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Influence of service marketing mix on Perceived Brand Quality: Mobile Telecommunication Perspective in Northern Bangladesh

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ABSTRACT

Purpose: The study tried to identify the influence of service marketing mix on perceived brand quality in mobile telecommunication industry with the reference to northern Bangladesh.

Methodology: Research model has been developed from the previous literatures. The study adopted descriptive research design, quantitative approach, and survey-based research strategy. All the operators have been considered for the study where individual subscribers were treated as samples. Rajshahi district was selected as the study area. Sample size with 378 were determined who used a total of 672 SIM. Simple random sampling technique was used to draw the required samples while a pre-tested structured questionnaire was employed for survey. Researcher himself with two well-trained enumerators has completed the field data collection process. Researcher used SEM analysis to test the hypotheses.

Findings: Result shows, all the seven hypotheses have been rejected. It suggests that service marketing mix has statistically significant effect or influence on perceived brand quality in mobile telecommunication industry in northern Bangladesh.

Practical Implications: Implementation of the findings may provide operators with opportunities to improve their strength as perceived brand equity will increase. Moreover, operators would be able to leverage strategic marketing for brand management.

Originality: Researcher tried to identify the variables and items that influence perceived brand quality that would be helpful for strategic fit in developing marketing strategy to gain competitive advantage for mobile telecom operators in northern Bangladesh.

Research Limitations: As this study covered only Rajshahi district, it may not be generalized for overall Bangladesh.

1. Introduction

The significance of strategically using marketing mix in mobile telecommunication industry got its higher degree of attention as it became a vibrant and popular one in Bangladesh. Since it (branding) is a business mindset in marketing, brand management or branding strategy

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settle firm's activities which drive demand of a product or service (Aghaei *et al*., 2014). As dynamism in socio-economic arena impacts the competitive environment in mobile telecommunication industry in Bangladesh, companies require to put keen interest on brand quality. Therefore, the study aimed at identifying the influence of service marketing mix on perceived brand quality.

As the technology advances it is easier to produce similar quality product or service. As a result, there is little difference in same category of brands. So, companies are focusing on brand management specifically brand quality management, downsizing, re-engineering, lean production and so on where perceived value is a crucial one (Zeithaml, 1988). Competitive advantage is one of the aims pursued by most corporations in order to sustain in the business. Once a company could achieve a competitive advantage, it can increase the value and enhance the performance of the company (Novita & Husna, 2020) which is treated as a big issue to get superiority over competition leading to brand equity. It confirms additional value that provides company with the basis of differentiation where perceived brand quality would be a significant key to success (Hoffman, 2000). Therefore, it serves the mutual interest of both the firm and the customers.

2. Problem Statement and Justification

Over the last decade or so, mobile telecommunications services uplifted the daily life and its productivity to a certain height. It has effect on every sphere of life and changed consumer behavior in terms of communication and practicing other necessities of daily activities. It has changed socio-economic setting of Bangladesh to a great extent, and plays a crucial role in developing economy (Afza, 2015). Consumers now-a-days not only use it communication but also use it for surfing internet and value-added services (VAS) to perform economic, social, cultural and other need fulfillment. All these make this sector so vital to consumes in their life. As a result, perceived brand quality is of utmost priority to consumers at present. After the first stage of mobile telecom growth, it is observed that non-voice services become the main source of market growth in this competition. Competition exists in various dimensions as non-voice services consists of enormous application services like games, video streaming, audio streaming, stock quotes, news, cricket updates, chat, etc. and most of them are equally popular to different segments of market now-a-days. Adding to this, each service also has different dimensions in terms of content, costing, demand and customization for different segments at the same time (http://ptd.portal.gov.bd, 2016). Therefore, stiff competition exists including new or unique sources. In this critical phase, operators need to act accordingly.

Due to the fact, Mobile operators are always focusing on adding customer value and keep an eye on the dynamic behavior of customers to monitor the effect of their marketing program and its implementation. Operators are keen to adopt advanced technology to upgrade their system and offerings and to keep their productivity intact in a rapidly changing environment. This challenging environment leads operators to frequently examine or measure and modernize service tools in order to exploit its effect on market. Overall all these call for

superior customer attention for the greater effect on competition and profit with sustainability.

Besides, over the last decade, a more comparatively open and competitive market has been developed against the central mobile telecom monopoly that existed. Accordingly, some sorts of reforms have been introduced in the context of functional and fundamental in this industry in Bangladesh. So why, cumulative attention deserves to upsurge customer value. Therefore, rapid technological advancement, vibrant customer needs, and upward awareness and knowledge of recipients, it becomes decisive to seek for gaining brand equity in order to identify the degree of effect on and retain existing customer base followed by attracting prospects, and ultimately obtaining market positioning through superior marketing program that shots into a integrated program in achieving mutual interest of firm and customers (Keller, 1993).

Mobile telecom industry in Bangladesh got its pace and demand that causes rapid change along with the keen interest for strong growth among the operators. As a result, operators try to put more attention with their service offerings to keep demand intact and move forward. Similarly, consumers look forward for emotional benefit along with functional benefit in getting customer value. This reciprocal relation introduces dynamic service offerings with proper attention on perceived quality from customers for their brands. This phenomenon leads operators to focus on a strong brand consists of three dimensions i.e. company's promise through brand, what competitors' are doing, and how company deals with their service marketing mix time to time. On the other side, to a consumer, a strong competitive and well-positioned brand in their mind means brand's qualifications, and better understanding ways about tangibles and intangibles of services provided through a brand. Therefore, above perspectives lead the operators to focus more on proper management of service marketing mix that have effect on perceived brand quality to gain competitive advantage and move forward towards sustainability (Berry, 2000).

Literatures indicate that it is impossible to stay in the competitive market for a long time within gaining sustainable competitive advantage leading to brand equity. Perceived brand quality is one of the significant dimensions of consumer-based brand equity that is relevant or connected to many of the variables. Very open and competitive market environment, stiff competition, dynamic tastes and preferences of consumers, negligible contribution of VAS in revenue generation, technological advancement, vibrant customer needs, and mounting awareness and knowledge of recipients have left no option for operators to think for brand equity development where perceive brand quality upholds its position. Under these circumstances, researcher found rare research works regarding this though it is a very significant matter to mobile operators and contemporary one also. Therefore, the researcher attempted to conduct the research work.

3. Objective of the Study

Purpose of this study leads to measure the effect of service marketing mix with its degree on perceived product quality in mobile telecommunication industry in northern Bangladesh.

4. Literature Review

Marketing deals with value addition. It is the process through which companies offer value to consumers and also develop relationships to get value in return (Kotler, 2015). Service marketing deals with four distinguish features of services namely perishability, inseparability, heterogeneity or volatility, and intangibility to prepare service marketing program as offerings to customers (Booms and Bitner, 1981). Under the current competitive environment, key focus should direct towards planning, design and implementation framework to enrich and enhance the real-world effectiveness of service quality (Prakash and Mohanty, 2013). Service marketing mix is a set of 7Ps named as service product, price, place, promotion, people, process, and physical evidence a service marketer offers to customers or market. Each component of 7Ps defined to be a business strategy and assess as opportunity to have impact on gaining competitive advantage against competitors in a market (Booms and Bitner, 1981). In contrast, perceived brand quality reflects the judgment of consumers on the total excellence of a firm. It is the judgment of consumers over the firm's excellence or superiority (Zeithaml, 1988). It creates differentiation and provides opportunities for major outcomes major outcomes.

As marketing functions have effect on brand equity, marketers need to utilize service marketing mix strategically for effective outcome. Keller *et al.* investigated the effects of marketing practices such as pricing, sponsorship, intensity of distribution, and advertising over brand equity. It included different categories of services like banks, quick service restaurants and retail outlets of ten different brands. Result of the study found to be positive in relation between marketing activities and brand equity building (Keller *et al*., 2011).

Further, another study by Al-Dmour *et al* tried to examine with selected elements of the service marketing mix to identify the impact of them over customer-based brand equity. Result of the study showed a significant impact of the selected service marketing mix elements on brand equity building (Al-Dmour *et al*., 2013).

Again, a study by Uddin *et al* attempted to identify what satisfies recipients in mobile telecom industry in Bangladeh with the reference to Khulna city. Researcher developed a model, hypotheses and tested the model. The result revealed personal and market factors, perceived quality, perceived value, and corporate image as statistically significant (Uddin *et al*, 2014).

The research work of Kabadayi *et al*. studied the effects of pricing, sponsorship, distribution intensity, and advertising on product's brand equity where they revealed positive relation between those marketing activities and product's brand equity. They also found that response from consumers towards those marketing activities ranges from lower degree of

brand awareness to higher degree of brand loyalty basing on affective and cognitive behavior along with other behavioral considerations (Kabadayi *et al*., 2007).

Azad *et al*. conducted a research study on mobile service users in Iran to examine the relationship between elements of marketing and product's brand equity. It found intense influence of advertising over brand awareness among consumers where warranty was the most influential factor on brand equity with uniqueness of product feature found to be a significant one to develop brand equity (Azad *et al*., 2012).

Palaniappan and Sengottaiyan tried to analyze some influential factors related to customer loyalty towards BSNL in India. It revealed that variables like reliability, relationship, image, value-added services, and hassle of switching service operators' impacts customer loyalty towards BSNL. They recommended for improving network and customer service compatible to customer expectation (Palaniappan and Sengottaiyan, 2015).

Afza examined service quality variables to identify quality issues along with testing its associsation with perceived value, customer satisfaction, and intention for survival. It used a survey approach with twelve hundred subscribers to collect data. It found some service standards to be used in measuring quality of service for mobile telecom industry in Bangladesh. It recommended that the net promotion score of all the mobile operators found was very low and in some cases became negative might be alarming for profitability and growth (Afza, 2015).

Ansari et al. examined the effect of marketing mix on brand name and logo value with three hundred eighty five gym and aerobics clients in number using a cluster sampling technique. Multiple regressions show a higher degree of positive relation between the variables like price, mall image, and sales promotion with gym branding than any other item (Ansari *et al*., 2014).

Matin tried to measure brand equity of Grameenphone Ltd called as market leader in mobile telecom industry in Bangladesh using customer-based brand equity models named as Millward Brown's Brand Dynamics Pyramid and Keller's customer-based brand equity (CBBE). model to measure brand equity. It used a survey strategy with two hundred eight subscribers of GP to collect data through a pre-tested questionnaire. The study developed Grameenphone brand hierarchy with assigning value to each item representing the models (Matin, 2016).

Ai-Debi and Mustafa examined the impact of seven Ps on getting competitive advantage. It used five star hotels with three hundred thirty respondents for collecting data. The research came to conclusion that safety and security, furniture and equipment and green environment impacts more than others in getting competitive advantage. The research work recommended that hotels should consider all those variables as prime factors to be ahead in competition (Ai-Debi and Mustafa, 2014).

Hashim tried to identify the determinants of customer loyalty in Northwest of Nigeria. The study approached a survey with pre-tested questionnaire on GSM subscribers. The research revealed that perceived quality of service, perceived brand image and perceived customer satisfaction influences customer loyalty with no effect of price fairness. It recommended for high quality service delivery in retaining customers (Hashim, 2014).

Rahman and Rahman examined the antecedents of customer satisfaction and loyalty to identify the key factors for GP's success in Bangladesh mobile telecom industry where one hundred fifty GP subscribers were randomly drawn to face a survey with pre-tested questionnaire for their response. Customer loyalty or customer retention factors of the study revealed that subscribers are satisfied. Moreover, a large portion of forty percent respondents suggested for innovating some potential services to gain competitive advantage. The research recommended for service quality, service charges, network quality, and value added services to improve to a great extent with a focus on potential service factors to gain competitive advantage (Rahman and Rahman, 2015).

Valavi tried to serve the purpose of developing and validating an empirical research model describing a relationship between value-added services and underlying factors of brand equity in mobile telecom. It used a survey approach with four hundred ninety seven subscribers to collect data and employed structural equation modeling. The research came with a conclusion of identifying brand loyalty, perceived quality and brand awareness as statistically significant determinants of key brand equity factors. The research work recommended for using those attributes properly for designing strategies and delivering value-added services accordingly (Valavi, 2014).

Islam and Rima tried to identify the factors that impacts on customer experience influencing brand equity of mobile services. It found core services, product variety of service products and marketing promotion as major factors to have impact on customer experience for gaining brand equity (Islam and Rima, 2013).

Furthermore, Ullah observed current and projected quality of services perceived by Grameenphone customers by users in Bangladesh. The study revealed that a significant gap exists between current and projectted services in the context of networking, customer services, existence of physical facilities, billing practices, information of services, mobile banking practices, and service offerings (Ullah, 2015).

Moreover, a study by Alam *et al* attempted to analyze the gap between customer expectations and perceptions in the telecommunications industry in Bangladesh to allow mobile operators to improve. The study concludes that mobile operators should be strategic in terms of pricing, network facilities and promotional activities in the intense competition to close the gap between customer expectations and perceptions of quality of services (Alam *et al*, 2016).

Again, a study was triggered to uncover a pattern of awareness among the students of Dhaka

University in Bangladesh in terms of mobile phone use and their usage rate. it found the students with highly awareness, students of science and business schools using cell phones for educational purposes more than arts faculty students. It also revealed that female students use mobile phone more frequently as well as usage rate comparing to male students for educational purposes (Rahman, 2014).

From the above discussion, it is found that marketing practices should be strategic where brand quality has its utmost importance. This allows making more investigation on it against the use of strategic service marketing mix. The above discussion indicates the importance of being strategic for marketing practices. Therefore, researcher found ample opportunity to conduct the research work at hand.

5. Conceptual Framework and Hypotheses Development

5.1 Conceptual Framework

From the above discussion and knowledge gathered from the literature review, researcher developed the following conceptual framework for the study:

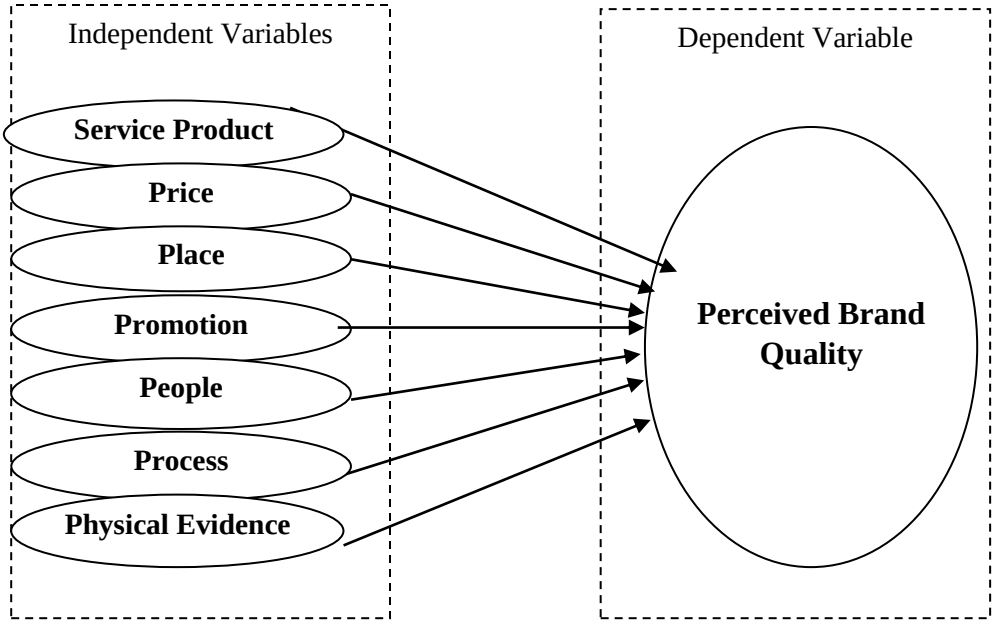

Figure 1: Conceptual Framework; developed by the researcher**.**

The above developed conceptual framework directs the effect of service marketing mix elements on perceived brand quality for the mobile telecommunication industry in northern Bangladesh.

5.2 Research Hypotheses

Basing on conceptual framework, researcher developed the required null hypotheses for the

study at hand:

H_{o1}: There is no statistically significant effect of service product on perceived brand quality;

H_{o2}: There is no statistically significant effect of price on perceived brand quality;

H_{o3}: There is no statistically significant effect of place on perceived brand quality;

H_{o4}: There is no statistically significant effect of distribution on perceived brand quality;

H_{o5}: There is no statistically significant effect of people on perceived brand quality;

H_{o6}: There is no statistically significant effect of process on perceived brand quality;

H_{o7}: There is no statistically significant effect of physical evidence on perceived brand quality.

6. Methodology of the Study

The study followed descriptive research design with quantitative approach where seven hypotheses been developed to test using SEM approach. A survey-based research strategy was adopted for data collection where personal interview using questionnaire was employed. A pre-tested structured questionnaire was developed as research instrument to collect required data. Individual recipients of mobile telecom industry were considered as population and samples from the study area. Rajshahi district was selected purposively as the research area for the convenience of data collection. Two wards from each of the urban, semi-urban and rural areas of Rajshahi district were treated as study area using lottery method. Researcher used voter list of study area as the sampling frame as subscribers' list is not accessible to mass people. This allowed the researcher to use probability sampling technique specifically simple random sampling (subscribers are overall homogeneous in nature in terms of services receive) to draw samples from the population. Researcher used eighteen years and above recipients as samples as below this range of ages are under parental guidance. Researcher made a pre-survey to know the approximate no. of population for the study who are voters of the concerned study area. Finally, the population of the study was determined to 20326. Therefore, researcher determined the required sample size using the following statistical formula (Kothari, (2004).

$$n = \frac{z^2.N.p.q}{e^2(N-1)+z^2.p.q} = \frac{(1.96)^2 \times 20326 \times .5 \times .5}{.05^2(20326-1)+(1.96)^2 \times .5 \times .5} = \frac{19521.0904}{51.7729} = 377.05 \text{ i.e., } 378$$

For the survey, a cross-sectional time-horizon was employed for the survey that took seven months to complete the fieldwork. Researcher along with two well-trained enumerators completed data collection process for the study. A total of 672 completed questionnaires were collected from the field as the 378 samples use a total SIM of 672 of different operators in Bangladesh compete in the mobile telecom industry. For the secondary data collection, publications, journal articles, dissertations, books, and websites were used. The study considered descriptive and inferential statistics to employ factor analysis, multiple regression followed by SEM analysis to get fruitful outcome from the study.

7. Data Analysis, Findings, and Discussion

In Bangladesh, penetration rate already exceeded 100% in terms of mobile telecommunication services users (www. btrc. gov.bd/ cellular-mobile). The study results in 1.78 SIM used by a unique subscriber. In the context of using number of SIM cards by a unique subscriber, the study found 62.5 percent holds 2 SIM cards, 19.2 percent 1 SIM cards, 13.4 percent 3 SIM cards, 4.2 percent 4 SIM cards, and 0.7 percent 5 SIM cards. The study also revealed, Grameenphone holds 55.8 percent subscribers followed by Robi with 20.2 percent, Banglalink 20.5 percent and Teletalk 3.5 percent. Above result indicates, subscribers are free to use any SIM (switching cost is very minimum) also free to switch to any of the operators which is a competitive signal to operators in this industry.

7.1 Demographic Profile of Respondents

Survey result dictates male respondents as 70.8 percent against female of 29.8 percent, where 22.4% found to be businessmen, 14.3% housewives, 26.8% students, and 17.4% private job holders. In the context of age, 18 years to 28 years were 46.7 percent, 29 years to 39 years were 36.8 percent, 40 years to 50 years were 15.6 percent, and above 50 years were 0.9 percent. The study reveals that 18 years to 28 years of users are highest level of users while above 50 years of aged respondents are least users in the study area. Results for income level indicates, 42.4 percent holds no do income, that indicates majority, 1.6 percent less than Tk. 5000, 25.3 percent Tk. 5000 to 20000, 22.2 percent Tk. 37000 to 52000, 7.4 percent Tk. 37000 to 52000, and 1 percent above TK. 53000. It dictates, very small no. of respondents have strong economic condition through income in the study area. Again, results for education level shows, 38.5 percent holds HSC, 32.3 percent graduation, 13.1 percent post-graduation, 11 percent SSC, 3.7 percent primary education level, and 1.3 percent below primary level among respondents.

7.2 Effect of Marketing Mix on Perceived Brand Equity

Followings are the processing, analyzing, and outcome with proper interpretation of collected data:

7.2.1 *Exploratory Factor Analysis (EFA)*

EFA used the following analytical tools to proceed further:

7.2.1.1 Reliability Analysis

Crobach's alpha (α) was employed in testing internal reliability of items under variables, and content validity of variables:

Table 1: Construct Validity

Constructs	Cronbach's Alpha	Cronbach's Alpha of Standardized Items	Total Items
Service Product	0.819	0.816	16
Price	0.854	0.850	11
Place	0.789	0.792	9

Promotion	0.848	0.850	15
People	0.882	0.882	8
Process	0.804	0.811	7
Physical Evidence	0.819	0.819	8
Perceived brand quality	0.784	0.785	3

***Source*:** Analysis on Field Survey Data

Result shows, α value of constructs are good measures and bear internal consistency along with their items attached.

7.2.1.2 Data Normality Analysis

The following descriptive statistics used for data normality analysis:

Table 2: Mean, Standard deviation, Skewness, Kurtosis

Components	**Mean**	**Std. Deviation**	**Skewness**	**Kurtosis**
Service product	3.3881	.69498	-.042	-.568
Price	3.2444	.73504	.070	-.380
Place	3.4839	.69060	-.251	.621
Promotion	3.0531	.72646	.587	-.073
People	3.6261	.77354	-.634	.769
Physical evidence	3.4340	.85419	-.461	-.093
Process	3.8157	.63000	-.372	.520
Positive attitude	3.3215	.69560	-.265	.578

Source: Analysis on Field Survey Data

Result shows, least spread of data around the mean with very minimum standard deviation of constructs. Moreover, standard error of 0.188 (close to zero) dictates the samples as representative. Furthermore, their absolute value of skewness and kurtosis around 2 and 7 respectively (Kline, 2005) which satisfies condition. All these confirm data as normally distributed.

7.2.2 Requirements of EFA for Service Marketing Mix

7.2.2.1 Kaiser-Meyer-Olkin Measure (KMO) of Sampling Adequacy

KMO has been used to identify the sample adequacy for exploratory factor analysis.

Table 3: Kaiser-Meyer-Olkin Measure (KMO) of Sampling Adequacy

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.813

Bartlett's Test of Sphericity	df	1225
	sig.	0.000

Source: Analysis on Field Survey Data

KMO value of 0.813 is under acceptable level of greater than 0.5 (Kline, 2005) dictates, the sample size required for exploratory factor analysis is adequate.

7.2.2.2 Factor Extraction

The rule of Eigen value greater than one for factor extraction (Field, 2005) was considered to retain constructs and items.

Table 4: Total Variance Explained

Component	Initial Eigen values			Rotation Sums of Squared Loadings		
	Total	Variance%	Cumulative %	Total	Variance%	Cumulative %
Price	10.605	27.907	27.907	5.874	18.195	18.195
People	4.586	12.069	39.976	5.508	14.233	32.428
Process	2.706	7.541	47.517	3.664	10.327	42.755
Physical Evidence	2.158	5.890	53.407	3.043	6.954	49.709
Place	1.829	5.025	58.432	2.676	6.519	56.228
Promotion	1.803	4.956	63.388	2.497	5.783	62.011
Service Product	1.242	3.049	66.437	1.667	4.426	66.393
Extraction Method: Principal Component Analysis						

Source: Analysis on Survey Data

Result above also shows that total variance is 66.393 explained by principal constructs.

7.2.2.3 Rotated Component Matrix

Items with values with more than 0.5 has been retained in the rotated component matrix using the conditions for it.

Table 5: Rotated Component Matrix[a]

No. of Items for each Component	Component						
	Price	People	Process	Physical Evidence	Place	Service Product	Promotion
1	.799	.832	.829	.725	.817	.813	.793
2	.789	.783	.738	.712	.829	.772	.842
3	.843	.698	.825	.826	.771	.742	.783
4	.833	.571	.812	.742		.823	.719
5	.756	.843					

No. of Items for each Component	Component						
	Price	**People**	**Process**	**Physical Evidence**	**Place**	**Service Product**	**Promotion**
6	.743	.712					
7	.724	.681					
8	.743	.784					
9		.762					
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.[a]							

Source: Analysis on Field Survey Data

Finally, 36 items under 7 constructs has been extracted.

7.2.3 Requirements of EFA for Perceived Brand Quality

7.2.3.1 KMO and Bartlett's Test

Table 6: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.826
Bartlett's Test of Sphericity	df	3
	Sig.	.000

Source: Analysis on Field Survey Data

KMO value of 0.826 suggests the sample adequacy for factor analysis.

7.2.3.2 Factor Extraction

Table Error! No text of specified style in document.**: Total Variance Explained**

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	**Variance%**	**Cumulative%**	**Total**	**Variance%**	**Cumulative%**
Positive Attitude	1.962	64.393	64.393	1.962	64.393	64.393
Extraction Method: Principal Component Analysis.						

Source: Analysis on Field Survey Data

Result shows, 64.393% of total variance explained by the construct.

7.2.3.3 Rotated Component Matrix

Table 8: Rotated Component Matrix[a]

Items under component	Positive Attitude
1	.826

2	.815
3	.798
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.[a]	
a. Rotation converged in1 iteration.	

Source: Analysis on Field Survey Data

Result shows that 3 items has been extracted under a single construct.

7.3 *Multiple Regression Analysis*

It is considered to measure whether service marketing mix has effect on perceived brand quality or not.

Service Marketing Mix on Perceived Brand Quality

Perceived brand quality can be expressed as:

$$Y_{PBQ} = \beta_0 + B_1P_1 + B_2P_2 + B_3P_3 + B_4P_4 + B_5P_5 + B_6P_6 + B_7P_7$$

Where, Y_{PBQ} = Perceived brand quality, β_0 = constant (coefficient of intercept), P_1 = Price, P_2 = People, P_3 = Process, P_4 = Physical Evidence, P_5 = Place, P_6 = Service Product, P_7 = Promotion, B_1,…, B_7 = regression coefficient of factor 1 to 7.

Table 9: Model Summary for Perceived Brand Quality

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.788[a]	.626	.624	.37677
a. Predictors: (Constant), price, people, process, Physical evidence, place, service product, promotion. b. Dependent Variable: Perceived brand quality				

Source: Analysis on Field Survey Data

According to result, R value of 0.788 dictates 78.8% correlation exists among independent variables and R square value of 0.624 means ideal to generalize the model because of very small difference with R square value of 0.626.

Table 10: ANOVA for Perceived Brand Quality

Model	df	Mean Square	F	Sig.
Regression	7	38.492	186.166	.000[a]
Residual	665	.769		

Total	672			

a. Predictors: (Constant), price, people, process, Physical evidence, place, service product, promotion.

b. Dependent Variable: Perceived brand quality

Source: Analysis on Field Survey Data

Result shows that F ratio is 185.166 with fulfill the condition of highly significant p value of 0.000 less than 0.05. It dictates the model with significant level of goodness-of-fit for predicting variance of perceived brand quality.

Table 11: Coefficients for Perceived brand quality

Model	**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**
	B	Std. Error	Beta		
(Constant)	3.062	.016		156,242	.000
Price	.514	.016	.569	32.436	.000
People	.325	.016	.378	12.653	.000
Process	.367	.016	.418	16.869	.000
Physical Evidence	.185	.016	.239	2.706	.008
Place	.246	.016	.296	5.326	.001
Service Product	.416	.016	.471	24.289	.000
Promotion	.224	.016	.276	2.833	.003
a. Dependent Variable: Positive attitude					

Source: Analysis on Field Survey Data

Result shows, Y_{PBQ} = 0.000 + 0.569 + 0.378 + 0.418 + 0.239 + 0.296 + 0.471 + 0.276=2.647. It interprets as: for increase of a single unit in service marketing mix, perceived brand quality would be increased by 2.647. It also shows that all the service marketing mix elements are statistically significant for perceived brand quality.

7.4 *Structural Equation Model (SEM) Analysis*

Followings have been processed to operate SEM analysis:

7.4.1 Confirmatory Factor Analysis (CFA)

According to CFA condition of 0.50 threshold level (Hair et al., 2009), all the factor loadings confirmed threshold level. R^2 values also were within the range of not less than 0.20 which dictates high level of error (Hooper et al., 2008).

Table 12: Composite Reliability and Average Variance Extract

Name of Component/Variable	Composite Reliability (CR)	Average Variance Extract (AVE)
Price	0.89	0.63
People	0.87	0.62
Process	0.84	0.61
Physical Evidence	0.87	0.61
Place	0.86	0.59
Service Product	0.84	0.57
Promotion	0.89	0.63

Source: Analysis on Field Survey Data

Composite /Construct reliability (CR) values are within limit to be treated as very strong internal consistency of variables fulfilling the rule which tells that coefficient for Cronbach's alpha value between 0 and 1 while very close to 1 dictates a greater internal consistency of scale items (Gliem and Gliem, 2003).

Result also dictates that the value of AVE for each construct provides greater value comparing to its corresponding squared correlation which confirms the condition of discriminatory validity (Gliem and Gliem, 2003).

7.4.1.1 Correlation of Components

It is done to make confirmation that variables are not highly correlated to each other.

Table 13: Correlation between Components

Statistic		price	people	Process	Physical evidence	place	Service product	promotion	Positive attitude
price	Pearson Correlation	1							
people	Pearson Correlation	.345**	1						
Process	Pearson Correlation	.309**	.529**	1					
Physical evidence	Pearson Correlation	.322**	.501**	.480**	1				
place	Pearson Correlation	.220**	.484**	.304**	.322**	1			

Service product	Pearson Correlation	.271**	.448**	.446**	.344**	.245**	1		
promotion	Pearson Correlation	.345**	.427**	.396**	.453**	.277**	.361**	1	
Perceived brand quality	Pearson Correlation	.210**	.126	.056	.052	.085	.019	.112**	1
**. Correlation is significant at the 0.01 level (2-tailed).									

Source: Analysis on Field Survey Data

7.4.1.2 Measurement Fit Indices of the Model

Measurement model confirmed the causal interactions among variables within the structural model. Followings are the measurement fit indices for the model:

Table 14: Measurement Fit Indices for the Model

Goodness-of-fit Indices	**Benchmark**	**Study Value**
Absolute goodness of fit measure		
Chi-square (CMIN)	P ≥ 0.05	0.001
Chi-square /degree of freedom	≤ 2	1.7
Absolute badness of fit measure		
Root mean Square Error of Approximation (RMSEA)	≤ 0.08	0.06
Incremental fit measure		
Normed Fit Index (NFI)	≥ 0.90	0.91
Comparative Fit Index (CFI)	≥ 0.90	0.94
Tucker Lewis Index (TLI)	≥ 0.90	0.93
Parsimony fit measure		
Parsimony Comparative of Fit index (PCFI)	≥ 0.50	0.81
Parsimony Normed of Fit index (PNFI)	≥ 0.50	0.77

Source: Analysis on Field Survey Data

Result shows that the measurement fit indices confirms the fitness of the model as it satisfied three fit indices; absolute, incremental, and parsimonious measures (Holmes-Smith, 2006).

7.4.2 Structural Model

It assesses the hypothesized relationships among the latent variables. Results of the second stage of Structural Equation Model are as follows:

Table 15: Result of Hypotheses Test

Hypotheses Paths	***β***	***p* value**	***t* statistic**	**Results of Ho**
Positive attitude ← Price	0.569	32.436	.000	Rejected
Positive attitude ← People	0.378	12.653	.000	Rejected
Positive attitude ← Process	0.418	16.869	.000	Rejected
Positive attitude ← Perceived Physical Evidence	0.239	2.706	.003	Rejected
Positive attitude ← Place	0.296	5.326	.001	Rejected
Positive attitude ← Service Product	0.471	24.289	.000	Rejected
Positive attitude ← Promotion	0.276	2.833	.003	Rejected

Source: Results on Field Survey Data

Therefore, the model is shown graphically below:

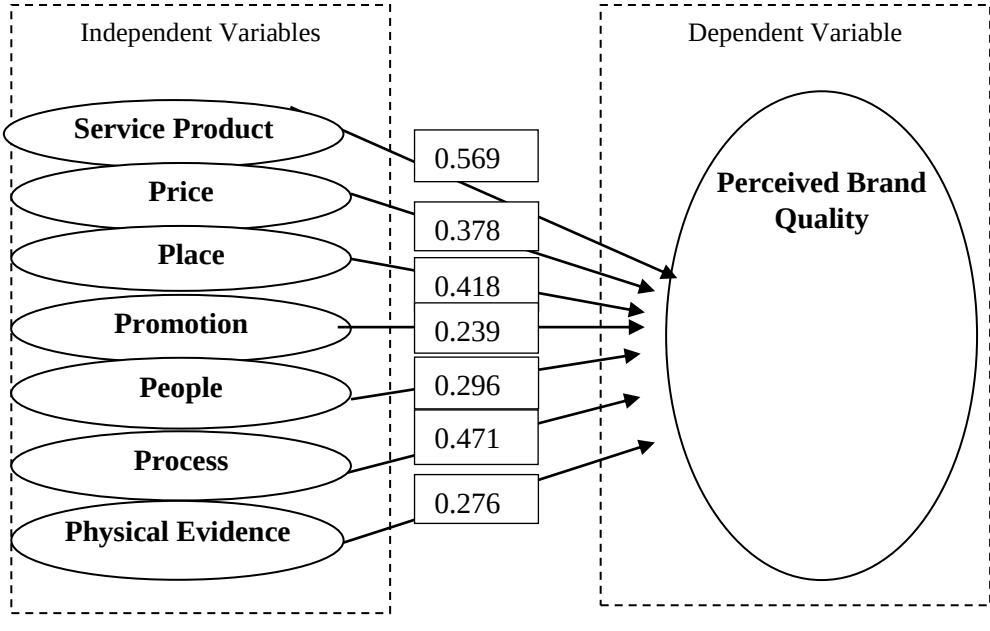

Figure 2: Model from the analysis using β (beta) value.

8. Implications

The study reveals, mobile operators must invest strategically in marketing program to increase brand equity and influence subscribers which may value them in a sustainable manner. By implementing the findings, operators may improve their strength as perceived brand equity will increase. Operators would be able to leverage strategic marketing through learning the research work. The study may be found as appreciable because it would improve the worth of previous literature on the study area.

9. Concluding Remarks

As this industry holds a greater interest to the people of Bangladesh, consideration of perceived brand quality takes place in brand management to the operators. The study provide a basis of some variables to consider while preparing service offers named as service marketing mix where its seven elements with thirty six items found in this study are determinant to perceived brand equity in the study area. Since competitive advantage is the key to be ahead, operators should be keen to serve the interest of the subscribers using perceived brand quality.

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