offered by the railway authority. However, in terms of convenience and reliability, Gen-Y passengers are not satisfied with the existing service provided by the railway authority (illustrated in Table 5 with statistical detail analysis). Thus, H_1 supported at 95% confidence level and H_2, H_4, and H_6 supported at a 99% confidence level and in contrast, H_3 and H_5 were rejected at the same confidence levels. Therefore, it indicates that a higher level of service quality can lead to a higher level of satisfaction (Shafiq, 2019). Again, a higher level of satisfaction leads customers towards loyalty which can retain the old customers, assists in building word-of-mouth, and refer a new customer base. This study found that Gen-Y passengers' overall satisfaction leads them towards loyalty. That means though there is some gap that exists in terms of service quality of the railway service. However, Gen-Y passengers found railway service comfortable and cost-effective than any other mode of public transport; that's why they are getting loyal to the existing service quality provided by the Bangladesh railway. Thus, H_7 supported at a 99% confidence level. The study findings have two-fold implications. Theoretically, this study results help the researchers working in the transport service-related research to explore the customer satisfaction and loyalty related aspects in the context of the Bangladesh railway. On the other hand, the policymakers and the authority dealing with the mass transport network and railway service can know the existing scenario and sketch a better plan for the future.

VII.   Conclusion:

By applying the PLS-SEM technique, the present study makes some contribution to exploring the critical dimensions of service quality of railway service in Bangladesh. The extended SERVQUAL model reveals that tangibility, comfort, assurance and empathy, and responsiveness have a tremendous significant positive impact on building customer satisfaction whereas, convenience and reliability have not impacted on building overall customer satisfaction. Furthermore, overall customer satisfaction has a significant positive impact on building loyalty on the Gen-Y passengers for the Bangladesh railway. This research findings suggest that the dimensions which the customers value most should be taken into consideration seriously and upgrade the existing service quality so that the passengers of the railway can get better service in the future and at the same time, contributed to foster the economic growth of the country.

VIII.   Limitations and future research direction:

For performing a PLS-SEM analysis, this study fulfills the minimum number of respondent's criteria, but it would be better to have more and diverse respondents all around the country. As most of the respondents are from Tangail and Dhaka districts of Bangladesh, thus, the generalization of the results may not be possible. Hence, the upcoming researchers interested in this topic may consider performing a moderating effect analysis on customer satisfaction and loyalty to have much more in-depth knowledge in this field.

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Appendix 1: Measurement items

Convenience	CON1	I feel that ticketing office hours are convenient and tickets are easy to buy for me
	CON2	I can get enough travel information from different online platforms (i.e., webpage, online customer care, mobile app, social media, etc.) provided by the railway authority
	CON3	I always get available online (webpage, mobile app, etc.) tickets
Reliability	REL1	I think that railway authorities maintain the train frequency in accordance with the schedule
	REL2	I feel that I get on-time train service
	REL3	I think that the price of the ticket and food on the train is reasonable
	REL4	I think that there is a good frequency of train to meet my needs
Assurance	ASS1	I think that the staff has adequate knowledge related to railway service and can give me information regarding train delay
	ASS2	I feel safe at the station
	ASS3	I feel safe on the train
	ASS4	I can easily move at night from the station with safety
Empathy and Responsiveness	ER1	I feel that the railway staff behave with me gently
	ER2	I think that railway staff understand my need in the time of inquires
	ER3	I feel that the railway staff are always ready to help me
	ER4	I can get prompt service from the staff
	ER5	I think the Traveling Ticket Examiner (TTE) of the train is fair in his duties
	ER6	I think that railway staff take my claim in a caring manner
Tangibility	TAN1	I think that the station is neat and clean
	TAN2	I think that the train is in modern appearances
	TAN3	I think that there is adequate train as per the demand of passenger
	TAN4	I can get enough restroom in the railway station
	TAN5	I feel that the washroom in the railway station is neat and clean
Comfort	COM1	I feel comfortable sitting on the train
	COM2	I think that the ventilation system inside the train is adequate
	COM3	I feel enjoyment while traveling on the train
	COM4	I can get an available space to go to the washroom or prayer room
Overall Satisfaction	OS1	I think that Railway provide excellent service to its passengers
	OS2	I think that Railway is a reliable transport provider
	OS3	I feel that I am satisfied with the railway service
Loyalty	LOY1	I will continue traveling by train in the future
	LOY2	I would like to travel by train rather than any other transport service
	LOY3	I would consider the railway as my first choice for traveling
	LOY4	I would like to continue to use the train service even if the cost higher than other transport services
	LOY5	I would like to travel by train even if the price is the same as other transport services
	LOY6	I will recommend my relatives and friends to travel by train