



## ANALYSIS OF SERVICE QUALITY VIS-A -VIS SERVICE COST IN PRIVATE HEALTHCARE SECTOR-A CASE STUDY OF CHITTAGONG, BANGLADESH.

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### Abstract

Disparities in the public sector motivate individuals to seek healthcare in the private sector even though the real cost exceeds their expectations in Bangladesh. Performance standard and service quality are critical concerns while considering the situation. After observing a lack of research, the researchers initiated this study to analyze the significant cost differences within the private healthcare industry in Chittagong, Bangladesh. The study also intends to apply a SERVQUAL framework to assess customer experiences in private healthcare sector in the mentioned area. The primary data was collected through a customized questionnaire. The findings will contribute to policymaking as well as benefit the public health stakeholders, healthcare workers, sincere learners, practitioners, and academia.

**Keywords:** Actual cost, Expected cost, SERVQUAL, Empathy, SEM (Structural equation model)

### Introduction:

The pluralistic aspect of the Bangladeshi health care system refers to the existence of different actors with diverse roles and responsibilities within a mixed system of medical practices. Government, the private sector, non-governmental organizations, and donor organizations are the four key actors that define the form and functioning of the wider health system. The government, the business sector, and nongovernmental groups are involved in the delivery of services, finance, and employment of health staff. The private sector employs more practitioners, including traditional healers, untrained allopaths, and government-employed physicians, due to its poor infrastructure. Private sector infrastructure in this region consists solely of medical schools, hospitals, and clinics of various kinds with differentiated qualities.

Private sector service coverage is more extensive than public sector responsibilities. The private sector is intended to offer superior service.

Globally, the overarching objective of all healthcare systems is to provide patients with medical care of the highest quality (Jonkitz et. al.,2022). The World Health Organization (WHO) states that

hospitals are a crucial component of a healthcare system that must continuously provide services for both acute and complex diseases (Haq, Alam, Mollick, & Kabir, 2022). In the private healthcare industry, the most notable term is service quality. It is now undeniable that measuring, evaluating, and monitoring service quality in the healthcare industry is crucial (Kalaja, 2000). As early as the 1980s, service providers prioritized determining the quality of their services. As Peprah and Atarah (2014) highlighted, to increase the service quality dimensions, healthcare practitioners must access and identify patients' preferences amid the restricted healthcare resources. The possibility that a hospital will have a better hospital image and winning patients' loyalty is higher if patient satisfaction with the hospital is increased (Asnawi et al, 2019) As a result, the hospital will be more financially successful (Rahim, Ibrahim, Musa, Chua, & Yaacob, 2021). Even in Chittagong, the commercial center of Bangladesh, health care is a rapidly expanding industry that has attracted a great deal of attention from scholars and healthcare practitioners throughout the world. The SERVQUAL model, an empirical model created by Zeithaml, Parasuraman, and Berry, categorizes consumers' needs for service quality into five categories. These parameters highlight the fundamental elements that underlie patient contentment. Because of this, the SERVQUAL model will be utilized in this article as a method for assessing quality of the services offered.

The importance of service quality in choosing the private healthcare sector will be examined in this study. Our research will widen the focus to include multiple or all private hospitals in Bangladesh. SEM (Structural Equation Model) methodology will be used to conduct this study. To attract more investors and clients, this study will identify the major elements influencing the hospital's quality of service and provide the right recommendations to the hospital's management. In addition, the identification of the most important aspects will help the public sector as a whole boost service quality to compete with private hospitals.

### **Objectives:**

1. To determine if there is a relation between the actual and expected cost of healthcare service.
2. To identify the factor(s) that impacts the choice of private healthcare sector in Chittagong, Bangladesh using SERVQUAL and Structural Equation Modelling (SEM)

### **Literature review:**

#### **SERVQUAL:**

According to Behdioğlu, Acar, & Burhan, (2017), “the SERVQUAL method, which was developed by Parasuraman, Zeithaml, and Berry (1988) stated as one of the widely used tool to obtain customer perceptions and expectations by questionnaires in order to measure service quality.” This technique has been demonstrated to be a valid indication of healthcare service quality (Al-Neyadi, Abdallah, & Malik, 2016). According to new research. In research from Kalaja et al. (2016) found that “Although there is a dose of criticism on the validity and reliability of SERVQUAL instrument, different researchers argued that it remains a useful tool for measuring service quality and it is reliable and valid in the hospital environment”. Nyeck, Morales, Ladhari, & Pons (2002) pointed that SERVQUAL “remains the most complete attempt to conceptualize and measure service quality.” Souca (2011) stated that “it’s clear that the SERVQUAL model and its instrument are a popular choice in both the academic and the practical field.” She added that if detecting important service gaps is the primary aim of the analysis, SERVQUAL with its three-column style and gap model seems to be the most beneficial for serving the purpose. The goal of service quality in the healthcare business is to accommodate patients to a high level of utility by providing services of greater quality (Ali & Anwar, 2021).

Andaleeb (2000) using servqual method shown that better service quality is a direct result of a better incentive in the private health sector. The objective of service quality in the healthcare industry is to accommodate patients to a high standard by delivering high-quality services (Ali & Anwar, 2021).

Siddiqui, N. (2016) have also used SERVQUAL method for analyzing 400 exit patient interviews and remarked that, perceived cost is an important factor while choosing private healthcare. The score was better in case of private healthcare than in public sector. Siddiqui, S., Hamid, S., Rafique, G., Chaudhry, S. A., Ali, N., Shahab, S., & Sauerborn, R. (2002) explained that people's choice of provider depends on several factors like service fee, quality of care, access to care, perception of the provider's flexibility of illness or socioeconomic and demographic conditions of the people. Hossain et. al. (2017) demonstrated that SERVQUAL Model can work wonder to fill up the slits between the provider and receiver of service. The study recognized a positive association between service quality and customer satisfaction in healthcare service or hospital. In 2007, Andaleeb, Siddiqui and Khandakar have analyzed in their secondary research that there are few studies that have contributed to measuring patients benefit and emphasized on the service quality provided by the health workers for proper measurement. Moreover, doctors service orientation is found to be an important factor while assessing patients benefit. Ahmed, Tarique, and Arif (2017) compared the public and private healthcare sectors with a focus on service quality, patient contentment, and loyalty and found that the private sector performed higher on self-administered questionnaires with 204 significant replies. Many researchers used the SERVQUAL model (Canel and Fletcher, 2001; Lam, 1997; Donthu, 1991; Sohail, 2003; Andaleeb, 2001, 2007) to evaluate health care service quality. Siddiqua and Choudhury (2014) used a modified SERVQUAL survey to assess the quality of service in Dhaka's private hospitals.

The acronym SERVQUAL refers to a series of questions often used to measure service quality. The components that will be used to evaluate service quality (SERVQUAL) in this study include reliability, assurance, tangibles, responsiveness, and empathy.

#### **Reliability:**

According to Al-Damen (2017), gauging the reliability of a healthcare provider is essential since it shows the employees' trustworthiness to the patient. Patients are more likely to be satisfied with the services provided by healthcare professionals if they have built trust in the services they received as customers (Upayadhi et al., 2019). Reliability is the capacity to offer responsible and correct service to customers (Al-Neyadi et al., 2016).

#### **Assurance:**

Assurance is the willingness and capacity of staff to instill trust and confidence in patients (Al-Neyadi et al., 2016). This involves the healthcare worker's ability to communicate courtesy to patients (Al-Damen, 2017). Training and testing are necessary to ensure that healthcare professionals are competent in this field. As a result of the healthcare provider's assurance, patients are more inclined to adhere to the doctors' advice (Tripathi and Siddiqui, 2018).

#### **Tangibility:**

Tangibles are the facilities that have visual appearance. Like the pathological equipment, ICU bed with advanced technologies. It is important that the provider maintains these tangibles to serve patients with the highest quality services (Al-Damen, 2017). Important tangibles make it easier for medical providers to give certain services as compared to situations where insufficient tangibles are available (Tripathi and Siddiqui, 2018).

#### **Empathy:**

Empathy refers to the ability of a healthcare provider to deliver personalized care to a patient (Al-Neyadi et al., 2016). Several studies, like those by Gupta (2016) and Tripathi and Siddiqui (2018), shed light on the significance of enhancing empathy in patient care.

### **Responsiveness:**

A healthcare provider's responsiveness is their readiness to assist and deliver services to patients (Al-Neyadi et al.,2016). Gupta (2016) emphasized the significance of responsiveness in terms of patient satisfaction, while emphasizing the need to be more empathic to provide a sense of ease. According to research conducted by Midor (2018), patient evaluations indicate that responsiveness is the most difficult component to enhance.

### **Structural equation model:**

SEM is a framework consisting of regression analysis, route analysis, factor analysis and also equipped to solve simultaneous econometric equations, and latent growth curve models (Bollen,1989). Variables may be characterized using factor analysis based on their interrelationships. It is possible to believe that variables within a certain group are highly correlated among themselves but have relatively low correlations with variables from a different group. Consequently, it may be claimed that each group of variables reflects a single underlying concept (or factor) that is responsible for the observed correlations (Suleiman et al., 2019).

“SEM is a powerful statistical technique that combines measurement model or confirmatory factor analysis (CFA) and structural model into a simultaneous statistical test” (Hoe,2008).

Chin (1998) has observed that the model is flexible enough to model the relationships among multiple predictor and criterion variables. According to Tang et. al. (2001) “SEM estimates the unknown coefficients in a set of linear structural equations. Variables in the equation system are usually directly observed variables, and unmeasured latent variables that are not observed but relate to observed variables.”. Bentler & Stein (1992) analyzed that a modern statistical method that contributes in the evaluation of causal hypotheses on a set of intercorrelated nonexperimental data is named as Structural equation modelling (SEM). Kusrkar et al. (2013) have used SEM and found that relative autonomous motivation is related positively with academic performance while academic performance is the result of deep strategy and higher effort towards study. Baker (2007) tested Locker's (1988) multidimensional model of oral health with SEM model with empirical evidence and data from UK dental health survey and found all the direct pathways hypothesized to be significant. Miao et al. (2018) have identified patient value dimensions in healthcare and their relationships with patient satisfaction and loyalty. Xie et al. (2019) observed that, the level of health literacy was substantially related to demographic variables (age, BMI, and residency) and socioeconomic position (i.e., monthly income, occupation, and education level). A case study been conducted in two hospitals in Shanghai, China. Four value dimensions as economic value, health value, fair value, and supplemental value have been identified and the structural equation model used to inspect the relationships between patient value.

### **Methodology**

This is a cross-sectional study. Clustered systematic random sampling is adopted depending on the maximum number of patients served and the maximum number of service types offered by the hospitals. For the study, the following five renowned private hospitals were selected: Max Hospital Limited, National Hospital Pvt. Ltd., Chittagong Metropolitan Hospital, Bangabandhu Memorial Hospital - BBMH, and Chevron Hospital. Four hundred questionnaires were distributed to respondents, including patients or their attendants, who have experienced the quality of private healthcare services in the above hospitals. The questionnaire was divided into two sections, one pertaining to respondent demographics (gender, age, education level, and income group) and the other containing the 21-item SERVQUAL questionnaire. Confirmatory factor analysis (CFA) and SEM (Structural Equation model) was done using **SPSS 21** and **AMOS 25**.

**Data Analysis:**

**Table 1: Socio-Demographic profile of respondents**

Variables	Criteria	N	(N %)
Age	0-20	30	10.0%
	<b>20-30</b>	<b>133</b>	<b>44.3%</b>
	30-40	48	16.0%
	40-50	33	11.0%
	50-60	30	10.0%
	> 60	26	8.7%
Gender	Male	142	47.3%
	<b>Female</b>	<b>158</b>	<b>52.7%</b>
Educational Qualification	Below SSC	41	13.7%
	SSC	35	11.7%
	HSC	68	22.7%
	<b>Honors</b>	<b>85</b>	<b>28.4%</b>
	Masters	48	16.1%
	Above	22	7.4%
Income (Monthly)	Below 10000	67	22.5%
	10000-20000	48	16.1%
	20000-30000	66	22.1%
	<b>40000-50000</b>	<b>87</b>	<b>29.2%</b>
	Above 50000	30	10.1%

The age distribution of respondents indicates that the majority (44.3%) are between the ages of 20 and 30. 8.7% fewer responders are older than 60 years of age. The majority age group suggests that most respondents are young and knowledgeable about contemporary medical technologies and services. Consequently, this age group may evaluate the service quality of private hospitals in accordance with modern standards. In addition, there is evidence that women who require a c-section for childbirth turn to the private hospital sector for rapid pre and neonatal services, the majority of whom are young first-time mothers or instances requiring intensive post-operative care. The fact that male respondents are 47.3% of the total corresponding respondents and major percentage of female respondents in the total indicates that, according to the gender group, female patients prefer the services of the private healthcare sector and frequently support as an attendee. 44.5 percent of respondents hold a bachelor’s and master’s degree; thus, approximately 45 percent of respondents have attained higher education. As a result of this subset of respondents realizing the survey questions and providing accurate responses, our research will contain a certain proportion of very accurate data.

In Chittagong, Bangladesh, it is abundantly obvious that most people who prefer private healthcare fall into the economic bracket of 40,000 to 50,000 taka. The group with the second-highest income is those with a monthly income of less than 10,000 Bangladeshi taka, which means that for crucial operations and post-operative care, those with a yearly income of less than 10,000 Bangladeshi taka are frequently forced to use the private healthcare sector. In Bangladesh, the public healthcare industry is frequently plagued with absenteeism, corruption, insufficient tangible current facilities, untrained employees, a lack of empathy and rapid response, and access is frequently denied due to a lack of resources.

**Table 2 & 3: Actual cost vs. Expected cost**

Statistical analysis: T-test for Paired samples							
		Mean	N	SD	Std. Error Mean		
AC vs EC	Actual Cost	65301.0067	298	98886.69722	5728.35257		
	Expected Cost	56022.8188	298	91663.64485	5309.93238		
T test for Paired Samples							
Pair		Mean	Standard Deviation	Standard Error Mean	t	df	Sig. (2-tailed)
Actual Cost - Expected Cost		9278.18792	49502.82474	2867.62164	3.235	297	<b>0.001&lt;0.05</b>

The value of actual cost-expected cost that to measure service quality in paired t-test is significant at 10% level of significance meaning there is significant gap in Actual cost and expected cost. In Bangladesh, the out-of-pocket expenditure is 64% of the total healthcare expenditure. They must incur more cost for their requirement of healthcare if they need to avail the service from the private healthcare sector. As we have previously mentioned that the accessibility and availability is poor in the public sector. It is to mention that there are two to three of them which are unable to provide prompt and quality service at lowest possible time. In a word unable to fulfill the demand for emergency care needed as per the need of the patients. This table demonstrates that the actual costs incurred by various income groups vary significantly. According to the study, the largest proportion of respondents fall within the income bracket of 40,000 to 50,000 Bangladeshi taka, and the second largest proportion falls within the income bracket of less than 10,000 Bangladeshi taka. Here, the table demonstrates that there is a significant difference between the actual costs incurred by the 40000-50000 income group and the actual costs incurred by all other income groups below 40000. Extremely large mean differences exist. Again, affordability or the ability to pay is the prime concern. According to the respondents, due to the higher quality of services, patients with higher incomes always seek care in the private healthcare sector, whereas those with lower incomes prefer the private sector only when their needs are particularly great; otherwise, they prefer the public sector. Consequently, it can be stated that individuals in Chattogram, Bangladesh are availing the service from the private healthcare sector despite the significant disparity between actual and expected costs only because of the quality of the service. The study then attempted to analyze the various SERVQUAL attributes to determine which attribute or attributes significantly contribute to service quality and divert patients to the private healthcare sector.

**Table 4: Mean difference in actual and expected cost**

LSD		Actual Cost			Expected Cost		
(I) Income (Monthly)		Mean Difference (I-J)	Std. Error	Sig.	Mean Difference (I-J)	Std. Error	Sig.
<b>Below 10000</b>	40000-50000	<b>-46536.78161*</b>	15861.010	0.004	<b>-36223.96110*</b>	14977.753	0.016
	10000-20000	<b>-40526.36494*</b>	17545.031	0.022			
	20000-30000	<b>-37615.56949*</b>	15928.748	0.019			
<b>40000-50000</b>	Below 10000	<b>46536.78161*</b>	15861.010	0.004	<b>36223.96110*</b>	14977.753	0.016
	10000-20000	<b>40526.36494*</b>	17545.031	0.022	12622.198	16425.849	0.443
	20000-30000	<b>37615.56949*</b>	15928.748	0.019	28632.236	14912.667	0.056

\*. The mean difference is significant at the 0.05 level.

The F-test reveals a p-value <.05 from the table, indicating that there is a significant difference in actual costs between income groups, but no significant difference in expected costs. As a possible explanation, it can be noted that people with higher incomes do not appear to request discounts because the price is already within their ability to pay. Even though hospitals are profit-driven, the low-income population may receive discounts on humanitarian grounds or if they have acquaintances in the administration. And the reason why there are no significant differences in expected cost among different income ranges is because all respondents have the same opinion about what should be the cost of the services. Surprisingly, these values are nearly identical regardless of income group for the same type of delivered services.

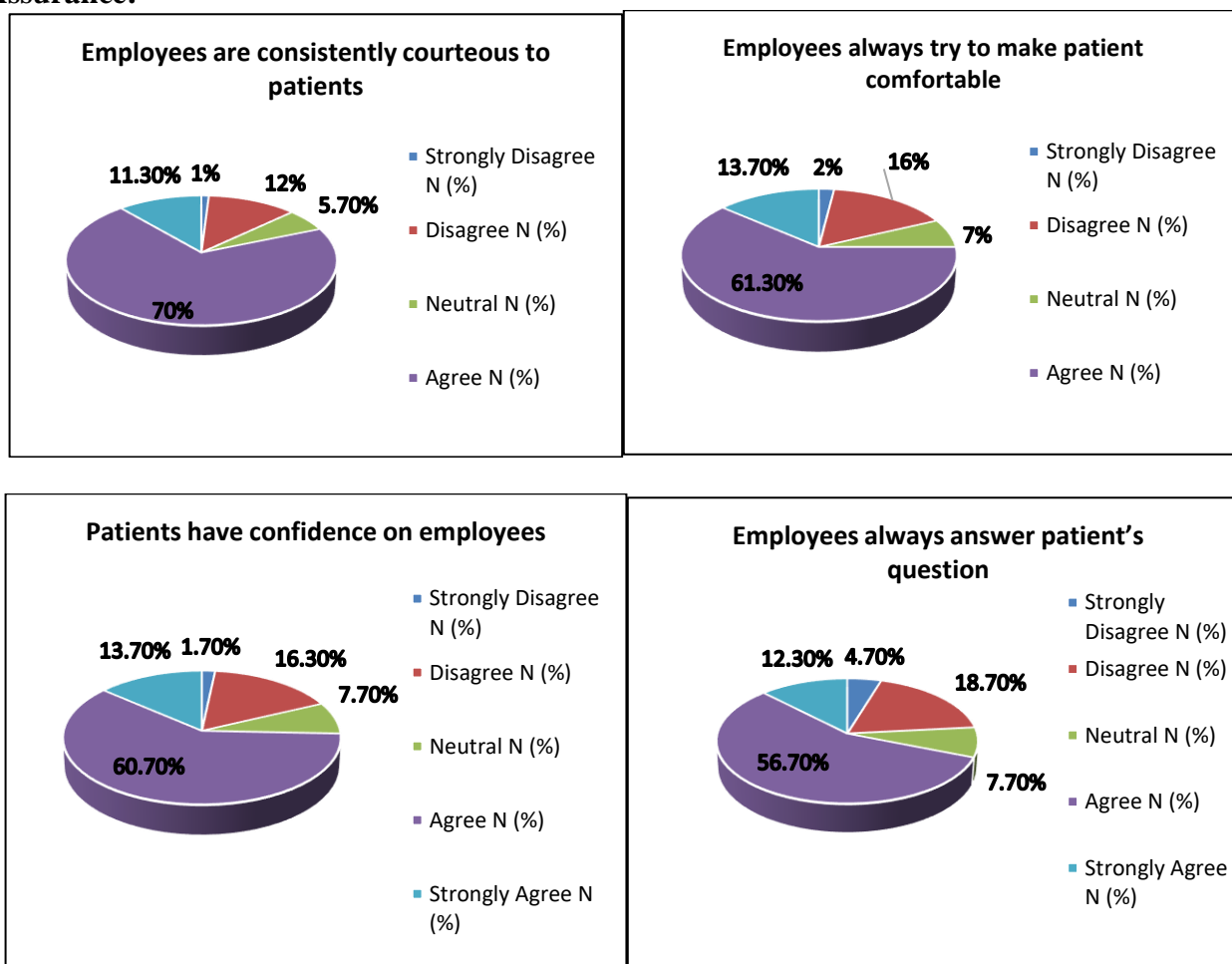
**Percentage responses to SERVQUAL factors:**

**Table 5: Responses to Reliability**

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	N (%)	N (%)	N (%)	N (%)	N (%)
Hospital provide promised services	3(1%)	13(4.3%)	18(6%)	<b>244(81.3%)</b>	<b>22(7.3%)</b>
Sincere in solving problems	1(0.3%)	23(7.7%)	12(4%)	<b>214(71.3%)</b>	<b>50(16.7%)</b>
Performs service right at first time	6(2%)	34(11.3%)	29(9.7%)	<b>178(59.3%)</b>	<b>53(17.7%)</b>
Provides service at promised time	5(1.7%)	44(14.7%)	16(5.3%)	<b>190(63.3%)</b>	45(15%)
Maintains error-free record	4(1.3%)	34(11.3%)	27(9%)	<b>200(66.7%)</b>	35(11.7%)

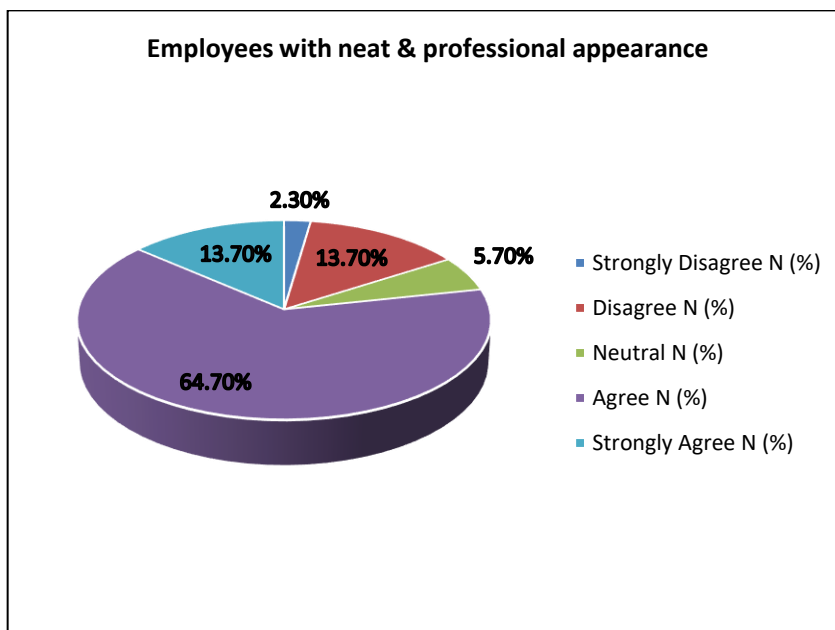
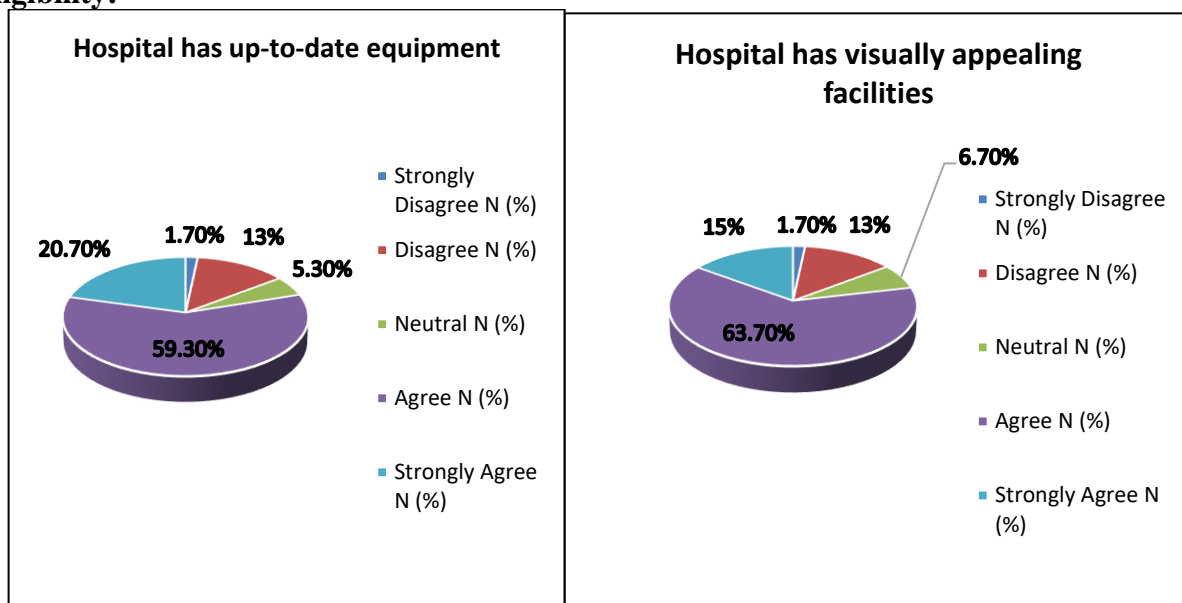
In response to reliability factors, 244 respondents (81.3% agreed) and 22 respondents (7.3%) strongly agreed that hospitals deliver services as promised. This indicates that private hospitals are more committed to delivering promised services. From the second factor, it is evident that private hospitals in Chittagong are very sincere in solving any type of problem regarding the patients as 71.3% of respondents agreed and 16.7% strongly agreed to it. The analysis reveals that 178 respondents (59.3%) have agreed and 53 (17%) have strongly agreed that first-time private hospital service demonstrates clear sincerity. 190 respondents (63.3% agreed) and 45 respondents (15%) indicated that they can access the service at the promised time, indicating that the average waiting time is extremely short. 200 respondents, or 66.7% of the total respondents, agreed that hospitals maintain records with sufficient sincerity, and 35 respondents (11.7%) responded strongly to it.

**Assurance:**



In response to Assurance factors 210 respondents (70%) agreed that employees are consistently courteous to patients and 34 respondents (11.3%) have strongly agreed to the fact. That means private hospital employees are sincere in maintaining courtesy. From the second factor this is obvious that private hospitals in Chittagong are very sincere in comforting the patients according to their need where 61.3% has agreed and 13.7% has strongly agreed to the fact. In answering the queries of the patients, the analysis is showing that 170 respondents (56.7%) have agreed and 37(12.3%) have strongly agreed that reflects clear sincerity.182 respondents (60.7%) agreed, with 41 (13.7%) indicating that the patients have sufficient faith in the personnel.

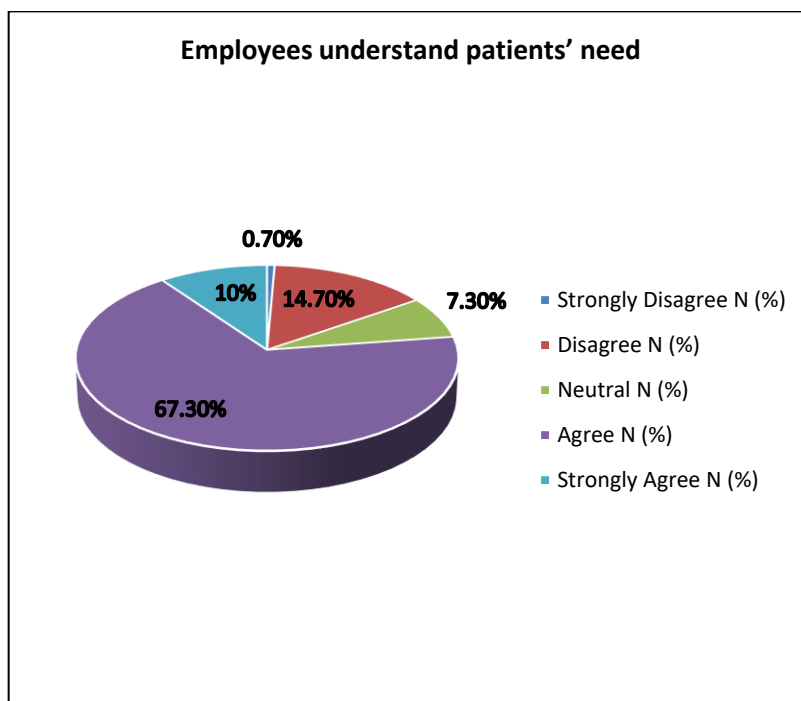
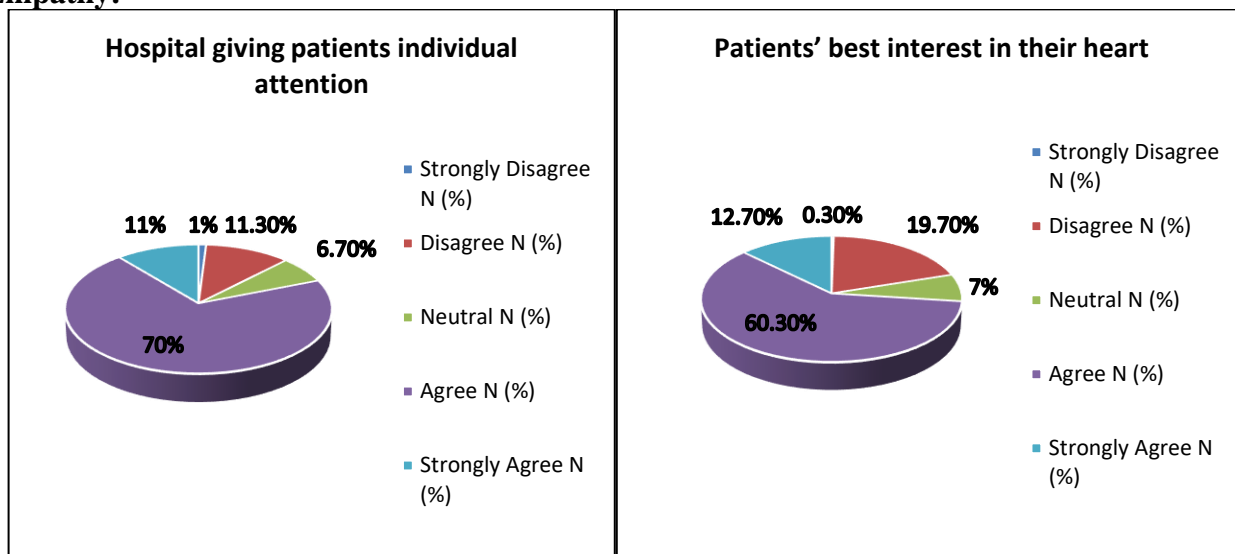
**Tangibility:**



As visible amenities are a major component in attracting patients' attention, tangibility is given great consideration. In response to tangibility considerations, 178 respondents (59.3%) agreed that the hospital is equipped with modern technology, and 62 respondents (20.7%) highly agreed. This indicates that most private hospitals have modern equipment. Based on the second aspect, it is evident that private hospitals in Chittagong have visually appealing facilities to meet the special needs of their patients, as 63.7% of 191 respondents and 15% of 45 respondents strongly agree with this statement. In maintaining professional hygiene and dress code, the analysis reveals that 194 respondents (64.7%) have agreed and 41 (13.7%) have strongly agreed, indicating that there is room for improvement on the part of the authority, given that, when asked verbally, patients cited hygiene as a key factor in selecting the private healthcare sector. 173 respondents (57.7%) agreed, while 50 respondents (16.0%) indicated that hospitals have enticing resources and equipment.

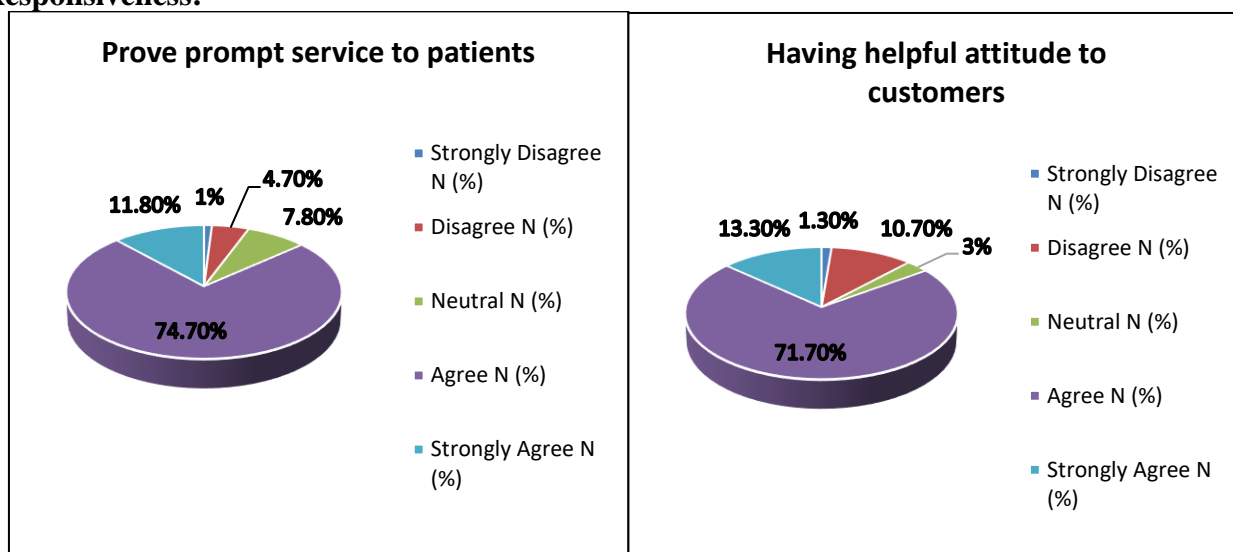


**Empathy:**



In response to empathy criteria, 210 respondents (70%) agreed that hospitals provide patients with individualized care, while 33 respondents (11%) strongly agreed with this statement. This indicates that most private hospitals (physicians, staff, and technicians) provide individualized care for patients. Based on the second aspect, it is evident that private hospitals in Chittagong work in the best interest of their patients, with 181 respondents (60.3%) agreeing and 11% (33 respondents) strongly agreeing with this statement. The study reveals that 202 respondents (67.3%) agree and 30 (10%) strongly agree that private hospitals are empathetic enough towards patients in terms of addressing their needs. This indicates that private hospitals are sufficiently empathetic towards patients. It is also a major factor in selecting the private healthcare sector. 176 respondents (58.9%) agreed, and 56 respondents (18.7%) strongly agreed, indicating that hospitals provide convenient business hours for patients.

**Responsiveness:**



It is evident that private hospitals in Chittagong do their utmost to give up-to-date information, since 208 respondents (69.6%) agreed and 58 respondents (19.4%) highly agreed. In response to responsiveness factors, 221 respondents (74.7% agreed) and 35 respondents (11.8%) strongly agreed that hospitals provide prompt services to patients which is the maximum response rate under this attribute. Therefore, the patients are more inclined toward private hospitals, as most private hospitals provide rapid services. In recognizing patients' particular needs, the analysis reveals that 215 respondents (71.7%) agreed and 40 (13.3%) strongly agreed that private hospitals are extremely helpful to their clients. 165 respondents (55%) agreed, and 32 respondents (10.7%) strongly agreed, indicating that hospitals are sincere enough to always obey with patients' requests.

Overall, patients have agreed that providing fast service to patients, offering patients personalized attention, maintaining a tidy and clean professional appearance, and delivering services as promised are the most crucial aspects of hospitals. Literally, these were the most important factors to them in SERVQUAL, which indicates the quality of service in the private healthcare sector in Chittagong, Bangladesh.

**Table: Means of differences: perception (P) of the received service and expectations (E) for the services in private healthcare sector**

Statements	Servqual gap score (Perceived-Expected)
<b>Tangibility</b>	
Hospital has visually appealing materials	-1.023
<b>Empathy</b>	
Patients' best interest in their heart	-1.063
<b>Responsiveness</b>	
Always carry out patient's request	-1.200

\*(researchers own study)

If gap score is calculated for service quality as  $quality = \sum perceived - expected$ , the following statements revealed the highest disparity between perceptions and expectations: Patients' best interest in their heart (15), Hospital has visually appealing materials (13), Always carry out patient's request (21). These indicate that these areas should be more emphasized in order to maintain the quality of service in the private healthcare sector in Chittagong, Bangladesh.

**Reliability of the data:**

Perception	Cronbach's Alpha	Standardized Cronbach's Alpha	No.of Items
All Items	0.877	0.880	21
Reliability	0.747	0.755	5
Assurance	0.800	0.803	4
Tangibility	0.582	0.585	4
Empathy	0.624	0.622	4
Responsiveness	0.703	0.721	4

Expectation	Cronbach's Alpha	Standardized Cronbach's Alpha	No. of Items
All Items	0.934	0.941	21
Reliability	0.740	0.747	5
Assurance	0.784	0.786	4
Tangibility	0.755	0.756	4
Empathy	0.741	0.743	4
Responsiveness	0.732	0.759	4

Table displays the results of the Cronbach Alpha and standardized Cronbach Alpha tests. As can be seen, the obtained findings fall within the expected range of (0.7-0.9). Such numbers indicate that the results for each attribute category are satisfactory and that all answers can be studied further. The low value of alpha for tangibility and empathy may be due to poor interrelationships between items or heterogeneous constructs.

	Reliability Statistic – Measure of Service Quality	Cronbach's Alpha if Item Deleted
Reliability	Hospital provide service as promised	0.872
	Sincerely solves problems	0.871
	Performs service right at first time	0.871
	Provides service at promised time	0.869
	Maintains error-free record	0.871
Assurance	Employees are consistently courteous to patients	0.867
	Employees always try to make patient comfortable	0.871
	Employees always answer patient's question	0.868
	Patients have confidence on employees	0.864
Tangibility	Hospital has up-to-date equipment	0.880
	Hospital has visually appealing facilities	0.876
	Employees with neat & professional appearance	0.878
	Hospital has visually appealing materials	0.876
	Hospital giving patients individual attention	0.870
Empathy	Patients' best interest in their heart	0.870
	Employees understand patients' need	0.873
	Hospitals' business hour convenient to patients	0.873
	Provide patients update information	0.875
Responsiveness	Prove prompt service to patients	0.871
	Having helpful attitude to customers	0.870
	Always carry out patient's request	0.868

Alpha value greater than 0.7 are acceptable evidence of dimension reliability. In this case, Alpha values for the overall scale is high.

**Factor analysis eligibility test using reliability:**

Reliability Test		
Kaiser-Meyer-Olkin results for adequacy		<b>0.869</b>
	Approx. Chi-Square	2078.757
Bartlett's Test of Sphericity	df	210
	Sig.	<b>0.000</b>

For Kaiser-Meyer-Olkin, a score of > 0.9 is excellent, > 0.8 is meritorious, > 0.7 is average, > 0.6 is mediocre, > 0.5 is poor, and 0.5 is undesirable. Dimensions of Sampling adequacy indicates that factor analysis is applicable to these data. This study's data produced a significance value of 0.00, indicating that they were suitable for factor analysis.

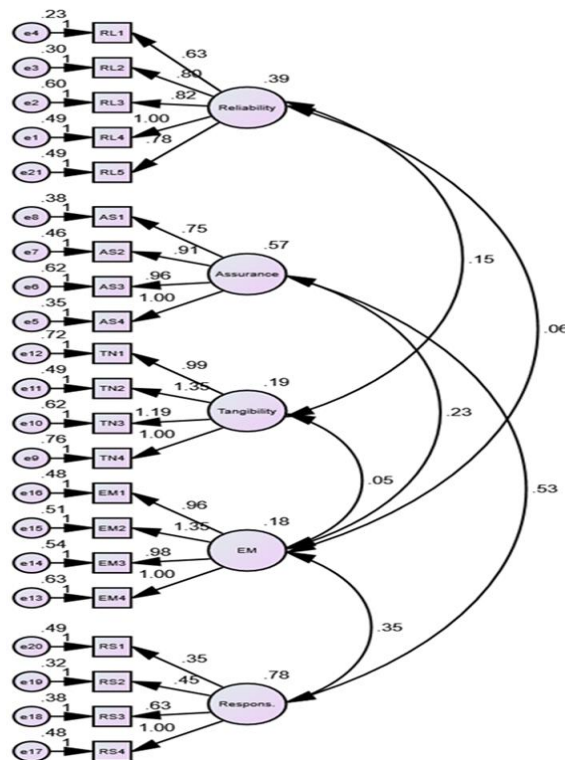
**Structural Equation Modeling (SEM): CFA**

Name of the test of significance	value	type	References
Chi-square	633.243	Highly significant	
CMIN/DF	3.460<5	a reasonable fit.	(Marsh & Hocevar, 1985)
GFI	.839~1	a good fit.	(Tanaka & Huba, 1985).
AGFI	.797~0.90		
RMSEA	.091	Borderline fit	(MacCallum et al, 1996)
TLI	.736	a perfect fit.	

**Results from SEM:**

Relation of Attributes			Significance level
Assurance	<-->	Empathy	***
Tangibility	<-->	Empathy	.002
Empathy	<-->	Responsiveness	***
Reliability	<-->	Empathy	.003
Assurance	<-->	Responsiveness	***
Reliability	<-->	Tangibility	***
For females			
Tangibility	< --	Empathy	***

This covariance table represents the correlation between the model's components. Based on the results, we can conclude that most of the components relate to empathy (Assurance, Tangibility and Reliability) Assurance has a strong correlation with both Responsiveness and Empathy. Tangibility has a significant correlation with dependability. Therefore, Empathy is practically correlated with three dimensions, implying that it may be the most significant aspect when measuring the servqual in the private healthcare market in Chittagong, Bangladesh. consumer satisfaction is positively affected by the provider's empathy and relationship with the customer (Fitzpatrick, 1991;Zarei, Arab, Froushani, Rashidian, & Ghazi Tabatabaei, 2012). While analyzed for the females who covers more than 50% of the respondents it showed there is a causal relationship between tangibility and empathy. Empathy in using tangible facilities contribute to service quality.



Graph: Path diagram of SERVQUAL SEM Analysis

### Conclusion:

1. As a result of a substandard healthcare system, corruption, and redundancy, public hospital personnel are unable to give patients with the finest medical care (Chaudhury et al., 2006; Andaleeb, 2000). Even if private hospital administrators in Bangladesh charge more than the expected costs, the personnel ensures that quality health care is provided.
2. It is noteworthy that healthcare providers in Bangladesh are sometimes more concerned with the cost of service than with its quality (Mezgebe, 2020). According to them, people in Bangladesh are reluctant to pay extra for superior service. But in our study, we found that people are inclined to private healthcare sector for better quality of service despite huge cost they must incur.
3. By recognizing the strengths and weaknesses of service quality, providers may allocate resources to services more efficiently and ultimately, the quality of these services will be enhanced.
4. To improve the results of the analysis, additional samples might be employed. A greater sample size would yield more reliable results. Additionally, additional study might be undertaken to investigate other districts in Bangladesh.
5. Empathy is essential for leading healthcare workers to be emotionally responsive to a patient's situation, offer the patient with more accurate diagnoses, and speed up the healing process, hence enhancing healthcare service delivery. Additionally, empathy boosts healthcare providers' concern for their patients (Kuo, Cheng, Chen, Livneh, & Tsai, 2011; Aw, Ilies, & De Pater, 2020). According to the derived results it is the most significant aspect of SERVQUAL. For females also empathy is significantly related to tangibility and can be considered as the most important aspect for them too.

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