



**MEASURING THE IMPACT OF THE CUSTOMER-BASED BRAND EQUITY (CBBE) DIMENSION ON BRAND LOYALTY: A STUDY ON SELECTED SMARTPHONES IN BANGLADESH**

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**Abstract**

One of the vital issues in brand building is customer-based brand equity. Any brand can measure its equity based on proportions like salience, performance, imagination, judgment, feelings, and resonance. This study intends to measure the outcome of the customer-based brand equity dimension on brand loyalty and investigate the effects of those dimensions on their purchasing intentions. Both online and offline surveys conducted through a self-structured questionnaire that was distributed randomly among young consumers in Bangladesh, and data were collected from 220 respondents, whereas 200 completed final questionnaires considered for the study. All of the needed reliability and validity have tested. Structured Equation Modeling (SEM) has applied to examine the proposed hypothesis of the study. The findings demonstrate that, within specific Smartphone categories, the dimensions of customer-based brand equity, such as brand salience, brand judgment, and feelings contribute to increasing customer loyalty. The findings will aid Smartphone marketers in developing effective marketing strategies to take advantage of market opportunities. The limitation of the study was the small sample size and geographic focus.

**Keywords:** Brand equity, Brand loyalty, Brand salience, Brand performance, Smartphone.

**Introduction**

Brand equity is a result of brand building, brand understanding, and brand relationships of a particular product and brand loyalty is an outcome of brand equity (Chatzipanagiotou et al., 2019). Organizations require efficient tools for recruiting, keeping, and developing a consumer base with strong brand equity to succeed in the cutthroat commercial world. Brand equity was first used in marketing about 20 years ago. Simply, 'brand' means any term, name, sign or symbol that helps to identify and differentiate one brand from others. A brand can be described simply as the sole identity of products or services offered by specific organizations. According to Keller (2021), a powerful brand can make a strong image in the observance of consumers when competing with other brands. A brand can differentiate its products from those of other brands. The primary elements that contribute to the creation of a distinctive location in the customer's mind is brand equity. Brand equity denotes to the share of a product or service that is related to the brand. It is just referred to as an intangible property that is created through customer attitudes. Many studies have substantiated the connection between perceived value and brand loyalty (Aaker, 1991; Jones et al., 2006; Overby and Lee, 2006; Peña et al., 2017; Yoo et al., 2020). The stronger a consumer's insights of worth, the higher the probability that they will engage in recurrence behavior. Given that a consumers' insight of value serves as a motivational feature, it assumes a significant character in forecasting loyalty, encompassing forthcoming actions (Yoo et al., 2020). Conceptualizing the brand equity model, Aaker (1991) broke new ground in the literature and gave practitioners and researchers a way to measure brand equity. He claimed that a brand's equity is made up of its assets and liabilities. It is the typical model used by scholars like Kapferer (2008) and

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Joseph et al. (2020) whose models pressure the points made by Aaker (1991). According to Jara (2018), the standard brand equity leads to loyalty to the brand and store, while Mahajan et al. (1991) explanation for customer-based branding by the perception of the customer. According to Keller (1993), customer-based branding denotes to the distinctive marketing impression of brand information on consumers' responses to brand promotion. It is based on consumer memory and brand familiarity. In a different study, Farquhar (1989), explained brand equity as an extra benefit that a brand gives to a product, while Ishrak & Al-Mamun (2022) recognized that customer-based brand equity (CBBE) acting a significant character in determining product resonance within the carbonated soft drinks sector in Bangladesh. Brand equity has been validated by Gil et al. (2007) as a value addition to the product. Brand equity is typically demarcated as the consumer's conception of all the benefits and advantages that a brand possesses in comparison to other brands. This study is undertaken to identify the consequence of the customer-based brand equity dimension on brand loyalty towards some selected Smartphone categories in Bangladesh. Thus, it mentions the following questions to be answered:

- What is the effect of customer-based brand equity proportions on brand loyalty for some selected Smartphone categories?
- What is the connection between different dimensions of customer-based brand equity for some selected Smartphone categories in Bangladesh?
- What are the suggestions that can be provided to Smartphone marketers to take effective action to enhance brand loyalty for some selected Smartphone categories in Bangladesh?

The research aims are to measure the consequence of customer-based brand equity proportions on brand loyalty and provide some suggestions and directions for Smartphone marketers to enhance brand loyalty in Bangladesh.

### **Objectives of the Study**

The exploratory study pursues to evaluate the influence of the customer-based brand equity on product loyalty in some selected Smartphone categories in Bangladesh, with the following primary objectives:

- To inspect the customer grounded brand equity on product loyalty of some selected Smartphone categories in Bangladesh.
- To analyze the customer-based brand equity dimension's impact on product loyalty for some selected Smartphone categories in Bangladesh.
- To identify the connection between different dimensions of the customer-based brand equity for some selected Smartphone categories in Bangladesh.

### **Limitations of the Study**

The study depends on self-reported data from questionnaires to assess brand equity and customer-based brand loyalty, which may be biased toward social desirability. Respondent can give responses they think are anticipated or favorable, which could lead to distortions in their true opinions and behaviors regarding the chosen devices. The study's capacity to establish an objective association between CBBE dimensions and brand loyalty based on selected Smartphones in Bangladesh may be compromised by this bias, which may also impair the findings' accuracy and validity. Moreover, the authors did not have enough opportunity to compare the scope of customer-grounded brand equity that support to increase the brand loyalty of consumers for some selected Smartphone categories in Bangladesh among the various locations.

### **Literature Review**

Customer-based product equity is the most important factor in any organization and a company can measure customer satisfaction and brand loyalty. Many organizations are attempting to improve customer-based brand equity in order to increase organizational success and brand loyalty. Customer-based brand equity has a positive influence on customer preference and brand loyalty (Mudanganyi, 2019). Consumer-based brand performance (CBBP) is heavily influenced by brand feature, association, and judgment (Yang et al., 2019). Jeon and Yoo (2021) investigate how brand experience influences brand loyalty and comprehended value by examining aspects such as brand consciousness, brand imaginary, and comprehended quality. The findings highlight the reputation of building a

customer-based brand equity (CBBE) which includes sensory, emotional, cognitive, and behavioral components as a critical technique for increasing customer brand loyalty. In another study, Keller (1993) recommended that generating product loyalty needs a strong effort by the organization. He also suggested that customer-based product equity responds to the marketing of the brand differently and uniquely. The measurement of customer-based brand loyalty involves assessing the appealing marketing-driven results derived from strategic marketing initiatives (Gwinner et al., 1998). Customer-based equity directly contributes to customer satisfaction and reputation while also indirectly fostering positive effects on consumer engagement (Cambra-Fierro et al., 2021). In another study Kerri-Ann et al. (2008) identified that official buyers have a strong impact on the vending organization, counting corporate brands, and the credibility of staff. Gautam & Kumar (2012) conducted an exploratory factor analysis to reduce the overall number of items and to measure and analyze the factors. The findings produced a total of six factors, which are resonance, judgment, feelings, performance, imaginary, and salience. According to the study's findings, brand performance ranked higher on the importance scale for brand resonance than brand feelings and brand judgment.

A research study explores the connection between consumer-based and financial-based brand equity. This analysis encompasses consumer-related data, such as awareness, imaginary, quality, brand value, equity, and loyalty, in addition to publicly available financial data for destinations, which includes metrics such as visitor numbers, market segment, tourist expenditures, tourism taxes, and employment in the tourism sector (Tasci, 2020). A study was conducted by Farhana and Islam (2012) to appraise the brand equity of financial institutions in Bangladesh using the customer-based product equity model of Keller using 300 respondents and data collected by organized questionnaire and assesses that if the customer have a strong connection to the brand, they are more likely to exhibit brand loyalty. The facilities of a product, its reliability, and its existence in the customer's mind leads to a robust connotation by the brand. On the other hand, brand recall, and recognition have a significant effect on brand loyalty. In another study Datta et al. (2017) identified that the consumer perceptions and sales are the two main methods for assessing brand equity. Sales-based brand equity (SBBE) illustrates the brand's influence within decision-making models, whereas the consumer-based brand equity model assesses customers' attitudes and opinions regarding the brand.

A study discovered the influence of brand image on customer-grounded brand equity. According to the data, enthusiasm, competence, and sincerity, on average, exert a more significant positive influence on customer-grounded brand equity than sophistication and severity (Luffarelli, 2023), while Pina and Dias (2021) identified that the brand experience partakes a positive influence on consumer-grounded brand equity. According to Swaminathan et al. (2007), brand affiliation helps to protect negative brand statistics. Past studies suggested that if sellers want to transform the negative image into a positive image of the brand, then brand affiliation is vital. In the context of the chosen Smartphone category in Bangladesh, this study sought to measure the influence of the customer-based brand equity dimension on customer brand loyalty, which had not been previously explored. In another study Mahajan et al. (1991) identified that the degree of the customer's perspective can be used to gauge customer-based product equity. As per the findings of Qiao et al. (2022), brand value exerts a favorable impact on brand quality and customer aptitude. Conversely, brand resonance and affective commitment serve as mediating factors in the association between product value and customer-based brand equity. In the case of India, Husain et al. (2022) explored the impact of consumer-brand dyadic attributes, encompassing elements such as experience, resonance, trust, and consumer participation, on the desire for luxury products. Suhardi et al. (2022) examined that the brand salience operates as a mediator in the affiliation between brand consciousness and customer's intention to purchase. Both brand consciousness and the consumer's intention to purchase are positively and significantly affected by brand salience. On the other hand, brand salience, brand equity, and purchase intention collectively play a positive role in strengthening brand awareness, brand image, and brand identity.

### **Conceptual Framework and Hypothesized Model**

To explain the impact of the customer-based brand equity on brand loyalty within selected Smartphone categories in Bangladesh, Figure 1 illustrates the conceptual framework and hypothesized model. The conceptual framework of this study has identified some dimensions of customer-based brand equity like brand salience, performance, imagination, judgment, and feelings that ultimately guide enhancing the brand loyalty of some selected Smartphone categories in Bangladesh.

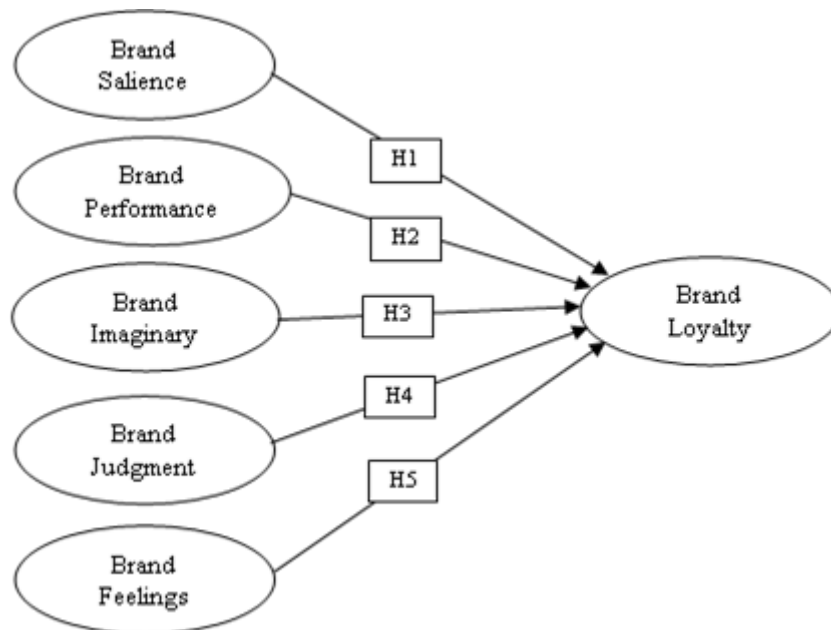


Figure 1. Conceptual Framework and Hypothesized Model

### Brand Loyalty

Brand loyalty stands a key aspect of success, and it refers to a customer's willingness to continue purchasing a particular brand's products or services over time. Brand loyalty means being loyal and sincere to any brand. It does not allow a consumer to switch to other brands rather than respected brands (Oliver, 1997). Aaker (1991) said that consumers are likely shift to alternative brand when they think that the present brand is charging high.

### Brand Salience

Brand salience refers to the awareness of a brand among customers. A brand can come to mind when customers think about a product or service category. Brand salience can be achieved through advertising, brand name, packaging, and other marketing activities. Brands that have high salience are more likely to be considered by customers when they are making a purchase decision. Brand salience refers to a brand's prominence in the consumer's memory and its association with consumer choices and purchases (Menon, 2019). Thus, the proposed hypothesis is:

**H<sub>1</sub>:** Brand salience has a significant and positive influence on consumer brand loyalty in the case of the selected Smartphone categories in Bangladesh.

### Brand Performance

Brand performance pertains to the extent to which a brand effectively fulfills the functional requirements or needs of its customers. In simpler terms, brand performance assesses whether the product or service accomplishes its intended purpose and does so effectively. Establishing robust brand performance entails providing dependable, top-notch products or services that either meet or surpass customer anticipations. Huang and Sarigöllü (2014) propose two categories of brand performance metrics: (a) customer-centric measures, focusing on brand knowledge, and (b) product market performance measures, emphasizing revenue premium. Consequently, the following hypothesis is put forth:

**H<sub>2</sub>:** Strong brand performance has a positive and significance influence on consumer brand loyalty within the chosen Smartphone categories in Bangladesh.

### **Brand Imagery**

Brand imagery pertains to the intangible elements of a brand, such as its personality, values, and the associations that customers form with the brand. Building strong brand imagery involves creating a clear and compelling brand identity that resonates the target audience. According to Keller (2003), brand image is the perception of the products and services that connect to their external characteristics. He said that some factors are essential to increase the brand image. He additionally clarified that brand image is a thing that consumers mark uniquely. The brand image has a positive and significant effect on brand loyalty with the mediating role of customer satisfaction and brand awareness (Abbas et al., 2021). Thus, the proposed hypothesis is:

**H<sub>3</sub>:** Strong brand imagery has a significant positive impact on consumers' brand loyalty for some selected Smartphone categories in Bangladesh.

### **Brand Judgment**

Brand judgment is the idea or perception of a brand that consumers hold (Keller, 1993). The concept is closely related to the brand's value or product quality. According to Keller (2001), a brand with a strong level of judgment holds the potential for high consumer brand loyalty. Consumers can form various judgments about the brand, and among these, four crucial judgments include brand quality, credibility, consideration, and superiority (Keller et al., 2008). Consequently, the proposed hypothesis is:

**H<sub>4</sub>:** Strong brand judgment has a significant and positive influence on consumer brand loyalty within the chosen Smartphone categories in Bangladesh.

### **Brand Feelings**

The last step in establishing brand credibility entails assessing the feelings and perceptions of consumers regarding the brand. Brand feelings refer to the emotional connections that customers have with the brand. Building strong brand feelings involves creating positive emotional experiences that resonate with customers and build loyalty. In a research Aziz and Yasin (2010) found a strong connection between brand feelings and loyalty. That's why the following hypothesis is taken:

**H<sub>5</sub>:** Strong brand feelings have a significant and positive influence on consumer brand loyalty within the chosen Smartphone categories in Bangladesh.

When applied to the appropriate platforms, each of these factors is measurable, allowing for the identification of further brand equity-building opportunities. Every touch point throughout the client journey must communicate branding to generate this awareness. To inform and enhance customer brand loyalty and to highlight the brand's competitive advantage, data may then be collected at various marketing phases.

### **Materials and Method**

To achieve the objectives, the researchers adopted a qualitative research approach. A systematic survey was carried out among a sample of Smartphone users in various Bangladeshi regions. The poll asked questions about brand loyalty, salience, performance, imaginary, judgement, and feelings. To enable researchers to conduct a qualitative analysis of the data, participants were asked to score their opinions on a 5-points Likert scale. This study was conducted through a survey of 200 Smartphone users in Bangladesh. A questionnaire was designed using the four dimensions of the CBBE model as a framework: salience, performance, imagery, and feelings. Participants were requested to provide ratings for their perceptions to selected Smartphone brands concerning each dimension within the CBBE model, along with their overall assessment of brand loyalty.

### ***Types of Research Design***

In this study, the effect of customer-based product equity dimension's impact on brand loyalty has been required to be measured. That's why an exploratory study has been introduced to achieve the primary goals of the impact of customer-based product equity dimensions on brand loyalty for some selected Smartphone categories in Bangladesh.

### ***Types of Data:*** Primary

### ***Measurement Instrument***

The study has identified and developed five dimensions of customer-based brand equity that helps to expand brand loyalty within specific Smartphone categories in Bangladesh. The brand loyalty dimension includes prefer, trust, recommend, reliability, and repeat purchase. The salience dimension includes brand hearing, brand identification and brand knowledge. Performance dimension includes the brand has special features, reliability and durability. Imaginary dimension includes premium quality, availability and charging the right price. The judgment dimension includes good opinion, satisfaction, innovation and brand uniqueness. The feelings dimension includes feelings of pleasure, feelings of safety, feelings of self-respect and feelings of social approval.

### ***Scaling Technique***

In the study, a 5-point Likert scale was utilized to accumulate responses from the participants. Respondents were instructed to mark the points they found to be the most compelling and appropriate. On this 5-point Likert scale, reaching from 'strongly disagree' (1) to 'strongly agree' (5), participants were questioned to specify their level of disagreement or agreement. To ensure questionnaire accuracy, a pretest involving twenty respondents was conducted before finalizing the questionnaire.

### ***Questionnaire Development***

A self-structured questionnaire was utilized to gather primary data. Three sections make up the questionnaire. The respondents' demographic information is included in the first section. In the second section, some basic information about customer-based brand equity to the particular Smartphone category was presented. In the third section, factor analysis was used to identify five factors that contribute to increased brand loyalty for a particular Smartphone category, and 27 items were created under these factors.

### ***Sample Size and Sampling Technique***

Non-probability sampling was chosen for its cost and time efficiency since constructing a sample frame can be resource-intensive. Among the various non-probability sampling techniques, we opted for simple random sampling. The study's sample size covered 200 individual Smartphone users, and the geographical scope of the study was limited to the Kushtia district in Bangladesh.

### ***Data Collection***

The study collected information from January 01, 2022, to March 31, 2022, online and physically both using self-structured questionnaire with a five-point Likert scale from 200 respondents (Who use Smartphone) in the Kushtia district of Bangladesh.

### ***Data Analysis***

Users of Smartphones have provided information, which has been encoded in SPSS version 22 software and R statistical software (with packages like lavaan) used for analysis. Cornbach's Alpha reliability analysis, multiple regression analysis, structural equation model (SEM) diagram, and correlation analysis are used to analyze the data.

### ***Results and Discussions***

In the context of Smartphones in Bangladesh, the study's findings offer light on the relationship between CBBE characteristics and brand loyalty. The important findings are as follows:

#### ***Demographic Profile of the Respondent***

The Table 1 displays the respondent's demographic profile. The demographic profile of the participants shows that most of the respondents are male (72.5%); among them, most are 20–25-year-olds (83%), have completed graduation (80%), and their income level is 5000–10,000 taka per month (72%).

Table 1. Respondent's Demographic Profile

Variables	Categories	Frequency	Percentage
Gender	Male	145	72.5%
	Female	55	27.5%
Age	Below 20 years	26	13%
	20-25 years	166	83%
	26-30 years	07	3.5%
	31-35 years	01	0.5%
Education	SSC	04	2%
	HSC	17	8.5%
	Graduation	160	80%
	Masters/Post-graduation	18	9%
	Doctor of Philosophy	01	0.5%
Occupation	Students	187	93.5%
	Businessman	05	2.5%
	Private Job	04	02%
	Government Job	04	02%
Income	5000-10000 tk.	144	72%
	10000-15000 tk.	45	22.5%
	15000-20000 tk.	07	3.5%
	20000-30000 tk.	03	1.5%
	30000 and above	01	0.5%

*Source: Author's Calculation*

This table presents data on various variables and their corresponding categories along with the frequency and percentage of each category within the dataset. Male respondents are 72.5% and most of them are 20-25 years old. Most of the respondents completed graduation (80%) and (93.5%) are students. The majority of the respondent's monthly income (transfer payment) is taka (5000-1000). These statistics provide an overview of the demographic and socioeconomic characteristics of the surveyed individuals.

This study also collected basic information from the respondents which are represented in the following Table 2.

Table 2. Basic Information of the Respondents about the Customer-Based Brand Equity of Smartphones

Variables	Categories	Frequency	Percentage
Do you have a Smartphone?	Yes	200	100%
What brand of Smartphone do you use?	iPhone	15	7.5%
	Samsung	54	27%
	Xiaomi	41	20.5%
	Oppo	28	14%
	Vivo	24	12%
	Symphony	09	4.5%
	Nokia	04	2%
	Others	25	12.5%
	How long have you been using this phone?	1- 6 months	16
6 months - 1 year		24	12%
1 year - 2 years		58	29%
2 years - 3 years		51	25.5%
3 years and above		51	25.5%
How much was the price of your Smartphone at the time of purchase?	5000 -10000 tk.	27	13.5%
	10000 -15000 tk.	52	26%
	15000 - 20000 tk.	63	31.5%
	20000 - 30000 tk.	42	21%
	30000 and above	16	08%
Who influenced you to buy this phone?	Self	116	58%
	Family members	42	21%
	Friends	29	14.5%
	Any celebrity	07	3.5%
	Others	06	03%

*Source: Author's Calculation*

**Reliability Analysis**

A Cronbach's Alpha of 0.90 for a scale with 27 items indicates an excellent level of internal consistency reliability. It's range from 0 to 1, with higher values indicating greater reliability. A value of 0.90 is considered excellent and suggests that the scale is highly reliable. The high Cronbach's Alpha suggests that the items in the scale are highly consistent with each other. Respondents who answer positively to one item are likely to answer positively to other items as well, and vice versa. So, the questionnaire used was reliable for information collection.

Table 3. Analysis of Reliability

Cronbach's Alpha	Number of Items
0.90	27

Source: SPSS 22.0

**Hypotheses Test**

To evaluate the hypotheses, researchers utilize a structural model, facilitating the examination of the proposed hypotheses and providing insights into the relationships between dependent and independent variables. Structural equation modeling (SEM) is the chosen method to investigate and test the hypothesized causal relationships among brand loyalty within selected Smartphone categories in Bangladesh. SEM enables a comprehensive analysis of these relationships and provides a valuable tool for researchers in understanding the complex dynamics involved.

Table 4. Multiple Regression Analysis

Hypothesis	Independent Variable	Non-standardized Coefficients		Standardized Coefficients	T	P	Decision
		Beta	Std. Error	Beta			
(Constant)		0.490	0.324		1.513	0.132	
H <sub>1</sub>	Salience	0.208	0.102	0.160	2.042	0.043	Supported
H <sub>2</sub>	Performance	-0.101	0.103	-0.880	-0.978	0.329	Rejected
H <sub>3</sub>	Imagination	-0.025	0.090	-0.020	-0.281	0.779	Rejected
H <sub>4</sub>	Judgment	0.318	0.111	0.287	2.863	0.005	Supported
H <sub>5</sub>	Feelings	0.398	0.089	0.364	4.473	0.000	Supported

Source: SPSS 22.0

**Dependent Variable:** Loyalty

**Note:** H = Hypothesis, Std. Error = Standard Error, T = Hypothesis Test Statistic, P = Probability.

The multiple regression analysis model exhibits that salience ( $\beta = 0.208$ ,  $P = 0.043$ ), judgment ( $\beta = 0.318$ ,  $P = 0.005$ ), and feelings ( $\beta = 0.398$ ,  $P = 0.000$ ) of customer-based brand equity have a positive statistically significant impact on enhancing the loyalty of customers in case of the selected Smartphone category in Bangladesh. On the other hand, the coefficient of performance ( $\beta = -0.101$ ,  $P = 0.329$ ), and imaginary ( $\beta = -0.025$ ,  $P = 0.779$ ) is insignificant. These results suggest that salience, judgment, and feelings are statistically significant predictors of dependent variable brand loyalty in this multiple regression model.

**Structural Equation Model (SEM) Analysis**

A Structural Equation Model (SEM) was executed using the statistical software R, with packages such as lavaan. To validate the relationships between the constructs as hypothesized in the SEM path coefficients, we assessed the fit of the structural model. This analysis is crucial for evaluating how well the model aligns with the data and provides insights into the validity of the proposed relations between the variables. The model's fit indices yielded the following results:

Table 5. Structural Equation Model (SEM) Result

$\chi^2$	df	p	$\chi^2/df$	RMR	GFI	NFI	IFI	CFI	RMSEA
365.015	198	0.000	1.843	0.026	0.945	0.945	0.967	0.946	0.052

Source: Statistical Software R (with packages like lavaan)

The significance of the structural equation model (SEM) is expressed below:

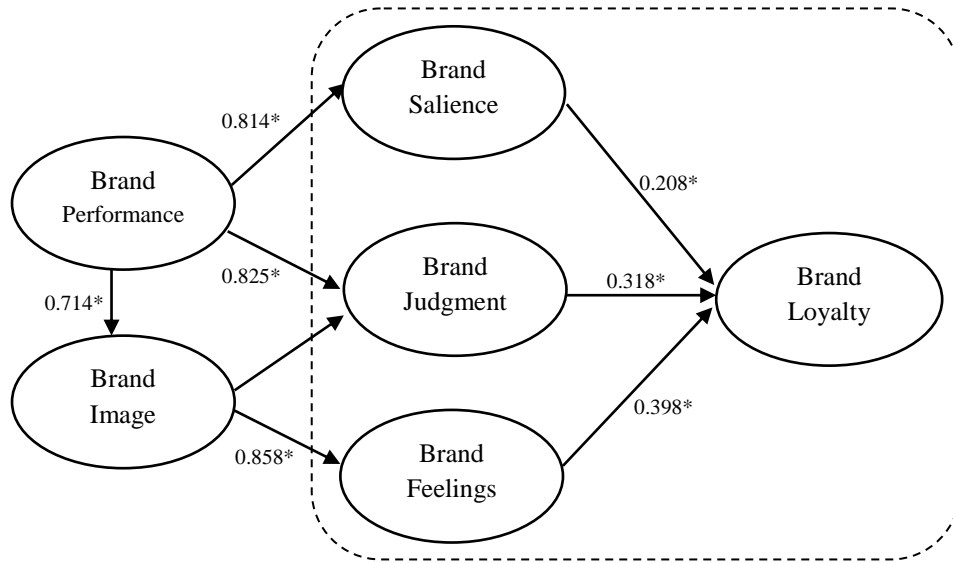
- **Chi-Squared Statistic ( $\chi^2$ ):** This value,  $\chi^2 = 365.015$ , is the result of the chi-squared test. To evaluate the goodness of fit for the Structural Equation Model (SEM), we quantify the difference between the observed covariance matrix and the anticipated covariance matrix derived from the fitted SEM model. In essence, it quantifies how close to structural model aligns with the actual data. A lower  $\chi^2$  value indicates a more favorable fit, suggesting that the model's predicted relationships match the observed data more closely.
- **Degrees of Freedom (df):** The  $df = 198$ , represent the number of parameters in the structural model that were estimated or allowed to vary.
- **p-value:** The probability value, denoted as  $p = 0.000$ , indicates the likelihood of encountering a chi-squared test as the calculated one ( $\chi^2 = 365.015$ ) under the statement that the null hypothesis is correct. In the context of Structural Equation Modeling (SEM), a smaller p-value generally shows a more favorable model fit.
- **Chi-Squared to Degrees of Freedom Ratio ( $\chi^2/df$ ):** This is a standardized measure of model fit. It is calculated by dividing the chi-squared statistic by the degrees of freedom ( $\chi^2/df$ ). In this case,  $\chi^2/df = 1.843$ . A lower  $\chi^2/df$  ratio indicates a better fit because it suggests that the model is explaining the data well.
- **Root Mean Square Residual (RMR) value:** The RMR value of 0.026 is relatively small and close to zero. This suggests that the model's predictions closely match the actual observed data, indicating a good fit.
- **Goodness-of-Fit Index (GFI):** A GFI score of 0.945 explains the proportion of variance and covariance within the observed data that the structural model accounts for. A GFI value approaching 1 indicates a strong fit, and a value of 0.945 suggests that the model is successful in explaining a significant portion of the observed data. This indicates that the structural model aligns well with the actual data, reflecting a good overall fit.
- **Normed Fit Index (NFI):**  $NFI = 0.945$  stands for the Normed Fit Index. It assesses the relative improvement in fit by comparing model's fit to a null model (a model with no relationships between variables). An NFI value near to 1 specifies a good fit, and the value of 0.945 suggests that the model is a better fit than a null model.
- **Incremental Fit Index (IFI):**  $IFI = 0.967$  stands for the Incremental Fit Index. It also measures the improvement in the fit relative to a null model. An IFI value near to 1 specifies a good fit, and the value of 0.967 suggests that the model is a strong improvement over a null model.
- **Comparative Fit Index (CFI):**  $CFI = 0.946$  stands for the Comparative Fit Index. Like IFI, CFI compares the fit of the model to null hypothesis. A CFI value near to 1 specifies a good fit, and the value of 0.946 suggests that the hypothesis fits the data well.
- **Root Mean Square Error of Approximation (RMSEA):** The RMSEA value 0.052 represents the extent of the inconsistency between the model and the observed data, adjusted for degrees of freedom. A lower RMSEA value indicates a more favorable fitting. A RMSEA value 0.052 is relatively small which shows that the model offers a strong fit to information, further supporting the model's validity and appropriateness for explaining the observed data.

In conclusion, while the chi-squared test indicates some discrepancy between the model and observed data, the other fit indices (RMR, GFI, NFI, IFI, CFI, RMSEA) collectively recommend that the SEM model delivers a rationally well fit to the information. However, it's essential to consider the context and potential limitations of the study when interpreting these fit indices.

### ***Structural Equation Model (SEM) Diagram***

In Figure 2, the outcomes of each hypothesis test explaining the causal relationships between pairs of constructs are summarized.  $H_1$  was supported as it revealed that brand salience has a positive and significant impact on consumer brand loyalty ( $\beta = 0.208$ ,  $t = 12.283$ ,  $p = 0.043$ ).  $H_2$  was rejected because the coefficient of brand performance is insignificant ( $\beta = -0.101$ ,  $t = 11.801$ ,  $p = 0.329$ ).  $H_3$  was also rejected because the coefficient of brand image is insignificant ( $\beta = -0.025$ ,  $t = 9.758$ ,  $p = 0.779$ ).  $H_4$  was supported as it indicated that brand judgment has a positive

and significant influence on brand loyalty ( $\beta = 0.318, t = 5.906, p = 0.005$ ). Lastly,  $H_5$  was supported because brand feelings were found to have a positive and significant influence on brand loyalty ( $\beta = 0.398, t = 6.255, p = 0.000$ ). These results provide valuable insights into the relations between different brand equity and loyalty within the context of Smartphone categories in Bangladesh. On the other hand, we found that brand performance has a positive and significant influence on the brand image ( $\beta = 0.714, t = 5.283, p = 0.000$ ), salience ( $\beta = 0.814, t = 12.712, p = 0.000$ ) and judgment ( $\beta = 0.825, t = 9.714, p = 0.000$ ), the brand image has a positive and significant influence on judgment ( $\beta = 0.626, t = 8.451, p = 0.000$ ) and feelings ( $\beta = 0.858, t = 11.801, p = 0.000$ ).



Source: Statistical Software R

Figure 2. Structural Equation Model (SEM) Diagram

The parameters have estimated by statistical software R (with packages like lavaan) at 1% level of significance. These results suggest that salience, judgment, and feelings are statistically significant predictors of dependent variable brand loyalty, while Performance and Imaginary are not significant predictors in this multiple regression model. On the other hand, a brand performance has a positive and significant effect on brand image, salience and judgement and a brand image have a positive and significant influences on brand judgement and feelings.

**Correlation analysis**

Table 6 indicates that all the variables except performance and imaginary have a positive and statistically significant association with the other variable. Performance and imaginary have nsignificant correlation with brand loyalty. It is evident that brand salience, brand judgment, and brand feelings have a strong positive affiliation with brand loyalty.

Table 6. Correlations among the variables

Variables	Salience	Performance	Imaginary	Judgment	Feelings	Loyalty
<b>Salience</b>	1					
<b>Performance</b>	0.686*	1				
<b>Imaginary</b>	0.561*	0.657*	1			
<b>Judgment</b>	0.654*	0.625*	0.654*	1		
<b>Feelings</b>	0.584*	0.595*	0.641*	0.742*	1	
<b>Loyalty</b>	0.656*	-0.351	-0.354	0.764*	0.791*	1

\* Test at significance level 0.01 (2-tailed).

Source: SPSS 22.0

### ***Discussion of Findings***

The study's conclusions offer significant new information about the association between brand loyalty and customer-based product equity characteristics in the context of particular Smartphone categories in Bangladesh. According to the study, customer-based product equity's salience, judgment, and sentiment characteristics partake a direct and significant impact on growing consumer brand loyalty. This suggests that to increase brand loyalty, Smartphone marketers should focus on the growing brand awareness (salience), strengthening brand qualities and features (judgment), and creating strong emotional connections with customers (feelings).

Specifically, we observed a significant impact on brand loyalty, driven notably by the salience factor, as evidenced by a  $\beta$  coefficient of 0.208 and a significance level (P-value) of 0.043. This shows that to increase customer brand loyalty, Smartphone marketers should concentrate on raising the brand's exposure and recognition among consumers. The establishment of a lasting presence in the thoughts of potential customers can be facilitated by placing a significant emphasis on brand recognition through efficient marketing and advertising techniques.

The judgment dimension also exhibited a positive impact on brand loyalty ( $\beta = 0.318$ ,  $P = 0.005$ ). This result emphasizes the significance of improving the brand's perceived quality, traits, and features. Smartphone companies may increase consumer brand loyalty and trust by consistently enhancing their product offers and making sure that consumers can positively assess the brand.

Additionally, the brand feelings have a positive and significant influence on brand loyalty ( $\beta = 0.398$ ,  $P = 0.000$ ). Smartphone users can be encouraged to develop stronger brand loyalty and the deeper brand attachment by establishing emotional connections with customers through tailored experiences, storytelling, and empathetic involvement.

Conversely, the coefficient of performance and imaginary is insignificant (Performance:  $\beta = -0.101$ ,  $P = 0.329$ ; Imaginary:  $\beta = -0.025$ ,  $P = 0.779$ ).

Correlation analysis was also performed on the study variables, and the findings revealed that brand salience, judgment, feelings, and loyalty have a strong positive correlation with each other. Performance and imaginary have showed positive and significant correlations with these variables, but the insignificance correlations with loyalty.

In conclusion, the study's findings offer Bangladeshi Smartphone-marketers helpful advice. Salience, judgment, and feelings are three aspects of customer-based product equity that should be given priority. Smartphone companies may strengthen brand loyalty, improve consumer happiness, and gain a competitive edge in the dynamic Smartphone market by producing excellent products, forging emotional connections, and ensuring positive brand judgments.

### ***Implications of the Study***

The study has significant consequences for companies that are active in Bangladesh's Smartphone market. The findings imply that companies should focus on generating a strong and distinctive brand uniqueness that demands to their target market. Making strong emotional connections with customers is just as crucial as having a well-known brand. Businesses should spend in creating a distinctive brand identity that embodies their principles, character, and mission. The report advises organizations to concentrate on providing high-quality goods or services that match or beyond client expectations. Positive customer experiences can result from developing good brand performance, and these experiences can boost brand loyalty.

### ***Conclusion***

In conclusion, the study highlights the importance of brand equity within the realm of Smartphones in Bangladesh. The results emphasize how crucial it is to comprehend consumer perceptions and the mechanisms of customer-grounded brand equity that effect on brand loyalty. The all of 200 respondents had Smartphones from various brands that they had purchased with the help of family and friends. This demonstrates how social media and word-of-mouth influence consumer decisions. The survey also shows that consumers' views of performance and the hypothetical aspect of customer-based brand equity were unfavorable. This study emphasizes the importance of addressing product performance concerns and cultivating stronger brand associations in the minds of customers, especially for Smartphone marketers. Businesses may increase brand loyalty among their clients by concentrating on increasing these dimensions.

Positively, the study emphasizes the vital role of salience, judgment, and feelings attributes in cultivating brand loyalty. Consumers are more likely to be loyal to a company when marketing efforts are successful in raising brand salience, highlighting good brand judgment, and creating brand feelings. Smartphone marketers may develop efficient marketing strategies, target particular consumer segments, increase market presence, and vary their offers by understanding these aspects of customer-based brand equity. Smartphone manufacturers can use the study's findings to pinpoint areas for improvement and modify their strategies to increase consumer loyalty. The study clarifies the mechanisms of brand loyalty and customer-based brand equity in the Bangladeshi Smartphone market. It emphasizes the significance of consumer perceptions and the part that various facets of brand equity play in influencing loyalty. These insights can help Smartphone marketers to be competitive and accommodate to the ever-fluctuating demands and tastes of their target consumers in Bangladesh as the mobile phone industry continues to develop quickly.

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### Conflict of Interests

The authors declare no conflict of interest.

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