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## The Significance of Accreditation, Services Quality, Green Standards and Product Superiority on Customer Loyalty, With Mediating Role of Brand Image and Customer Trust; A Case of Healthcare Quality in Hospitals of Pakistan

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ARTICLE DETAILS	ABSTRACT
<p><b>History</b> Revised format: February 2020 Available Online: March 2020</p>	<p>The practices of Management Accounting have not been highly adopted in developing countries. But with increased importance of these practices, firms of developing countries are motivated to adopt MAPs. In this research, MAPs align with increased importance of SMEs have been studied and provide understanding to enhance adoption of MAPs in SMEs. This study outlines the usage of MAPs in Pakistani SMEs; identify the contextual factors that affect the adoption of MAPs by SMEs and lastly explore perceived benefits and problems in adoption of these practices. A mixed methodology was used to collect data. A questionnaire with five categories of MAPs was used to examine the extent of use of MAPs by 100 SMEs of Multan from textile sector. Eight interviews were conducted to identify the factors, benefits and problems. However, the results shows that majority of respondent firms adopt traditional MAPs and other medium sized firms do more focus on contemporary MAPs. The findings of current study can be helpful and informative for practitioners and policy makers in the development of contemporary MAPs as well as provide deep insight for SMEs to enhance their business by adopting these practices.</p>
<p><b>Keywords</b> Accreditation, Brand Image, Customer Trust, Customer Loyalty, Green Hospital, Healthcare Industry, Services Quality</p>	
<p><b>JEL Classification:</b> I11, O14,</p>	

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### 1. Introduction

Standardized, secured and quality healthcare services delivery are key objectives of healthcare industry all around the world. But unfortunately health care institutions have been seen providing sub-standard and unacceptable services quality just like other industries and the service delivery of public hospitals adds insult to injury. Shabbir, Kaufmann, and Shehzad (2010) noticed that poor quality services in public

hospitals motivate patients to visit private hospitals where hospital distance, treatment affordability, therapy durations, medications, prompt service delivery by medical and paramedical staff are key factors of choosing private hospitals and these considerations are being constant due to delivery of improved health services. In Pakistan, mostly population tends to go to public or charity hospitals because treatment affordability is main concern for most of patients due to poor economic conditions.

Previous studies have acknowledged the fact that private sector provides outclass services to middle and upper-class of the country through excelling service quality and patient satisfaction and because of high trust levels as compared to public hospitals (Fatima, Malik, & Shabbir, 2018). Ujan, Bhutto, and Ismaili (2019) found that health industry in Pakistan is growing gradually from last couple of years as different institutions are paying attention on critical dimension of health (See Table 1). It is admissible fact that favorable brand image expands customer satisfaction that causes to enhance customer loyalty (Dennis, King, & Martenson, 2007).

Scholars discovered that customer trust is compelling agent between business operations and customer loyalty (Cheng, Chen, Yen, & Teng, 2017). This study aims to estimate and evaluate the claims that healthcare institutions get accreditation of different hospital standards and adopt green practices to provide quality health services and offer superior health products to its patients by establishing cooperative's brand image to get patient trust and loyalty. This study would also support in getting knowledge about patient's preferences and consequences on healthcare institutions.

**Table 1:** Health statistics of Pakistan

	2016-17	2017-18
Registered Doctors	195,896	208,007
Registered Nurses	99,228	103,777
Registered Dentists	18,333	20,463
Doctors per population	997	957
Dentists per population	10,658	9,730
Beds per population	1,592	1,580
*Source: Gallup Pakistan – Short Report on Health Statistics of Pakistan (2018)		

## Research Questions

Following questions are essential purpose of the investigation:

- What are the impacts of healthcare quality and environment standards, and could environment impact the trust, image branding and loyalty of patients?
- Whether quality services and product superiority affect in making brand image and building relationship of patient trust and patient loyalty?
- Does brand image of hospital and patient trust mediate the association between hospital standards, inner and outer environmental factors, product worthiness, healthcare service value and loyalty of patients?

## 2. Literature Review

### 2.1 Hospital Accreditation

Falstie-Jensen, Bogh, and Johnsen (2018) stated that hospital pursue accreditation as lifelong methodical structure for strengthening the track of throughputs that concentrate on governance and medical infrastructure including policies and procedures. The key objective is to be robust and give secure and quality care to patients. Anyways, aggregated testimonials of accreditation have endorsed fruitful implications while treating patients. Accredited medical institutes conduct on premise surveys after an interval of three-to-four years to guarantee consistent conformity of ongoing quality refinements. After

repeated accreditations, only somewhat evidences from literature are found that periodic accreditation cycles are effective. The studies demonstrated that hospitals devote ample finances on accreditation on first cycle and grab more advantages from consecutive three cycles, but this is not correlated to patient driven data. Investigations on patient-related outcomes are missing on effectiveness of periodically sequential accreditations (Falstie-Jensen et al., 2018).

## **2.2 Green Hospital**

Idea of green hospital is made by the U.S Green Building Council (USGCB). Green hospital is constructed with concept of reusing tangibles, decreasing waste, providing pure and hygienic material. The Joint Commission International (JCI) accreditation also focuses on the idea of green hospital to attain the objective of application of green business in health sector (Afifi & Amini, 2019). Karliner and Guenther (2011) elaborated that health industry is also participating in increasing ecological challenges although it endeavors to counter the consequences. Health industry is generating notable pollution involuntary and harming public health through resource consumption, wastes generation, construction and building operations.

Vittori (2002) described that building operations are one of main cause for generating of Carbon Dioxide from 35% to 45% in climate that is predecessor to global warming and wasting ozone layer. Karliner and Guenther (2011) stated that the Global Green and Healthy Hospitals Agenda (GGHHA) has taken first step to make attempts for more durable environmental wellness of worldwide health care industry. The GGHHA contains (1) Leadership (“Prioritize Environmental Health as a Strategic Imperative”), (2) Chemicals (“Substitute Harmful Chemicals with Safer Alternatives”), (3) Waste (“Reduce, Treat and Safely Dispose of Healthcare Waste”), (4) Energy (“Implement Energy Efficiency and Clean, Renewable Energy Generation”), (5) Water (“Reduce Hospital Water Consumption and Supply Potable Water”), (6) Transportation (“Improve Transportation Strategies for Patients and Staff”), (7) Food (“Purchase and Serve Sustainably Grown, Healthy Food”), (8) Pharmaceuticals (“Prescribe Appropriately, Safely Manage and Properly Dispose of Pharmaceuticals”), (9) Buildings (“Support Green and Healthy Hospital Design and Construction”), (10) Purchasing (“Buy Safer and More Sustainable Products and Materials”).

## **2.3 Product Superiority**

Consumer’s experience regarding product efficiency and linking it with expectations is known as product superiority. Consumers evaluate product superiority from the conclusions of how much happiness he or she has gotten from the product (Saleem, Ghafar, Ibrahim, Yousuf, & Ahmed, 2015). Fetter and Freeman (1986) expressed that hospitals and health givers offer health care products to individual patients in form of explicit series of goods and services, like other business corporations in the market. Specific treatment given to individual patients during proceedings of hospitalization depends on illness. This comprises of laboratory, radiology, ancillary and pharmaceutical services, prescribed by physicians, as part of treatment along with nursing care, operation theatre, surgical supplies, hotel and social services. Since hospital’s actual business is to treat patients, these are transitional acquisitions. Therefore, a set of these interim outputs given to individual patient is called a “product” of a hospital. Thus, hospital is a multi-product company having numerous goods and services. The product-line of the hospital is likely as comprehensive as it serves the patient volumes.

Hospitals have started struggling hard in focusing on superiority of healthcare products to incite patients in selecting best healthcare facility. Healthcare providers take service quality as critical component and sound benchmark as an edge to other healthcare facilities (Fatima et al., 2018).

## **2.4 Service Quality**

Kotler and Keller (2015) determined that “Quality is the totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs”. In context of healthcare, Wu

(2011) noticed that gap between patient's beliefs and impressions could be described as service quality. Beliefs are patient's expectations regarding medical offerings in hospital while impressions are patients' actual experience regarding specific medical service with reference to expectations. Practically, service quality in hospital deals with belief and impression of patient alignments. Hospital service excellence is the creditability divergence of services impression to patients and attendants and beliefs on services proposed by hospitals (Upadhyai, Jain, Roy, & Pant, 2019).

During presence of customers, services are performed and expended all together, and efficiency and quality of service can vary. Some disturbance may be occurred by undermining customer satisfaction due to prolonged waiting time. For endurance and progress of business, researchers have made association between service quality and customer satisfaction (Mbutia & Thaddaeus, 2015). Due to customer sophisticated expectations and desires, hospitals go with superior healthcare services to accomplish healthcare concerns (Fatima et al., 2018). Upadhyai et al. (2019) stated that unsatisfactory quality may cause assorted sensations in patients, attendants and families having fatigue and emotional tension, disappointments and desperations, being panic on additional expenditures, complicacy in management of care, stress causing hindrance in health care pathways, disaffection from care arrangements.

## **2.5 Customer Trust**

Customer trust is beliefs of consumer on faith and loyalty of an entity while giving commitments (Afifi and Amini, 2019). Trust is the practicable speculation, associated convenience, and builds frequent correspondence that generates admirable affiliations (Lestariningsih et al., 2018). Customers become more loyal as company takes customer-friendly measures and therefore they intend to do more business with companies (Van Vuuren, Roberts-Lombard, & Van Tonder, 2012).

Medical researchers have established the fact that patient trust is extremely complicated. Nepotism in providing quality service would demolish customer trust. Some philosophers are convinced that patient trust is a firmed posture that physician would undertake treatment in a secured fashion (Shabbir et al., 2010). Leisen and Hyman (2001) noted that patients trust to physicians in curing diseases and expect proficiency and affirmative results along with goodwill. Patients expect that medications advised by physicians would cordially cure diseases and by this trust patients believe in treatments. In institutional terms, trust promotes products optimistically and elegant referrals that cause to improve the volume of business.

## **2.6 Brand Image**

Critical determining factor of decision making amongst the customers is recognized as Brand Image (Lock, 2016). Critical determining factor of decision making amongst the customers is recognized as Brand Image (Lock, 2016). Wu (2011) stated that in scenarios of healthcare, brand image of hospital is a set of faiths, understandings and reactions that a patient perceives from the hospital. . Patient builds brand image from the experience of clinical examinations and treatment encounters. In addition, hospitals use to build brand image through strategic marketing operations to improve competing postures. Therefore, sympathetic brand image of hospital inspires patient in selecting hospital.

Results of various studies have approved that brand image holds major impression on customer loyalty with slight disparities. A few research work has proved that brand image effects customer loyalty with other mediating elements whereas some researchers have demonstrated that brand image has no effect of customer loyalty (Yi Zhang, 2015).

## **2.7 Customer Loyalty**

Kotler and Keller (2015) defined loyalty as, "a deeply held commitment to rebuy or re-patronize a preferred product or service in the future despite situational influences and marketing efforts having the potential to cause switching behavior". Sentimental affiliation is constructed between perpetual customers

and company by building up loyalty redeems. Business share would rise as customer gives optimistic feedback and, loyal customers are easily attainable as compared to fresh ones (Mbutia and Thaddaeus, 2015).

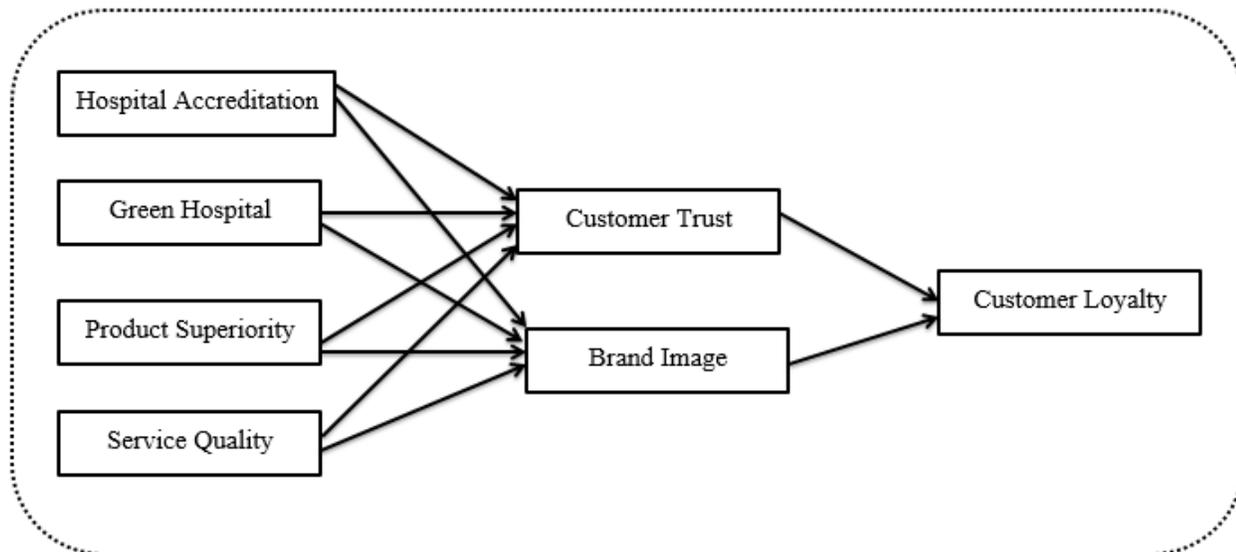
Anwar et al. (2011) found that health care service excellence influences patient faithfulness through patient peace of mind, and previous studies showed that satisfaction and trust plays a mediating role between quality service and loyalty (Ou, Shih, Chen, & Wang, 2011). Meesala and Paul (2018) noticed that satisfaction of women with service quality in hospitals effect loyalty to hospitals whereas this is not all with menfolk. (Patawayati et al., 2013) stated that trust impacts loyalty implicitly in a positive fashion as extensive trust would result in exceeding loyalty.

Sciulli and Missien (2015) affirmed that quality, service value and patient consummation in healthcare sector effect behavioral motives and, patient's re-considerations in getting hospital services for positive results that could be a pointer to loyalty in hospital marketing. Latif, Islam, Mohamad, Sikder, and Ahmed (2015) narrated that superior product offers distinct and exceptional supremacy from other products that do not present any distinctive feature and that specific product establishes compelling brand image. Lock (2016) found that product or service superiority determines the brand image that impacts trust on product.

### 3. Research Methodology

#### 3.1 Hypothetical Research Framework

This investigation applies the descriptive methodology to explain the hypotheses. The conceptual framework of research consists of independent, mediating and dependent variables.



**Figure 1:** Hypothetical Research Framework

The above **Error! Reference source not found.** shows that hospital accreditation, green hospital, product superiority and services quality are independent variables and customer loyalty is a dependent variable. Furthermore, customer trust and brand image are mediating variables.

#### 3.2 Hypotheses

- H1: Patient trust mediates the positive association between hospital accreditation and patient loyalty.  
 H2: Patient trust mediates the positive association between green hospital and patient loyalty.  
 H3: Patient trust mediates the positive association between product superiority and patient loyalty.

- H4: Patient trust mediates the positive association between healthcare quality services and patient loyalty.
- H5: Brand image mediates the positive association between hospital accreditation and patient loyalty.
- H6: Brand image mediates the positive association between green hospital and patient loyalty.
- H7: Brand image mediates the positive association between product superiority and patient loyalty.
- H8: Brand image mediates the positive association between healthcare quality services and patient loyalty.

### **3.3 Research Approach**

This study used the quantitative research approach using a comprehensive questionnaire to measure responses. Bolarinwa (2015) defines the questionnaire as data collection tool that predefines a set of questions used to collect and record information about specific subject matter.

### **3.4 Population, Sample and Sampling Technique**

Population used for this research involves hospitals that provide healthcare facilities to patients. Privacy, security and confidentiality remained the key constraints for meeting and getting patient specific information that is why the researcher decided to use snowball sampling technique. The researcher selected seven hospitals as snowball sampling based on professional contacts from targeted population of health care institutions of Pakistan, considering them the influential persons in those hospitals.

A sample of 390 respondents was calculated by multiplying the total number of items with 10 as per Wolf, Harrington, Clark, and Miller (2013) rule. However a total of 580 questionnaires were distributed out of which 447 responses were obtained. The contacted persons were explained the objectives of survey and questions in questionnaire; and they were asked to fill the questionnaires independently being part of hospitals. They were asked further to attain the services of volunteer staff in their references and guide patients, patient families and visitors by elaborating the survey questionnaires to get their visit experience in the hospital.

### **3.5 Instrument**

A concise and close-ended survey questionnaire was designed to evaluate the latent variables to be participated in undergoing investigation. Items used for the constructs were chosen carefully from previous research studies to assure the content validity. Some questions were extracted from literature as self-extracted items. This survey form contained two parts, first section was comprised of 4 questions related to respondent's demographics; and the second part entailed questions discovering perception of respondents regarding hospital facilities, treatment quality, satisfaction levels, trust and loyalty towards health care providers.

By applying quantitative research method, survey questionnaire was designed as research instrument for this investigation report. All healthcare facilities were measured using five-point Likert scale representing: "Strongly disagree = 1", "Disagree = 2", "Not decided = 3", "Agree = 4", and "Strongly agree = 5". Items in Table 13 are used to measure constructs and adopted from prior research work.

### **3.6 Data Analysis Tool**

Data is examined in SPSS 20, which is a leading software suite to be used for interactive statistical analysis in social sciences by educational, medical, marketing, financial and other researchers, and SmartPLS (v. 3.2.8) which is one of the leading software tool with Graphical User Interface (GUI) for Variance-Based Structural Equation Modeling (VB-SEM) using the Partial Least Squares (PLS) path molding technique (Ringle et al., 2015). Sandoval and Ramos-Diaz (2018) encourages to use PLS-SEM approach (SmartPLS software) due to flexible software. Recording of coded outputs are made in MS Excel as CSV file to analyze in data analysis tools.

#### 4. Results and Analysis

The researcher distributed 580 questionnaires. After completing surveys, packed surveys in sealed envelopes were returned to researcher by hand or by courier services. Finally, out of 580 questionnaires, 447 valid responses with feedback of 77.07% were returned. During data collection process, survey was safeguarded by anonymity and voluntary contribution.

**Table 2:** Sample statistics

Sr. No	1	2	3	4	5	6	7	Total
Hospital	A	B	C	D	E	F	G	
Distributed	60	60	100	100	100	100	60	580
Received	54	29	79	84	96	69	37	447
Response Rate (%)	90.00	48.33	79.00	84.00	96.00	69.00	61.67	77.07

Note: Hospital names are kept secret because of anonymity

#### 4.1 Demographic statics

In Table 3, demographics (n = 447) illustrates that dominants respondents comprises of male gender of 60.6%, age 21–30 years of 37.8%, education graduation of 37.2% and visit purpose as family members of 27.3%.

**Table 3:** Demographic Analysis

Demographics		Frequency	Percent	Valid percent
Gender				
Valid	Male	271	60.6	60.8
	Female	155	39.1	39.2
	Total	446	99.8	100
Missing		1	0.2	
Total		447	100.0	
Age				
Valid	20 years or less	37	8.3	8.3
	21 – 30 years	168	37.6	37.8
	31 – 40 years	151	33.8	34.0
	41 – 50 years	63	14.1	14.2
	51 years or above	25	5.6	5.6
	Total	444	99.3	100.0
Missing		3	0.7	
Total		447	100.0	
Education				
Valid	Matriculation or less	44	9.8	10.0
	Intermediate	68	15.2	15.5
	Graduation	163	36.5	37.2
	Masters	141	31.5	32.2
	M. Phil or above	22	4.9	5.0
	Total	438	98.0	100.0
Missing		9	2.0	
Total		447	100.0	
Visit purpose				

Valid	A general visitor	46	10.3	10.6
	Visit to patient	72	16.1	16.5
	As patient family	119	26.6	27.3
	For medical tests	92	20.6	21.1
	For medical treatment	107	23.9	24.5
	Total	436	97.5	100.0
Missing		11	2.5	
Total		447	100.0	

### 4.2 Consistent PLS (PLSc)

The consistent PLS (PLSc) procedure makes improvement in interrelationships of reflective constructs to build reliable outcomes with a factor model (Dijkstra & Schermelleh-Engel, 2014) (Dijkstra & Henseler, 2015).

The consistent PLS Path modeling assessment is exhibited in Figure 1.

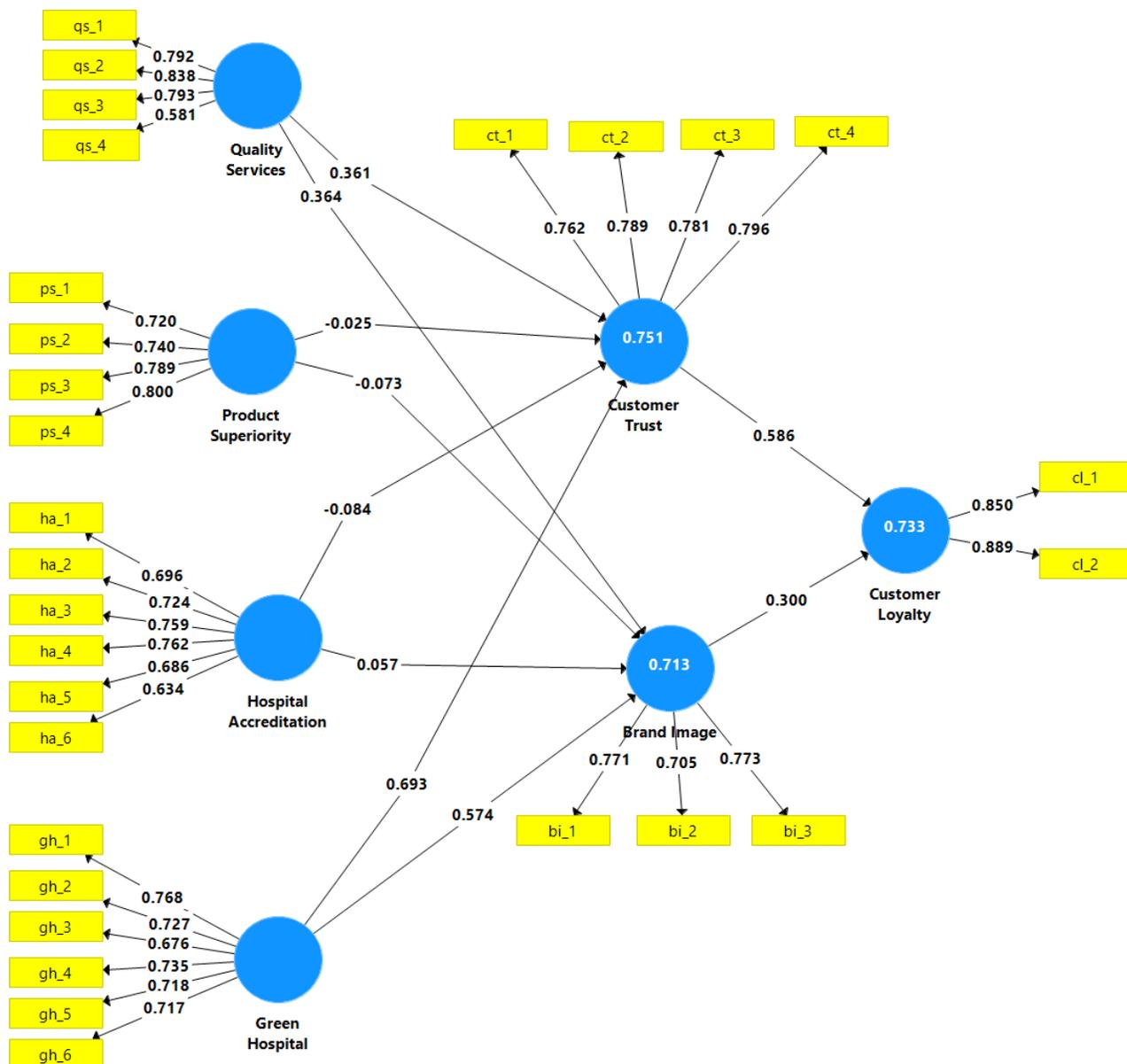


Figure 1: PLS Path model - Structural Equation Modeling (SEM) diagram

### 4.3 Measurement Model Analysis (Outer Model)

Evaluation of reflective external model includes consistency investigations of the specific items (indicator reliability), construct reliability, internal consistency (Cronbach Alpha and Composite Reliability), construct validity (loadings, and cross-loadings), convergent validity (Average Variance Extracted (AVE)), and Discriminant Validity (Fornell-Larcker measure, Cross Loading, and HTMT condition) (Ab Hamid, Sami, & Sidek, 2017)

### 4.4 Reliability

Reliability can be defined as firmness of measuring instrument i.e. questionnaire. If results of the measuring instrument are constant and less deviated, it means the higher reliability of instrument. Composite Reliability (CR) and Cronbach's Alpha are frequently in-use measures for Internal Consistency that measures the reliability depends on correlation of constructs. The reliability of data could be found by the coefficient of Cronbach's Alpha or Composite Reliability. Range of the coefficient is between 0.0 and 1.0; where higher value specifies higher reliability. In exploratory study, Cronbach's Alpha or Composite Reliability acceptable measures are between 6.0 and 7.0 whereas in more advanced levels the value of Cronbach's Alpha / Composite Reliability (CR) should be greater than 7.0. However, more than 9.0 value is not required and the value more than 9.5 is certainly not acceptable (Ab Hamid et al., 2017).

**Table 4:** Cronbach's Alpha and Compsite Reialbility

Latent variables	Cronbach's Alpha	rho_A	Composite Reliability (CR)	Average Variance Extracted (AVE)
Brand Image	0.795	0.796	0.794	0.563
Customer Loyalty	0.861	0.862	0.861	0.756
Customer Trust	0.863	0.863	0.863	0.611
Green Hospital	0.868	0.869	0.868	0.524
Hospital Accreditation	0.860	0.862	0.860	0.506
Product Superiority	0.848	0.849	0.848	0.582
Quality Services	0.855	0.856	0.855	0.663

In Table 4**Table**, values of latent variables for Cronbach's Alpha and Composite Reliability (CR) falls between 0.7 and 0.9 and these have good reliability.

### 4.5 Validity

Construct Validity indicates an assessment intended to calculate a construct measuring that latent variable. Average Variance Extracted (AVE) should be 0.5 or higher (Bagozzi & Yi, 1988). AVE of each latent variable in Table 4**Table** is higher than 0.5 that is adequate for convergent validity. Discernment Validity or Divergent Validity establishes that indication that measure constructs must differ hypothetically from one another. The intensity of discriminant validity coefficients must prominently smaller than convergent validity coefficients (Hubley, 2014). Henseler, Ringle, and Sarstedt (2015) emphasized to employ the HTMT criterion for the evaluation of discernment validity in Variance-Based (VB) Structural Equation Modeling (SEM).

**Table 5:** Discriminant Validity (using HTMT)

Latent Variable	Brand Image	Customer Loyalty	Customer Trust	Green Hospital	Hospital Accreditation	Product Superiority	Quality Services
Brand Image							
Customer Loyalty	0.797						
Customer Trust	0.850	0.842					
Green Hospital	0.797	0.730	0.833				
Hospital Accreditation	0.771	0.691	0.763	0.820			
Product Superiority	0.653	0.659	0.680	0.709	0.748		
Quality Services	0.695	0.660	0.708	0.616	0.830	0.754	

Note: HTMT < 0.85 (Kline, 2015), HTMT < 0.90 (Gold, Malhotra, & Segars, 2001)

From the results in **Error! Reference source not found.**, study-wide HTMT for PLSc are within the threshold except 0.85 that is quite below from the strict threshold of (Kline, 2011). Therefore, discriminant validity of measurement is confirmed.

**Table 6:** Confidence Interval Biased Corrected

		Original Sample (O)	Sample Mean (M)	Bias	2.50 %	97.50 %
Customer Loyalty	Brand Image	0.797	0.797	0	0.722	0.867
Customer Trust	Brand Image	0.850	0.850	0	0.783	0.904
Customer Trust	Customer Loyalty	0.842	0.842	0	0.772	0.893
Green Hospital	Brand Image	0.797	0.796	-0.001	0.719	0.861
Green Hospital	Customer Loyalty	0.730	0.728	-0.001	0.649	0.803
Green Hospital	Customer Trust	0.833	0.833	-0.001	0.773	0.885
Hospital Accreditation	Brand Image	0.771	0.771	-0.001	0.695	0.836
Hospital Accreditation	Customer Loyalty	0.691	0.691	0	0.615	0.759
Hospital Accreditation	Customer Trust	0.763	0.764	0	0.692	0.826
Hospital Accreditation	Green Hospital	0.820	0.821	0	0.762	0.871
Product Superiority	Brand Image	0.653	0.654	0.001	0.557	0.732
Product Superiority	Customer Loyalty	0.659	0.659	0	0.571	0.737
Product Superiority	Customer Trust	0.680	0.681	0.002	0.588	0.764
Product Superiority	Green Hospital	0.709	0.709	0	0.635	0.775
Product Superiority	Hospital Accreditation	0.748	0.747	-0.001	0.660	0.819

Quality Services	Brand Image	0.695	0.694	0	0.610	0.771
Quality Services	Customer Loyalty	0.660	0.659	0	0.574	0.734
Quality Services	Customer Trust	0.708	0.708	0	0.629	0.778
Quality Services	Green Hospital	0.616	0.617	0.001	0.536	0.690
Quality Services	Hospital Accreditation	0.830	0.830	0	0.761	0.888
Quality Services	Product Superiority	0.754	0.755	0.001	0.681	0.819

Bootstrapping procedure allows to determine whether HTMT considerably deviates from the value one (HTMTInference). There are two hypotheses in HTMT: H0 (HTMT  $\geq$  1) null hypothesis, a confidence interval of 1 indicates shortfall in discriminant validity; H1 (HTMT  $<$  1) an alternative hypothesis, if the value 1 falls out of boundaries of interval, the two variables are different empirically. In this study, Table 6 indicates that neither lower nor upper boundary confidence interval includes in the value of 1. Therefore, in conclusion discriminant validity has been established by running complete bootstrapping (5,000 samples) routine.

#### 4.6 Model Fit

After accessing the reliability and validity, the requirement is to access model fit. SRMR (Standardized Root Mean Square Residual) is the variance between data and model estimates is known as the residuals. Average of the residuals are measured, and its square root is processed. Hu & Bentler (1999) recommended that SRMR close to 0.8 or lesser corresponds to a sufficiently appropriate. A zero worth of SRMR specifies an absolute balance between model estimates and data. SRMR value in Table 7, model examined from the output of SmartPLS is 0.043. Therefore, it could be brought about good fitness of the model.

**Table 72:** Model Fit Summary

	Saturated Model	Estimated Model
SRMR	0.039	0.043
d_ ULS	0.631	0.737
d_ G	0.383	0.403
Chi-Square	881.568	921.526
NFI	0.89	0.885

NFI (Normed Fit Index) likewise recognized as the Bentler-Bonett Normed Fit Index points out that model being estimated has inconsistency between independence model and saturated model. The NFI differs between 0 and 1; where 1 is perfect. In Table 7, NFI is of 0.885, that specifies that model of interest has developed the fit by 88.5% comparative to void or imperative model.

#### 4.7 Structural Model Analysis (Inner Model)

After the confirmation that measurement model is reliable and valid, the subsequent phase is to measure and estimate the inner structural model. It contains extrapolative relevance of the model and relationships amongst the latent variables. Therefore, (1) coefficient of the determination (R-square), (2) Path coefficient (Beta value), (3) T-statistics value, (4) Effect size (f-square), (5) Predictive relevance of the

model (Q-square), and (6) Goodness-of-Fit (GoF) index are the leading measures for the assessment of inside structure of the model.

#### 4.8 R-Square

The R<sup>2</sup> assessment validates the variance percentage in exogenous construct that is described by endogenous constructs. According to J. F. Hair, Ringle, and Sarstedt (2011), the R-Square value above 0.75 is bigger, value 0.50 is medium and value 0.25 is smaller.

**Table 8:** R Square

Latent Variable	R Square	R Square Adjusted
Brand Image	0.713	0.710
Customer Loyalty	0.733	0.732
Customer Trust	0.751	0.748

In

Table 8, R-Square for latent variables Brand Image (0.713) and Customer Loyalty (0.733) are larger than 0.50. R<sup>2</sup> for Brand Image and Customer Loyalty is categorized as moderate. R-Square for the construct Customer Trust (0.751) is greater than 0.75 that can be categorized as substantial.

#### 4.9 F-Square

The effect size ( $f^2$ ) is a measure that is utilized to evaluate the respective effect of a forecaster construct on an independent construct (Pek & Flora, 2018). According to Lorah (2018),  $f^2$  value of 0.35 is considered as large, value of 0.15 is considered as medium, and value of 0.02 is considered as small effect sizes.

**Table 9:** Effect size (F-Square)

Construct	Brand Image	Customer Loyalty	Customer Trust
Brand Image		0.092	
Customer Loyalty			
Customer Trust		0.352	
Green Hospital	0.325		0.547
Hospital Accreditation	0.002		0.005
Product Superiority	0.006		0.001
Quality Services	0.117		0.113

In Table 9: Effect size (F-Square), the F-Square of variable Brand Image (0.092) is classified as low effect to Customer Loyalty variable. F-Square value of variable Customer Trust (0.352) is classified high effect to Customer Loyalty. The F-Square of variable Green Hospital (0.325) is classified as moderate effect to Brand Image; and variable Green Hospital (0.547) has high effect to Customer Trust. Hospital Accreditation has no influence on Brand Image (0.002) and Customer Trust (0.005) with values approximate to zero. Similarly, Product Superiority also has no impact on Brand Image and Customer Trust with values 0.006 and 0.001, respectively. Quality Services has low impact on Brand Image (0.117) and Customer Trust (0.113).

#### 4.10 Q-Square

Blindfolding is a method of sample recycling that calculate the Stone-Geisser's Q<sup>2</sup> value which indicates valuation standard for cross-validated analytical significance of PLS path model. Q-Square test is used prediction relevance of model and Q<sup>2</sup> values greater than zero that indicates that values are restructured

thoroughly, and the model entertains predictive significance. Henseler, Ringle, and Sinkovics (2009) described that blindfolding measures are functional for only endogenous constructs in implementation of reflective measurement model.

Table 10 indicates that Brand Image ( $Q^2 = 0.346$ ), Customer Loyalty ( $Q^2 = 0.477$ ), and Customer Trust ( $Q^2 = 0.396$ ) are above zero that indicates that values soundly rebuilt the model, and model realizes the predictive significance.

**Table 10:** Q-Square

Construct	SSO	SSE	$Q^2 = (1 - SSE)/SSO$
Brand Image	1,341.00	877.13	0.346
Customer Loyalty	894.00	467.47	0.477
Customer Trust	1,788.00	1,079.56	0.396

#### 4.11 Goodness of Fit Index

As stated by Henseler and Sarstedt (2013), Goodness of Fit (GoF) index for PLS is estimated as the geometric mean of the average variance explained and the R-Square value.

$$\text{GoF} = \sqrt{\text{Average of AVE} \times \text{Average of } R^2} = 0.663$$

Aban, Perez, Ricarte, and Chiu (2019) depicts that GoF value of 0.1 should be considered as small, GoF value of 0.25 should be considered as medium, and GoF of value 0.36 or above should be considered as large. Henceforth, the GoF value of 0.633 is a large value that could be considered as a very good model fit.

#### 4.12 Collinearity statistics (VIF)

Multicollinearity is reciprocal of the tolerance value that takes place as two or more forecasters in the model are interrelated and deliver repetitious facts regarding the response. It evaluates to what degree the variance of a regression coefficient is exaggerated caused by multicollinearity in the model. Multicollinearity is calculated through Variance Inflation Factors (VIF) and tolerance. The rule of thumb for multicollinearity test is considering both result of tolerance and VIF where if the tolerance above 0.1 and VIF is below 10, it means that the variable is free of multicollinearity (Pangaribuan, Aggraeni, & Sitinjak, 2018).

**Table 11:** Collinearity statistics (VIF)

Latent Variable	Brand Image	Customer Loyalty	Customer Trust
Brand Image		1.990	
Customer Loyalty			
Customer Trust		1.990	
Green Hospital	2.198		2.198
Hospital Accreditation	2.906		2.906
Product	2.142		2.142

Superiority			
Quality Services	2.291		2.291

In Table 11, the VIF scores of the dependent variables for traditional PLS are below than threshold value of 3.3 (Diamantopoulos & Winklhofer, 2001), and thus inferring that there is no inner collinearity problem.

#### 4.12 Hypothesis Testing

Table 12 demonstrates the values of path coefficient ( $\beta$ ), t-statistics and p-value. The outcomes of hypotheses assessment could be estimated as follow:

**Table 12:** Hypothesis Testing

Hypothesis	Path	Path Coefficient ( $\beta$ )	T-Statistics t=1.96*	P Value	Status
H1	Hospital Accreditation to Customer Loyalty through Customer Trust	0.172	2.094	0.036	Supported
H2	Green Hospital to Customer Loyalty through Customer Trust	0.021	0.301	0.763	Not Supported
H3	Product Superiority to Customer Loyalty through Customer Trust	-0.012	0.343	0.732	Not Supported
H4	Quality Services to Customer Loyalty through Customer Trust	0.094	1.545	0.122	Not Supported
H5	Hospital Accreditation to Customer Loyalty through Brand Image	0.421	3.682	0	Supported
H6	Green Hospital to Customer Loyalty through Brand Image	-0.082	0.676	0.499	Not Supported
H7	Product Superiority to Customer Loyalty through Brand Image	-0.013	0.208	0.835	Not Supported
H8	Quality Services to Customer Loyalty through Brand Image	0.232	2.362	0.018	Supported

\*t-value= 1.96 at 5% two-tailed

H1: The mediating impact of Customer Trust between Hospital Accreditation and Customer Loyalty is gotten by the path coefficient which result 0.172; t-value 2.094 greater than 1.96; p-value 0.036 less than 0.05. So, there is adequate indication to accept the hypothesis (H1) which means that Hospital Accreditation is completely significant on Customer Loyalty mediating through Customer Trust.

H2: The mediating impact of Customer Trust between Green Hospital and Customer Loyalty is gotten by the path coefficient which result 0.021; t-value 0.301 less than 1.96; p-value 0.763 greater than 0.05. So, there is no adequate indication to accept the hypothesis (H2) which means that Green Hospital is not definitely significant on Customer Loyalty mediating through Customer Trust.

H3: The mediating impact of Customer Trust between Product Superiority and Customer Loyalty is obtained by the path coefficient which result -0.012; t-value 0.343 less than 1.96; p-value 0.732 greater than 0.05. So, there is no satisfactory indication to accept the hypothesis (H3) which means that Product Superiority is insignificant on Customer Loyalty mediating through Customer Trust.

H4: The mediating impact of Customer Trust between Quality Services and Customer Loyalty is gained by the path coefficient which result 0.094; t-value 1.545 less than 1.96; p-value 1.122 greater than 0.05. So, there is no acceptable indication to accept the hypothesis (H4) which means that Quality Services is positively insignificant on Customer Loyalty mediating through Customer Trust.

H5: The mediating impact of Brand Image between Hospital Accreditation and Customer Loyalty is attained by the path coefficient which result 0.421; t-value 3.682 greater than 1.96; p-value 0 less than 0.05. So, there is adequate indication to accept the hypothesis (H5) which means that Hospital Accreditation is positively significant on Customer Loyalty mediating through Brand Image.

H6: The mediating impact of Brand Image between Green Hospital and Customer Loyalty is gotten by the path coefficient which result -0.082; t-value 0.676 less than 1.96; p-value 0.763 greater than 0.05. So, there is no enough evidence to accept the hypothesis (H6) which means that Green Hospital is not unquestionably significant on Customer Loyalty mediating through Brand Image.

H7: The mediating impact of Brand Image between Product Superiority and Customer Loyalty is gained by the path coefficient which result -0.013; t-value 0.208 less than 1.96; p-value 0.499 greater than 0.05. So, there is no acceptable indication to accept the hypothesis (H7) which means that Product Superiority is positively insignificant on Customer Loyalty mediating through Brand Image.

H8: The mediating impact of Brand Image between Quality Services and Customer Loyalty is attained by the path coefficient which result 0.232; t-value 2.362 less than 1.96; p-value 0.018 greater than 0.05. So, there is adequate indication to accept the hypothesis (H8) which means that Quality Services is certainly significant on Customer Loyalty mediating through Brand Image.

## 5. Discussion

The hypothesis (H1) describes that hospital accreditation impact positively to customer loyalty mediating through customer trust that means accreditation of standards supports in getting patient loyalty when patient trust is gotten. Consultations from hypotheses (H2) and (H3) describes that green hospital and product superiority both does not influence to customer loyalty through customer trust. The result of hypothesis (H4) describes that quality services do not influence to customer loyalty through customer loyalty that is not in agreement with that of (Lestariningsih et al., 2018).

Consequences from hypothesis (H5) depicts that customer loyalty is supported by hospital accreditation by mediating through brand image means that patients from Pakistan becomes loyal to hospitals if accreditation programs of hospital are successful in building brand image. Findings from both hypothesis (H6) and (H7) describes that customer loyalty can neither be supported from green hospital and nor from product superiority mediating through brand image. It seems that hospital efforts in delivering superior products and services and creating green environment in hospitals are not enough to build image of brands in minds of patients so that they could become loyal to hospitals. Outcomes of hypothesis (H8) confirm that quality services support customer loyalty positively through brand image; this means quality services in Pakistan provides support in making brand image of hospital in market that makes the customers to become loyal to hospital.

## 6. Conclusion

This study inspects the framework of services quality, product superiority, green hospital, and hospital accreditations on customer loyalty mediating through customer trust and brand image. The previous research studies focused on dimensions of healthcare services quality using different variables like patient satisfaction, customer trust, customer value, customer loyalty, green hospitals and hospital accreditations from different aspects.

This study explores the impact of healthcare quality services, quality improvement measures like attaining accreditation standards and implementation of green hospital concept, by adding two more variables of product superiority and brand image on patient loyalty. The findings of the investigations show that quality services and green hospital environment influences customer trust directly; and green hospital environment, product superiority and quality services impact brand image directly.

Customer trust and brand image also influence customer loyalty directly. Insofar as mediating effect, only hospital accreditation could support patient loyalty through customer trust and brand image; quality services construct could support customer loyalty through brand image construct. Whereas hospital accreditation and product superiority variables do not support customer trust and brand image directly; and green hospital, product superiority and quality services construct do not support to customer loyalty through customer trust; and green hospital and product superiority variables to customer loyalty through brand image of hospital.

Hospital management in Pakistan should dedicate efforts towards providing superior healthcare quality services are at the same height of customer satisfaction, trust and loyalty. Most of the customer are cautious not to discuss their feelings openly including complaints although hospital management encourage patients to log their complaints (Shabbir et al., 2010). Patients demand ever more quality in healthcare services. If they do not get as per expectations, they would switch to alternative hospital for better-quality facilities.

### **7. Limitations and Future Directions**

The investigation outcomes are likely to build better considerations on accreditation, green environment of hospitals, and thereafter superiority and quality services by keeping in view trust and brand image while focusing on loyalty in healthcare industry of Pakistan. However, the mediating role of customer trust between green hospital, product superiority, quality services and customer loyalty is still open to discuss. Furthermore, data collected from seven hospitals cannot represent all hospitals of Pakistan. Therefore, results obtained from the study cannot not be generalized. Small sample size might not be able to generate significant outcomes. Researcher could get limited sample size (447 responses) that is also a limitation of this study since based on larger data sets researcher could have produced more precise results.

For future studies, integrated model can be replicated with a variety of hospital types or other settings to verify its applicability that might give distinctive or more supportive results. Further study could be planned to examine the attributes of hospital accreditations, services quality, brand image, customer trust, and customer loyalty in healthcare sector of other regions of the world using qualitative or mixed approaches. Current investigation has incorporated the mediating roles of brand image and customer trust while future studies might incorporate patient satisfaction. The study focused on patients, attendants, patient families and visitors while future researchers should incorporate input from medical and paramedical, other hospital staff and vendors to investigate variables brand image, trust and loyalty.

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