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Unveiling Brand Loyalty in Emerging Markets: Analyzing Smartphone User Preferences: Robustness of Structural Equation Modeling (SEM) and Simultaneous Equation Modeling (SEMs).

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Abstract

This study aims to examine the determinants of brand loyalty in emerging markets, focusing on smartphone consumers in Bangladesh. The study focuses on identifying the key elements that contribute to brand loyalty and the extent of their impact on customers' commitment to their preferred smartphone manufacturers. A theoretical framework will be employed to establish the relationship between the independent and dependent variables. Data for the study was collected from 390 participants through a Google form explicitly designed for this purpose. In this study Simultaneous Regression Analysis has been used to synchronize the findings of the Structural Equation Models (SEM) and also is used to emphasize the robustness of the study. The data analysis used PSS to calculate the mean and standard deviation. Structural Equation Modeling (SEM), reliability, and convergent validity were accomplished using Amos. The findings indicate that consumer attitudes, service quality, public self-consciousness,

and behavioural brand experience all significantly influence brand loyalty. Furthermore, brand trust plays a crucial and favourable mediating role between consumer perceptions, brand loyalty, and service excellence. The model suggested in this study has a big effect, and Bangladesh policymakers should consider this model when planning new factors affecting brand loyalty. The results of this research can be valuable for Bangladeshi smartphone companies as they gain insights into the factors affecting brand loyalty among consumers. The study discusses the limitations of its generalizability and provides practical implications for businesses and their market offerings.

Keywords: *Brand Loyalty, Smartphones, Brand Love, Behavioral Brand Experiences, Trust in Brands, Service Quality, Customer's Attitudes Of, and Public Self-Consciousness.*

JEL Classification Code: L15, M31, O33

1.0 Introduction

Brand loyalty is essential to corporate success in today's competitive market (Anderson, 1998). Many sectors have studied brand loyalty. Bangladesh's smartphone business is booming (Ryan & Bonfield, 1975). In January 2024, the Bangladesh Telecommunication Regulatory Commission (BTRC) recorded 12.61 crore (126.1 million) internet users, with the majority accessing the internet through mobile subscriptions. Over 30.9% of people in Bangladesh own smartphones, which equates to about 57 million users, according to a 2024 study by the Bangladesh Bureau of Statistics (BBS). Smartphone adoption in Bangladesh has grown significantly (Chaudhuri & Holbrook, 2001). Smartphone growth now affects the environment (Othman & Amin, 2022; Marliawati & Cahyaningdyah, 2020; Hossain *et al.*, 2023a). The increasing adoption of smartphones highlights the importance of thoroughly examining the factors that drive brand loyalty among consumers in Bangladesh. Understanding what influences brand loyalty is crucial for companies to craft effective marketing strategies and stay competitive. Previous studies have emphasized the mediating role of company trustworthiness in the relationship between consumer attitudes, service quality, and brand loyalty (Marliawati & Cahyaningdyah, 2020; Firdaus *et al.*, 2024). Additionally, consumer attitudes, service quality, and public self-consciousness significantly enhance brand loyalty, with long-term customer relationships depending on satisfaction, trust, and commitment (Fornell, 1992; Qing *et al.*, 2023; Gazi *et al.*, 2024a). The purpose of this study is to identify and analyze the factors influencing brand loyalty and product quality among smartphone consumers in Bangladesh. This involves examining the impact of product innovation, quality, affordability, and other factors such as customer attitudes and service quality. Another crucial part of this study is determining whether price

considerations influence brand loyalty or if it remains unaffected by the cost of the product. Understanding these dynamics is vital for local and multinational smartphone manufacturers looking to boost brand loyalty in this competitive market. This study examines the impact of product innovation, quality, and affordability on brand loyalty among smartphone users in Bangladesh, using Simultaneous Regression Analysis to align findings from Structural Equation Models (SEM) and ensure robust results. SEM effectively analyzes complex relationships between observed and latent variables, enhancing result validity by modeling measurement errors and latent variables. Combining SEM with Simultaneous Equation Modeling (SEMs) allows for a more robust analysis by estimating multiple interdependent equations and capturing the dynamic interactions between variables (Byrne, 2013; Zhao et al., 2019; Rahnama et al., 2024).

Previous studies have primarily focused on various aspects of brand dynamics, including customer brand loyalty's impact on purchasing intentions (Adisak, 2022), the influence of brand trust and brand effect on brand performance (Chaudhuri & Holbrook, 2001), and the role of brand experience in brand satisfaction (Chinomona, 2013). Other research has examined anthropomorphized versus objectified brands (Delgado et al., 2020), the interplay between brand experience, hedonic emotions, and brand equity (Ding & Tseng, 2015), and the effects of brand image and brand experience on brand loyalty (Farhan & Aditya, 2019). Additionally, studies have explored the emotional structures linking satisfaction and brand loyalty (Ghorbanzadeh et al., 2020), the relationship between brand innovation, brand trust, and brand loyalty (Gozukara & Çolakoglu, 2016), and consumers' intentions regarding mobile payment adoption (Hossain et al., 2023a). Further research has investigated brand experience and loyalty in Indonesian casual dining (Hussein, 2018), the mediating role of customer satisfaction and brand trust between perceived value and brand loyalty (Ikramuddin & Mariyudi, 2021), and the effects of brand image, trust, and experience on repurchase intentions, mediated by brand loyalty (Mardani, 2020).

While several studies have examined brand loyalty in the smartphone industry, more research should be done on the Bangladeshi market. The combined impact of product innovation, quality, and affordability on brand loyalty must be explored. This research aims to fill these gaps with a focused analysis of the Bangladeshi smartphone market, compiling data on factors influencing brand loyalty (Sharma, 2019; Marliawati & Cahyaningdyah, 2020; Fornell, 1992; Qing et al., 2023). Although SEM and SEMs have been widely used independently, their combined application must be explored. This study addresses this gap by integrating SEM and SEMs to enhance the reliability and validity of findings. By demonstrating the benefits of combining these methodologies, this research contributes to robust statistical modeling and provides practical insights for future studies. The results will improve the accuracy of empirical studies and advance the field significantly.

Our research makes several unique contributions to the field. Firstly, it presents a novel methodological framework that leverages the strengths of both SEM and SEMs to enhance the robustness of statistical analyses. Secondly, it provides empirical evidence on the effectiveness of this combined approach through a comprehensive case study. Thirdly, it outlines practical guidelines for researchers seeking to apply this integrated method in their own work, thereby advancing the methodological toolkit available to social and behavioral science.

As a result, pinpointing the elements that influence brand loyalty is essential for companies to develop marketing plans to draw in and keep clients (Mubarak *et al.*, 2022; Syed Mithun Ali *et al.*, 2024; Isa *et al.*, 2021). Finally, the research reveals several variables, such as brand loyalty, product quality, trust, customer attitudes, and brand experience that substantially impact loyalty to brands among smartphone users in Bangladesh (Kock *et al.*, 2019; Dhali *et al.*, 2023). In today's fiercely competitive smartphone market, brand loyalty is pivotal for the success and sustainability of smartphone manufacturers. Understanding the drivers of brand loyalty among consumers is crucial for companies aiming to maintain a loyal customer base and gain a competitive advantage. Numerous studies have delved into the complexities of brand loyalty within the smartphone industry, shedding light on the interplay among consumer preferences, product features, and brand perception. A standout among these studies is Sharma's comprehensive exploration of the determinants of brand loyalty in the smartphone sector conducted in 2019. Through rigorous research methodologies, Sharma's study provides valuable insights into the measurable and unbiased factors that shape consumers' allegiance to smartphone brands. This study further investigates the intricate relationship between product innovation, quality, affordability, and brand loyalty among smartphone users, especially in Bangladesh. By delving deeper into these dynamics, we aim to uncover the nuanced factors influencing consumers' perceptions and behaviors toward smartphone brands in the Bangladeshi market. The study centers explicitly on mobile brand loyalty and purchase decisions. Therefore, we can identify the following research questions (RQs) based on the research problem:

RQ1: *What are the key factors influencing brand loyalty among smartphone users in Bangladesh?*

RQ2: *How does brand trust impact brand loyalty among smartphone users in Bangladesh?*

RQ3: *What role do product innovation and quality play in shaping brand loyalty among smartphone users in Bangladesh?*

To address the research questions. We gathered cross-sectional data from 390 respondents. In this study, simultaneous regression analysis has been used to synchronize the findings of the structural equation models (SEM) and emphasize the study's robustness to bolster the credibility and acceptance of the empirical analysis. Through a combination of empirical analysis and theoretical frameworks, this research contributes to the existing knowledge surrounding brand loyalty in the smartphone industry. By revealing

actionable insights, our study aims to equip smartphone manufacturers and policymakers with the necessary tools to enhance brand loyalty strategies, cultivate customer satisfaction, and drive long-term success in Bangladesh's dynamic smartphone market landscape. These findings may assist companies in formulating potent marketing plans that focus on these critical elements, ultimately boosting consumer brand loyalty. Moreover, this research will aid Bangladeshi smartphone manufacturers in comprehending consumer brand loyalty and devising marketing campaigns to attract and retain customers.

2.0 Literature Review and Hypothesis Development

2.1 Theoretical Foundation

Structural Equation Modeling (SEM) is a powerful statistical method that enables researchers to examine complex relationships between observed and latent variables (Santoso et al., 2023). By integrating factor analysis and multiple regression, SEM offers a robust framework for understanding underlying constructs and their interconnections (Bollen, 1989). In our study, SEM is particularly valuable for simultaneously modeling measurement errors and latent variables, thus enhancing the robustness and validity of the results (Byrne, 2013). Simultaneous Equation Modeling (SEMs) builds on SEM by allowing for the estimation of multiple interdependent equations simultaneously (King, 2003). According to General Systems Theory (GST), we can understand complex systems by understanding their components and interactions (Shiba, 2022; Volkova et al., 2021). SEM is particularly suited for this approach, as it allows for the simultaneous analysis of multiple variables and their relationships within a system (Anderson & Gerbing, 1988; Gazi et al., 2024). Brand loyalty can be enhanced by incorporating brand trust as a crucial factor that affects both attitudes and behavioural intentions in the Theory of Planned Behavior (TPB). Brand trust is a key factor that influences the relationship between customer views and their intentions to act, ultimately impacting brand loyalty (Ajzen, 1991; Shiba, 2022). The expansion of TPB is especially pertinent in developing economies, where cultural variables significantly shape consumer behaviour. In Bangladesh, cultural factors such as public self-awareness and social reputation have a substantial influence on brand loyalty. Ajzen (1991) emphasizes the significance of subjective standards and perceived behavioural control when studying customer behaviour in these situations. In this research, SEM can model the interactions between variables such as brand trust, product innovation, quality, and brand loyalty, providing insights into the systemic influences on brand loyalty. Latent Variable Theory concentrates on inferring the underlying, unobservable variables (latent variables) from observable data (Borsboom, 2008; Feldon, 2024). SEM is powerful at handling latent variables (Anderson & Gerbing, 1988), enabling the study to uncover constructs like brand perception, customer satisfaction, and loyalty. Causal modeling theory is concerned with understanding the cause-and-effect relationships between variables. SEM allows researchers to specify and test complex causal models, including direct and indirect effects. This is particularly relevant for testing hypotheses regarding the causal impact of brand trust, product innovation, and quality on brand loyalty

among smartphone users in Bangladesh. SEMs is based on Simultaneity Theory, which looks at situations where variables depend on each other and often lead to simultaneous equations (Greene, 2003; Gujarati & Porter, 2009). SEMs can handle such interdependencies, making them suitable for models where endogenous variables influence each other (Iwasaki et al., 2024). In this study, SEMs can model the reciprocal relationships between brand loyalty and its predictors, such as the bidirectional influence between brand trust and loyalty. Situations where an explanatory variable correlates with the error term due to omitted variable bias, measurement error, or reverse causation fall under the purview of endogeneity theory (Kashyap, 2022). SEMs can fix endogeneity by modeling multiple equations and accounting for biases (Greene, 2003; Gujarati & Porter, 2009; Garzón et al., 2023). This makes the estimates of the relationships between the variables under study more accurate and reliable. The Path Analysis Theory extends regression models to include multiple dependent variables and indirect paths (Wright, 1934; Awogbemi et al., 2021; Du et al., 2021). SEMs, which incorporate path analysis, allow for specifying complex, multi-step relationships between variables (Awogbemi et al., 2021). This is useful for analyzing the pathways through which brand trust, product innovation, and quality impact brand loyalty, including the mediating and moderating effects. The research questions have a direct impact on the relevance of these theoretical perspectives. For RQ1, which seeks to identify key factors influencing brand loyalty, GST and Latent Variable Theory suggest modeling various factors and their interactions as a system to identify key influences on brand loyalty. SEM and SEMs can explore these factors, including latent constructs and their direct and indirect effects on loyalty. For RQ2, which examines the impact of brand trust on brand loyalty, the Causal Modeling Theory and TPB underpins the hypothesis that brand trust causally influences brand loyalty. SEM can test this causal relationship, taking into account other influencing variables and their interrelationships. For RQ3, which looks at the role of product innovation and quality in shaping brand loyalty, Path Analysis Theory helps model the direct and indirect pathways through which these factors impact allegiance. SEMs can handle potential endogeneity and simultaneity in these relationships, providing a comprehensive analysis of how product innovation and quality interact to shape loyalty.

2.2 Conceptual Framework

The conceptual framework for this study examines factors influencing brand loyalty among Bangladeshi smartphone consumers, including customer attitudes, service quality, public self-consciousness, behavioral brand experience, and brand trust. It employs Structural Equation Modeling (SEM) and Simultaneous Equation Modeling (SEMs) for robust analysis. The hypothesized relationships among these critical variables are following:

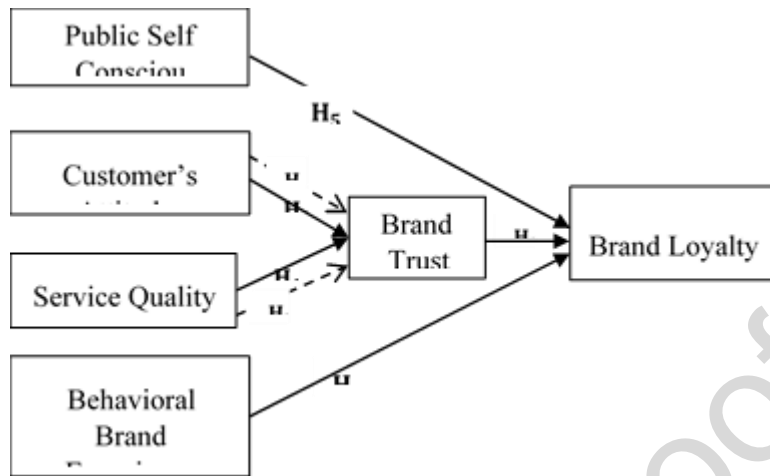


Figure 1: Proposed Framework

2.3 Consumers Attitude towards Brand Trust

Customers' reactions and experiences significantly influence their perceptions of products. Mishandling of clients can result in adverse impressions of the product. According to Kees and Andrews (2020), attitudes toward brands indicate project attitudes. Kock et al. (2019) characterize brand response as consumers' inclination to assess brands based on past interactions. As suggested by Khan et al. (2020), this can bolster brand confidence. Favorable responses from consumers to valuable content can heighten brand loyalty (Lou et al., 2019), while consumer contentment reinforces brand loyalty (Smith et al., 2003). The sentiments of customers are intricately linked with the company's brand. Kock et al. (2019) define customer satisfaction as fulfilling a need from the desire to possess or utilize a product or service. Trust, as outlined by Agarwal and Narayana (2020), grows when one party believes in the efficacy of the other's actions. As a result, we proposed the following idea in our investigation:

H₁: Customers attitudes have positive impact on Brand Trust

2.4 Service Quality to Brand Trust

Today's increasingly competitive and technologically sophisticated world views providing high-quality services as crucial to the success and longtime viability of service providers. The key goal has been to ascertain what consumer's value in terms of service quality and how to create better policies to meet those expectations (Vernuccio et al., 2021; Wang et al., 2023; Firdaus et al., 2024). The degree of service quality, which is relevant to the client, is an evaluation of the acknowledged standards for service, such as competitive quality, physical quality, and consequential quality. Romaniuk and Nenycz, (2013) among others, were the first to use the phrase "to figure out how well the level of service meets customer

expectations." Using a previous review as our guide, we focused on the importance of long-lasting quality of service in the present research. Stamenkov and Dika (2019) define sustainable service quality as the capacity to provide outstanding, uninterrupted services over a prolonged period of time. The characteristics of services show that they are intangible. Services must be examined and retested throughout time since they can't be preserved in a time capsule. Additionally, it's probable that the creation and consumption of services are inextricably linked (Gronroos, 1984). Additionally, customers who get outstanding treatment are more inclined to return, spend more money, utilize extra offerings, become fewer prices sensitive, and promote the business to others. Brand loyalty will be strongly associated with the quality of the service. According to the research, service quality is strongly connected with repurchase intent, recommendation, and reluctance to change. Therefore, in this investigation, we offered the following:

H₄: service quality has positive impact on Brand Trust.

2.5 Public Self Conscious to Brand Loyalty

Public uncertainty has a huge effect on how loyal people are to a business. It is the way a person remembers and recognizes a brand. Customer recall, brand recognition, or even awareness is all examples of brand consciousness in the setting of this research. Brand awareness refers to a mental connection with a particular brand; it may influence brand association in a favorable or negative way (Gazi *et al.*, 2023b; Masud *et al.*, 2023c; Syed Mithun Ali *et al.*, 2024). In this research we see that there are a positive relationship between public self-conscious and brand loyalty. According to the definition of public self-consciousness, it is the belief that a certain item or problem is personally relevant or important in a given situation based on the interests, needs, standards, personal lifestyles, and worries of the person who consumers. There will be a positive correlation between brand loyalty and public conscience (Kock, 2015). Moreover, owing to recent safety worries affecting items with well-known brands made by international firms. Consumers are increasingly reliant on domain-specific knowledge on human safety nowadays (Fetscherin *et al.*, 2021; Masud *et al.*, 2023a), which makes them evaluate the safety of the substances in cosmetics before buying them. As a result, we define the following claim using the literature review:

H₅: Public Self Conscious has positive impact on Brand Loyalty.

2.6 Behavioral Brand Experience towards Brand Loyalty

Brand experience is defined as the sensory, emotive, intellectual, behavioral, and social reactions to any stimuli from brands (Coelho *et al.*, 2020; Amin *et al.*, 2020). Designs, packaging, marketing, and environments for a brand may all act as stimuli. Consumer responses to the branding are a consequence of their perceptions of the goods and services provided by the company as well as with the employees

that work there (Paul *et al.*, 2013; Masud *et al.*, 2023b). These client responses are both inward-looking and arbitrary (Ding & Tseng, 2015). As a consequence of their brand experience, consumer responses may be divided into five categories: sensory, psychological, mental, behavioral, and social. Consumers' views of the environment are impacted by their five senses, but their affective experiences are also shaped by their present mental state, feelings, thoughts, and sentiments. The phrase "cognitive experience" refers to how consumers address brand-related issues in a thoughtful and innovative manner. Based on a range of factors, such as physical engagement with the brand, way of life, continuous behavioral patterns, or social interactions, behavioral experience may influence consumers' behaviors or intentions. According to Ding and Tseng (2015), the phrase "social experience" refers to how consumers interact with companies and how these interactions spark their thirst for the process of self-esteem, and affinity. Therefore, in this investigation, we offered the following:

H₆: Behavioral Brand Experience has positive impact on Brand Loyalty

2.7 Brand Trust to Brand Loyalty

Brand trust signifies the faith and dependence consumers place on a brand (Khan *et al.*, 2020; Masud *et al.*, 2021a). According to Ding and Tseng (2015) said that "the brand will consistently fulfill its promises, meet expectations, and act in the consumers' best interests, forming the bedrock of a robust brand-consumer relationship." Brand trust is instrumental in nurturing brand loyalty and fostering a sense of attachment and dedication among consumers (Hossain *et al.*, 2023b). This confidence in the brand's quality, reliability, and integrity cultivates enduring customer allegiance. Consistency in delivering high-quality offerings over time fosters trust and encourages consumer loyalty (Coelho *et al.*, 2020). Transparency in operations and interactions bolsters trust, while brands prioritizing personalized customer relationships and exceptional service earn lasting loyalty (Vernuccio *et al.*, 2021; Hossain *et al.*, 2023c). In essence, brand trust is pivotal in building brand loyalty and instilling consumer confidence, reliability, and authenticity. Thus we can make the following hypothesis:

H₇: Brand Trust has positive impact on Brand Loyalty

2.8 Mediation effects of Brand Trust

The mediation effects of brand trust between customer attitudes and brand loyalty, as well as service quality and brand loyalty, underscore the pivotal role of brand trust in shaping consumer behaviors and perceptions. Customer attitudes, which encompass perceptions, beliefs, and sentiments toward a brand, significantly influence purchasing decisions and long-term loyalty (Pu *et al.*, 2023). Brand trust links customer attitudes and brand loyalty by fostering reliability, credibility, and dependability in the brand-consumer relationship (Romaniuk & Nenycz, 2013; Amint *et al.*, 2020; Hossain *et al.*, 2023d). Positive

attitudes towards a brand lead to enhanced brand trust, increasing brand loyalty over time, regardless of competitive pressures (Chaudhuri & Holbrook, 2001; Fetscherin *et al.*, 2021). Moreover, service quality, defined by excellence, responsiveness, and reliability in brand services, directly impacts customer satisfaction and loyalty (Atulkar & Kesari, 2019; Gazi *et al.*, 2024b). Brand trust mediates service quality and brand loyalty by shaping consumers' perceptions of the brand (Sarkar *et al.*, 2022; Kock, 2015; Gazi *et al.*, 2023a; Hossain *et al.*, 2023e). When customers perceive a brand as trustworthy, they are more likely to trust the quality of its services, fostering greater loyalty (Atulkar & Kesari, 2019; Coelho *et al.*, 2020). This mediation effect highlights the importance of brand trust in translating superior service quality into sustained brand loyalty (Xiaoyi & Zhengliang, 2020). Companies prioritizing building trust and delivering exceptional service can cultivate strong, enduring customer relationships, driving long-term loyalty and advocacy (Delgado *et al.*, 2020). So, the mediation effects of brand trust highlight its crucial role as a primary influencer of brand loyalty. Recognizing and utilizing brand trust as a mediator between customer attitudes, service quality, and brand loyalty allows companies to strategically improve consumer perceptions, build trust, and establish lasting relationships with their target audience. We might then conclude the following hypotheses:

H₂: Brand trust mediates the relationship between customer attitudes and brand loyalty.

H₃: Brand trust mediates the relationship between service quality and brand loyalty.

3.0 Research Methodology

3.1 Research Design

It was decided to use a survey tool online to collect empirical data using a self-administered questionnaire. Convenience sampling is a method of non-probability sample selection that involves collecting evidence from people in the population who are readily available. While convenience sampling is pragmatic and cost-effective, it may introduce bias as the sample may not fully represent the population. To mitigate this, efforts were made to recruit participants from diverse backgrounds and demographics relevant to the study's context (Etikan *et al.*, 2016). And the 24 measuring questions were derived from validated scales used in prior research investigations conducted by Gozukara & Çolakoglu (2016) and Romaniuk & Nenycz (2013). Every question underwent meticulous scrutiny to guarantee its precise assessment of the intended build. The instruments for gathering data were a Google form. For data analysis, the downloaded Google Form data was transferred to SPSS. Three sections made up the questionnaire. The study's goals were briefly outlined in the first section, which also assured respondents that their comments would be kept anonymous and used exclusively for research. The demographic inquiries in Part 2. We got 390 samples from this online survey. Cohen (1988) and Westland (2010) recommend a sample size of around 300 for medium effect sizes in SEM analyses with 0.80 power at a 0.05 significance level. With 390 samples, our study

exceeds this recommendation. Kline (2023) suggests at least 10 cases per estimated parameter, and Wolf et al. (2013) recommend 200-400 samples for moderately complex models. Our sample size aligns with these guidelines, ensuring sufficient statistical power and reliability (Malhotra *et al.*, 2012). According to Gozukara and Çolakoglu (2016) and Romaniuk and Nenycz-Thiel (2013), the sample size of 390 is justified by established guidelines for SEM, empirical evidence from comparable studies, and the complexity of our model. This sample size ensures sufficient statistical power, reliability, and validity of our research findings. In this study, we performed Harman's one-factor test to address common method variance (Sohnchen, 2009; Gazi et al., 2022a).

The results showed that the first factor accounted for only 28.24% of the total variance, indicating that CMV is not a significant concern (Podsakoff et al., 2003). This test also confirms that our sample size is sufficient to capture diverse responses. The study's findings were disclosed through robustness analysis, employing simultaneous equation modeling techniques and the structural equation modeling (SEM) method, as detailed in the analysis section. The Structural Equation Modeling (SEM) technique assumes that the data meet the requirements of linearity, normalcy, and homoscedasticity (Byrne, 2016). In order to tackle the possible problems of endogeneity, which can occur due to factors that were not included or measurement mistakes, instrumental variables were used when appropriate. The selection of these instruments was based on theoretical justification and their validation was conducted using the Hausman test (Hausman, 1978). The utilization of Structural Equation Modeling (SEM) was chosen because it can represent complex interactions between observable and latent variables, while also accounting for measurement errors (Kline, 2023; Gazi et al., 2024c). The model was evaluated using Maximum Likelihood Estimation (MLE), a statistical method that is known for its ability to handle departures from normality (West et al., 1995). The adequacy of the model was evaluated by examining various indices, including the Comparative Fit Index (CFI), TuckerLewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR). Specific threshold values were used to determine whether the model fit was adequate, as outlined by Hu and Bentler (1999).

3.1.1 Pilot Test

In the initial phase of our research, we conducted a pilot test to refine our instruments and methodologies, ensuring reliability and validity before the primary data collection. The objectives were to evaluate the questionnaire's clarity, relevance, and consistency. We used a convenience sample of 40 respondents to identify significant issues (Hertzog, 2008). Participants represented diverse demographics similar to the target population and completed the survey online via Google Forms. Responses were analyzed using SPSS to check data distribution, response patterns, and technical issues. After pilot test input, we clarified wording, neutralized leading questions, and removed unnecessary material. To clarify, 'Do you consider

the brand trustworthy?' was changed to 'To what degree do you accord that the brand is reliable?' Cronbach's Alpha values > 0.70 showed high internal consistency in all builds. Items exhibited substantial loadings (>0.60) for each concept in confirmatory factor analysis (CFA) after factor analysis established their factor loadings. The Variance Inflation Factor (VIF) readings were all below 10, suggesting adequate levels, resolving multicollinearity (Hair *et al.*, 2014). . This result enhanced the questionnaire's reliability and validity, ensuring it accurately captured the needed data.

3.2 Survey Instruments

Based on the literature, five key factors influencing brand loyalty among smartphone users include Customer Attitude, Service Quality, Public Self-Consciousness, Behavioral Brand Experience, and Brand Trust (refer to Figure 1). These elements are drawn from prior studies (Gozukara & Çolakoglu, 2016; Romaniuk & Nenycz, 2013; Rather & Sharma, 2016; Pu *et al.*, 2023; Marliawati & Cahyaningdyah, 2020; Gazi *et al.*, 2024d). As a result, a survey based on aspects of evaluation scales was created to understand the effect of the mentioned areas on brand loyalty. The initial section of the survey consisted of the indicated scale questions, which examined smart phone user's impressions of the factors under consideration. Measurement inquiries for each construct are included in Part 3. The measurement questions employed a seven - point scale range such as (1) Strongly disagree (2) disagree (3) somewhat disagree (4) neutral (5) Somewhat agree (6) agree and (7) Strongly agree. These factors served as control variables, allowing us to analyze any potential influence on the dependent variable. This enabled for a more diversified group of responders to participate, resulting in a higher participation rate.

3.3 Inter Item Correlation Matrix

Table 1 displays the correlation matrix depicting the relationships among variables. The findings indicate that Brand Loyalty exhibits the strongest positive association with Behavioral Brand Experience, with a coefficient of 0.752. Following closely are Customer Attitude at 0.566, Brand Trust at 0.478, Service Quality at 0.470, and Public Self-Consciousness at 0.401.

Table 1: Inter-Item Correlation Matrix.

	CA	SQ	PSC	BBE	BT	BL
Customers Attitude	1.000	-.031	.711	.820	.740	.566
Service Quality	-.031	1.000	.042	.033	.641	.470
Public Self Conscious	.711	.042	1.000	.894	.617	.401
Behavioral Brand Experience	.820	.033	.894	1.000	.797	.752
Brand Trust	.740	.641	.617	.797	1.000	.478
Brand Loyalty	.566	.470	.401	.752	.478	1.000

Table 1 Also shows that all the correlations values between variables are within their critical limits, which representing there is no serious concern on multi-collinearity.

3.3 Simultaneous Equation Regression Methods

The simultaneous regression method is a process by which using multivariable regression models to find the causal relationship among the exogenous and endogenous variables. Simultaneous equation or system equation or full information regression technique is a process by which equations are estimated as a whole considering all restrictions i.e. omission or absence of some variables (Gujarati & Porter, 2008). The skeleton of the model is

$$BT_i = \delta_0 + \delta_1 CA_i + \delta_2 SQ_i + u_{1i} \dots \dots \dots Eq: 01$$

$$BL_i = \bar{\alpha}_0 + \bar{\alpha}_1 PS_i + \bar{\alpha}_2 BEE_i + \bar{\alpha}_3 BT_i + u_{2i} \dots \dots \dots Eq: 02$$

Equations 01 and 02 represent the basic regression of the simultaneous model. In two regression the coefficient δ 's and $\bar{\alpha}$'s measures the causal dependency of the dependent variables (BT_i and BL_i) on the pre-determined variables (CA_i, SQ_i, PS_i, BEE_i and BT_i). In this empirical study along with the one way regression approach the impact of the mediator variable on the dependent variable BL_i , also be examined. The regression on the presence of mediator variables has been demonstrated on equation 03 and 04,

$$BL_i^1 = \beta_0 + \beta_1 CA_i + \beta_2 BT_i + u_{3i} \dots \dots \dots Eq: 03$$

$$BL_i^2 = \alpha_0 + \alpha_1 SQ_i + \alpha_2 BT_i + u_{4i} \dots \dots \dots Eq: 04$$

The impact of mediator variable BT_i is measured through the coefficient β_2 and α_2 on the equation 03 and 04 respectively. The matrix notation of system equation is

$$\begin{array}{l} BT_i = \delta_0 + \delta_1 CA_i + \delta_2 SQ_i + \dots + \dots + \dots + u_{1i} \\ BL_i = \bar{\alpha}_0 + \dots + \dots + \bar{\alpha}_1 PS_i + \bar{\alpha}_2 BEE_i + \bar{\alpha}_3 BT_i + \dots + u_{2i} \\ BL_i^1 = \beta_0 + \beta_1 CA_i + \dots + \dots + \beta_2 BT_i + \dots + u_{3i} \\ BL_i^2 = \alpha_0 + \dots + \alpha_1 SQ_i + \dots + \dots + \alpha_2 BT_i + \dots + u_{4i} \end{array}$$

The aforementioned simultaneous equation system can explain through matrix notation in below

$$\begin{bmatrix} \delta_0 \\ \bar{\alpha}_0 \\ \beta_0 \\ \alpha_0 \end{bmatrix} + \begin{bmatrix} \delta_1 & \delta_2 & \beta_3 & \beta_4 & \dots \\ \dots & \dots & \bar{\alpha}_1 & \bar{\alpha} & \bar{\alpha}_3 \\ \beta_1 & \dots & \gamma_3 & \dots & \beta_2 \\ \dots & \alpha_1 & \dots & \dots & \alpha_2 \end{bmatrix} \begin{bmatrix} CA_i \\ SQ_i \\ PS_i \\ BEE_i \\ BT_i \end{bmatrix} + \begin{bmatrix} \dots & \dots & \dots & \dots \\ \dots & \gamma_6 & \gamma_7 & \dots \\ \dots & \pi_6 & \pi_7 & \dots \\ \dots & \dots & \dots & \pi_8 \end{bmatrix} \begin{bmatrix} BT_i \\ BL_i \\ BL_i^1 \\ BL_i^2 \end{bmatrix} = \begin{bmatrix} u_{1i} \\ u_{2i} \\ u_{3i} \\ u_{4i} \end{bmatrix} \dots \dots \dots Eq: 05$$

The reduce form equation for aforementioned eq: 5 is given

$$C_i + \aleph y_i + \beth x_i = \epsilon_i \dots \dots \dots Eq: 06$$

In equation 2, C_i is the $(n \times 1)$ vector of constant coefficient, \aleph is a $N \times N$ matrix of coefficient of endogenous variables, y_i is a $(n \times 1)$ vector of observation of N jointly dependent variables, \beth is

(N×M) matrix of structural coefficient, x_i is (M×1) vector of predetermined variables and ϵ_i is (N×1) vector of structural error term (Shalabh, 2019).

Assume that \mathfrak{K} is nonsingular so multiplying the structural equation 06 by \mathfrak{K}^{-1} , we get

$$\mathfrak{K}^{-1}C_i + \mathfrak{K}^{-1}\mathfrak{K}y_i + \mathfrak{K}^{-1}\mathfrak{J}x_i = \mathfrak{K}^{-1}\epsilon_i$$

or, $y_t = \vartheta x_i + v_i \dots \dots \dots$ Eq: 07

Equation 07 is known as reduce form equation and $\vartheta = \mathfrak{K}^{-1}\mathfrak{J}$ is the matrix of reduce form coefficient and $v_i = \mathfrak{K}^{-1}\epsilon_i$ is the reduce form disturbance term.

Assumptions on disturbance term is given as

- i. $\epsilon_i \sim IIND(0, \delta^2)$
- ii. $v_i \sim IIND(0, \tau^3)$

Applying 2SLS on the simultaneous equation 07 to estimate the coefficient of the simultaneous equation model is given,

$$\hat{\vartheta} = (X'X)^{-1}X'Y$$

4.0 Analysis

In this study, the item measuring scale and demographic characteristics were summarized using descriptive statistics based on the layout of the questionnaire. In the case of multiple linear regressions, where intermediary factors and indirect effects on each variable exist, the data must be analyzed before the test can be performed. In addition, the method's capacity to assess minimal size needs and exploratory character of the research were important factors in the decision. The survey information has been downloaded to Excel on a computer from the Google form. The demographic status was examined using SPSS 16.00, and the measuring items for the study's respondents were examined using SPSS Amos.

4.1 Respondents Profile

According to the findings, a huge majority of respondents (56.7%) were male, while 43.3% were female, and more than 80.3% of respondents were around the ages of 25 and 29. In addition, the majority of responders (79.50%) are single. Additionally, the majority of respondents (32.2%) had a bachelor's degree, while just 62.8% had a master's degree. Among the various brands of mobile phones, iPhone 9.5%, one plus 12.8%, Samsung 23.1%, Xiaomi 16.4%, vivo 18.5% and Oppo 19.7% usage among the

¹ $E(\epsilon_i) = 0, E(\epsilon_i, \epsilon_i) = \sum, E(\epsilon_i \epsilon_{i*}) = 0$
² $E(v_i) = 0, E(v_i, v_i) = \sum, E(v_i v_{i*}) = 0$
³ $\tau = \mathfrak{K}^{-1} \sum \mathfrak{K}^{-1}$

respondents. So these above results show that Age can influence brand loyalty, with younger consumers favoring innovation and trends while older ones prefer reliability. Gender affects consumer behavior, with women valuing service quality and men focusing on technology. Education impacts brand evaluation, and income affects brand choices. Thus, demographic factors like age, gender, education level, and socioeconomic status significantly influence brand loyalty and consumer behavior. Controlling for these variables allows us to isolate the effects of our primary factors, enhancing the study's internal validity and clarifying the relationships between these factors.

Table 2: Demographic Data (N = 390).

Variable	Items	Percentage	Brand Name	Frequency	Percentage
Gender	Male	56.7%	iPhone	37	9.5
	Female	43.3%	One Plus	50	12.8
Age	20-24	19.7%	Samsung	90	23.1
	25-29	80.3%	xiaomi	64	16.4
Education	Graduation	32.2%	Vivo	72	18.5
	Post-Graduation	62.8%	Oppo	77	19.7
Marital Status	Married	20.5%	Total	390	100.0
	Single	79.5%			
Income	10000-20000	9.7%			
	20001-30000	3.1%			
	30001-40000	40.3%			
	40001-50000	37.4%			
	Above 50000	9.5%			

4.2 Measurement Models Analysis

Along with the measuring model, the constructs' validity and reliability are assessed. Testing for reliability determines how well a research instrument performs in a study. The instrument is deemed to be reliable when a range of participants can comprehend the measurements or items for all latent variables in the same way (Kock, 2015).

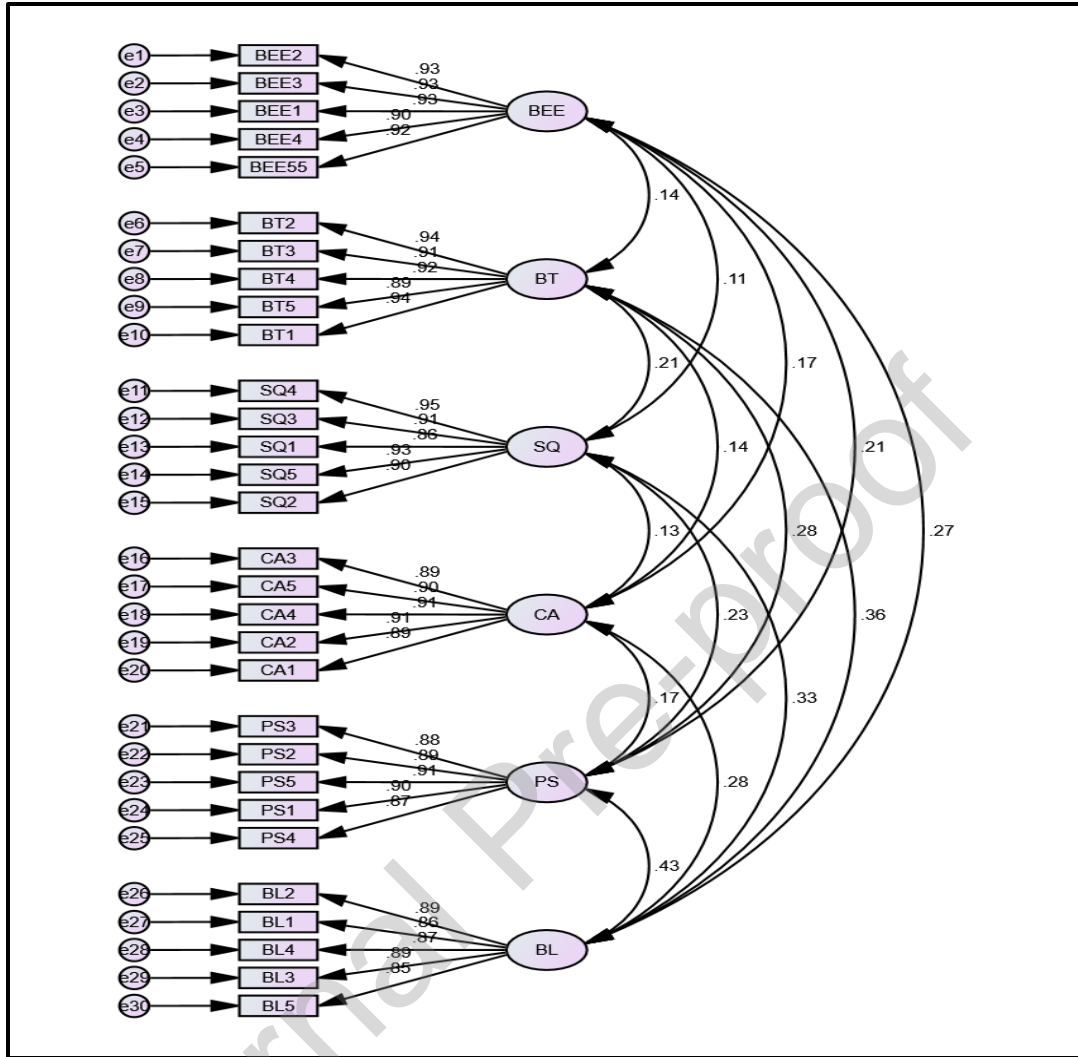


Figure 2: First order Measurement Model

According to the results, composite reliability ($CR > 0.70$) and Cronbach's alpha (> 0.70) are considered adequate (Hair *et al.*, 2014). Fornell and Larcker (1981) considered that factor loads (> 0.70) and average variance extracted ($AVE > 0.50$) were sufficient measures of convergent validity. The square root of AVE is used to examine inter-variable correlations in order to evaluate the discriminant validity, and the greatest correlation value ought to be lower than the square root of AVE (Hair *et al.*, 2014).

Table 3: Standardized Regression Weights

Constructs	Items	Mean	S.D	Estimate	S.E.	t-value	Cronbach's
Behavioral Brand Experience	BEE 2	5.82	1.294	.930			.965
	BEE 3	5.74	1.469	.930	.053	17.343	
	BEE1	5.77	1.402	.930	.064	14.996	
	BEE 4	5.93	1.325	.904	.063	15.605	
	BEE 5	5.78	1.334	.926	.064	16.081	

Brand Trust	BT2	5.67	1.476	.942							.965
	BT3	5.74	1.377	.819	.060	17.006					
	BT4	5.78	1.437	.922	.060	14.574					
	BT5	5.77	1.354	.890	.063	14.453					
	BT1	5.76	1.384	.945	.058	15.896					
Service Quality	SQ4	5.71	1.514	.958							.960
	SQ3	5.77	1.306	.913	.060	15.082					
	SQ1	5.82	1.275	.865	.061	14.460					
	SQ5	5.68	1.518	.938	.060	15.969					
	SQ2	5.62	1.387	.908	.054	16.025					
Customer's Attitudes	CA3	5.82	1.320	.892							.954
	CA5	5.85	1.226	.908	.068	14.335					
	CA4	5.85	1.285	.918	.071	15.839					
	CA2	5.80	1.309	.919	.078	13.603					
	CA1	5.87	1.233	.898	.070	13.252					
Public Self-Conscious	PS3	5.90	1.234	.888							.950
	PS2	5.87	1.219	.898	.053	18.568					
	PS5	5.91	1.282	.916	.044	18.522					
	PS4	5.99	1.204	.875	.054	14.713					
	PS1	5.92	1.279	.901	.051	17.348					
Brand Loyalty	BL2	6.04	1.020	.895							.941
	BL 1	6.05	1.134	.867	.065	17.082					
	BL 4	6.03	1.102	.873	.062	16.725					
	BL 3	5.99	1.107	.894	.062	15.719					
	BL5	6.02	1.046	.854	.065	13.350					

Source Calculation

Table 3 shows the details outcomes of Standardized Regression Weights results. It is found that the items of each construct value. The items of behavioral brand experience standard deviation. Additionally, Table 3 demonstrates that each construct has a Cronbach's alpha value larger than .70.

Table 4: First order Constructs validity statistics

	CR	AVE	MSV	MaxR(H)	BEE	BT	SQ	CA	PS	BL	VIF
BBE	0.966	0.850	0.071	0.966	0.922						1.066
BT	0.965	0.846	0.131	0.967	0.137	0.920					1.056
SQ	0.960	0.830	0.108	0.964	0.108	0.212	0.911				1.085
CA	0.955	0.808	0.081	0.955	0.168	0.135	0.126	0.899			1.115
PS	0.950	0.791	0.182	0.951	0.208	0.283	0.228	0.174	0.890		1.153
BL	0.941	0.761	0.182	0.942	0.267	0.362	0.328	0.284	0.426	0.873	

Table 4 shows that the range of the average variance extracted, which is good enough to show that all constructions had an excellent level of internal consistency. Thus, the findings indicated that each variable's scale has discriminant validity. The VIF, or variance inflation factor, is used to test the multi-collinearity problem.

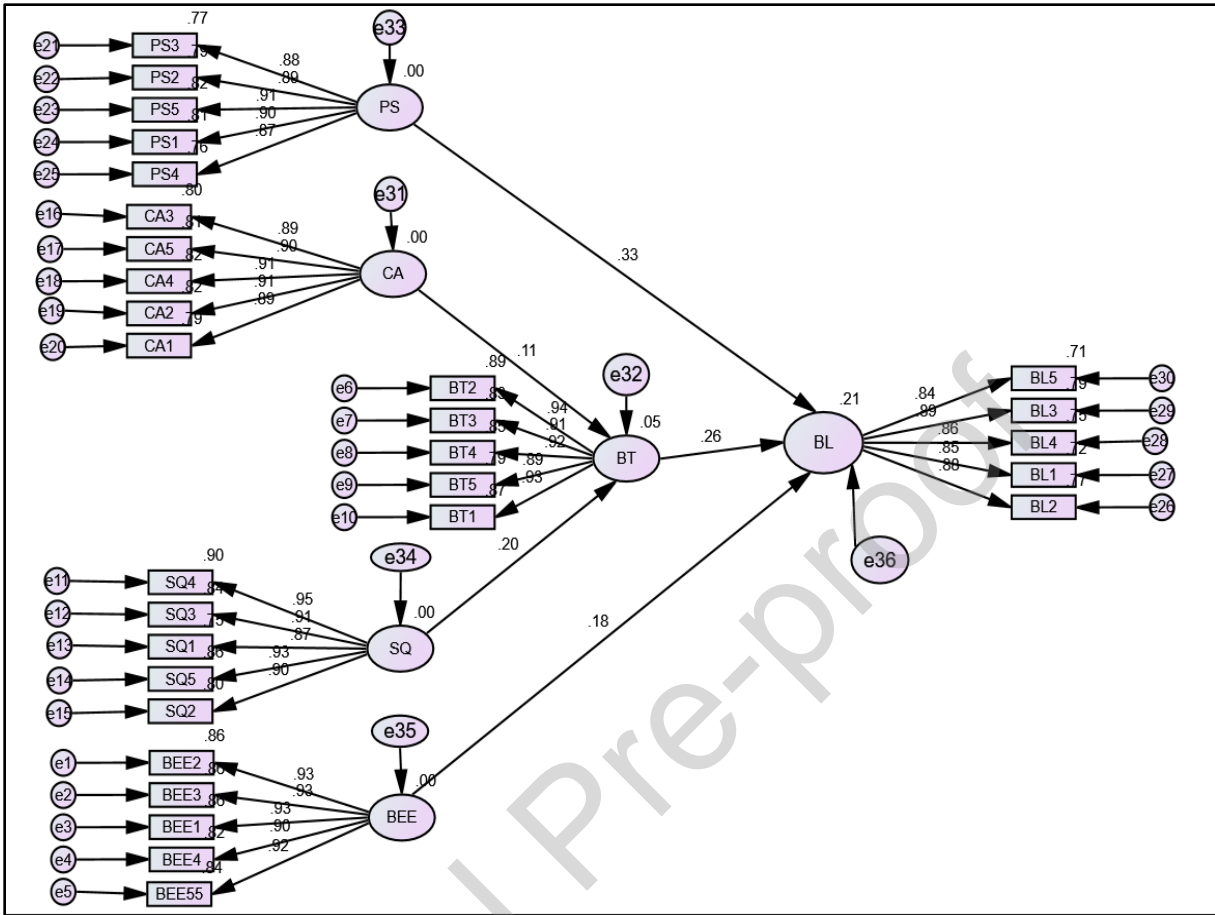


Figure 3: Structural Model

Table 5: Hypothesis Results

		Estimates	S.E	t-value	p-value	Decision
H ₁	Customer's attitudes--->Brand Trust	.11	.127	5.672	0.000	Accepted
H ₄	Service quality --->Brand Trust	.20	.065	2.621	.009	Accepted
H ₅	Public self-conscious ---> brand loyalty	.33	.065	2.591	.010	Accepted
H ₆	Behavioral brand experiences ---> brand loyalty.	.18	.055	3.666	0.000	Accepted
H ₇	Brand Trust ---> brand loyalty	.26	.047	2.361	.007	Accepted

Here, the link within customer attitudes and brand trust was favorable ($\beta = 0.11$, t -value = 5.672, and $p < 0.05$). Brand Loyalty and Brand Trust were positively correlated ($\beta = 0.26$, t -value = 2.361, $p < 0.05$). Brand Loyalty and Behavioral Brand Experience were positively correlated ($\beta = 0.18$, t -value = 3.666, and $p < 0.05$). Additionally, brand loyalty was directly and favorably correlated with Public self-conscious ($\beta = 0.33$, t -value = 2.591, $p < 0.05$), as well as Service quality and Brand trust is also directly and favorably correlated ($\beta = 0.20$, t -value = 2.621, and $p < 0.05$).

Table 6: Mediation Results

Variables	Estimate	Bootstrapping			p-value	
		Bias-corrected 95% CI				
Indirect effect		lower	upper			
H₂ Customer's attitudes → brand trust → brand loyalty	.033	.007	.071	.000	Accepted	
H₃ Service quality → brand trust → brand loyalty	.044	.020	.080	.000	Accepted	

Note: CI = confidence interval, the process repeated 5000 times.

In order to assess the mediating effects in the model, this study performed a bootstrapping following the guidelines of Baron and Kenny (1986). Bootstrapping provides an indirect effect of independent variable via mediator. Mediation result is calculated using SPSS process macro. Table 6 shows that the bias-corrected model with a 95% confidence interval. The table demonstrates how customer feelings, service quality, and brand loyalty are connected by brand trust (H2: $\beta = .033$, LLCI = .007, ULCI = .071, and $p < 0.05$; H3: $\beta = .044$, LLCI = .020, ULCI = .080, and $p < 0.05$).

4.2 Estimation of Simultaneous Regression Models

The estimated regression models' outcomes are elicited on table 7. The structure of the empirical studies based on four regression models which not only implies the interdependency of the exogenous and endogenous variables but also reflects the structure of the analysis. The table is divided into two panels, on panel A, the estimated value of coefficients, corresponding t-value and the significance value is given and on the other hand on panel B, some statistical measures have been given which reflect the stability and acceptability of the models.

Panel A : Independent Variables	Dependent Variables			
	BT_i	BL_i	BL_i^1	BL_i^2
CA_i	0.117** (2.091)		0.190*** (4.904)	
SQ_i	0.197*** (3.917)			0.192*** (5.456)
PS_i		0.261*** (6.533)		
BEE_i		0.122*** (3.552)		
BT_i		0.178*** (5.232)	0.232*** (6.722)	0.214*** (6.164)
Constant	3.935*** (9.500)	2.749*** (9.143)	3.583*** (12.574)	3.698*** (14.429)
Panel B:				

R-square	84.50	82.45	87.25	81.54
Adjusted R-square	79.25	78.37	82.25	77.65
Change of R-square			13.25	14.56
F-statistics	10.964***	41.810***	39.437***	42.678***
Durbin-Watson D	1.941	2.045	2.190	1.956
Note: *** $p < 0.001$; ** $p < 0.05$; * $p < 0.1$; (t-value) 1 and 2 regression with <i>mediate</i> Variable				

Hypothesis, **H₁** and **H₄** are tested through the regression equation 1 (**Eq: 01**). The coefficient values of variables **CA_i** and **SQ_i** are positive and the values are **0.117** and **0.197** respectively. Those values not only positive but also statistically significant because the **t-value** of the estimated coefficients is 2.091 and 3.917 implies the hypothesis **H₁** and **H₄** is accepted under the significance level 5% and 1%. The **R²** value of the model is 84%. The **F-statistics** (10.964) shows the functional specification of the model is statistically acceptable under the 1% significance level where as **Durbin-Watson D** (1.941) statistic shows the model is free from the problem of autocorrelation. For the hypothesis **H₅**, **H₆** and **H₇** are tested through the regression model 2 or **Eq: 02**, which demonstrated on table 07. The impact of exogenous variables, **PS_i**, **BEE_i** and **BT_i** are affirmative and statistically significant which emphasize to accept null hypothesis of the statement of simultaneous system. The coefficient value of the hypothesis **H₅**, **H₆** and **H₇** are 0.261, 0.122 and 0.178 respectively with the corresponding t-value 6.533, 3.552 and 5.232. The **R²** value of the regression model is 82% and the F-statistics value is 41.810 which accept the null hypothesis at 1% level of significance. The **DW-D** value elicit the error term of the model is uncorrelated. The last two regression models 3 and 4 or **Eq: 03** and **Eq: 04** measure the impact of mediator variable **BT_i** on dependent variable **BL_i** by influencing variables **CA_i** and **SQ_i** and the impact is significant not in terms of coefficient but also capable to change the **R²**.

4.3 Comparison and Robustness Assessment

The two alternative approaches i.e. Structural Equation Modelling (SEM) and Simultaneous Equation Modelling techniques have been compatible to analyses the analogues outcome from different perspectives. This research manuscript is based on SEM and coefficients are estimated Maximum Likelihood (ML) method. But in the analysis of latent variable the violation of the normality assumption leads misspecification error which would reduce the acceptability of the model (Bollen et al., 2018). To address this problem Two Stage Least Square (2SLS) method under the simultaneous equation techniques has been used to evaluate the outcomes of SEM and measures the robustness of the test (Robitzsch, 2022). The path analysis of the SEM using ML method and simultaneous equations outcomes by utilizing 2SLS process (Fan et al., 2016) is illustrated on **Table 8**.

Table 8: Robustness Assessment

Hypothesis	Structural Equation		Simultaneous Model		Decision
	Estimation	P-value	Estimation	P-value	
<i>H₁</i> : Customer's attitudes--->Brand Trust	0.110	0.000	0.117	0.043	<i>Supported</i>
<i>H₂</i> : Customer's attitudes → brand trust→ brand loyalty	0.033	0.000	0.190	0.001	<i>Supported</i>
<i>H₃</i> : Service quality → brand trust→ brand loyalty	0.044	0.000	0.192	0.000	<i>Supported</i>
<i>H₄</i> : Service quality --->Brand Trust	0.200	0.009	0.197	0.000	<i>Supported</i>
<i>H₅</i> : Public self-conscious ---> brand loyalty	0.330	.0100	0.261	0.000	<i>Supported</i>
<i>H₆</i> : Behavioral brand experiences ---> brand loyalty.	0.180	0.000	0.122	0.000	<i>Supported</i>
<i>H₇</i> : Brand Trust ---> brand loyalty	0.260	0.007	0.178	0.001	<i>Supported</i>

The findings of two alternative approaches converge to same outcomes. Though the estimated coefficients values are vary but their expected impact and acceptability under the statistical protocol are analogous. The measurement and structural Model constructs were tested for reliability and validity using confirmatory factor analysis (CFA). Key indices exhibited robust model fit. A chi-square ratio of 2.54 indicates a good match, as values below three are considered acceptable (Kline, 2012; 2023). According to Bentler (1999), the Comparative Fit Index (CFI) and TuckerLewis Index (TLI) are above 0.90 at 0.96 and 0.95, respectively. The Root Mean Square Error of Approximation (RMSEA) was 0.05, which MacCallum et al. (1996) consider acceptable. The Standardized Root Mean Square Residual (SRMR) was 0.03, far below Hu and Bentler's (1999) 0.08 cutoff. Convergent validity was confirmed by factor loadings above 0.70 for all constructs (Hair et al., 2010). The average variance extracted (AVE) values were over 0.50, confirming this validity (Fornell & Larcker, 1981). Composite reliability (CR) values > 0.70 indicated strong internal consistency in all constructs. Comprehensive documentation of fit indices and validity measurements ensures the reliability and trustworthiness of structural equation modelling (SEM) and Simultaneous Regression Model analysis, ensuring the results' strength and accuracy and the Robustness Assessment's accuracy.

5.0 Discussion

The results of our study are consistent with previous research on brand trust and loyalty, but we have also gained new and distinctive perspectives by analyzing the Bangladeshi smartphone industry. The studies conducted by Lou et al. (2019) and Vernuccio et al. (2021) have found consistent evidence of the positive relationships between customer attitude, service quality, and brand trust and their influence on brand loyalty. These findings align with previous research conducted in developed markets. Nevertheless, our findings underscore the importance of dependable service provision in developing countries such as Bangladesh, as it plays a vital role in building brand buoyancy. This underlines the necessity of additional investigation in order to comprehend these geographical disparities. By placing our study in the global

perspective, we emphasize the worldwide significance of brand trust while acknowledging the specific concerns of consumers in developing economies. We utilized SEM and Simultaneous Equation Modeling techniques to analyze the data, exploring potential relationships among variables. Both approaches yielded consistent results, offering a comprehensive understanding of the relationships between the study variables. **Figure 3** illustrates the possible links between these variables, while **Table 8** presents the results of hypothesis testing using both techniques. The findings support H_1 , indicating a positive association between customer attitude and brand trust, consistent with prior research (Lou *et al.*, 2019; Gazi *et al.*, 2024e). Our study suggests that believing in a specific brand positively influences consumer attitudes, which indicates that when customers respond positively to a brand, they develop trust in it, leading to increased commitment and repeat purchases, consistent with previous findings (Khan *et al.*, 2020).

Another results for H_4 , presented in **Table 8**, demonstrate a positive correlation between service quality and brand trust. These outcomes confirm the validity of H_2 , which supported the previous study (Vernuccio *et al.*, 2021), indicating that customers are more likely to trust a brand when they perceive high-quality services from it. Quality service reflects reliability and commitment, fostering confidence in the brand's ability to deliver value consistently. This trust strengthens the brand-consumer relationship, driving loyalty.

Table 8 also represents Public self-consciousness, has a significant, positive impact on brand loyalty (H_5), according to the current study (See **table 8**) which suggesting that individuals' concerns about social perceptions impact their commitment to a brand. When consumers with high public self-consciousness have positive brand experiences, it strengthens their brand loyalty. Previous research supports that client satisfaction and brand devotion are positively linked (Sahin *et al.*, 2022; Hossain *et al.*, 2023; Masud *et al.*, 2021b; Gazi *et al.*, 2024f).

Additionally, the results demonstrated a link between brand experience and customer loyalty (H_6) from **table 8**. According to the findings, brand trust strengthens the link between brand experience and loyalty to a particular brand. When someone makes wise purchase judgments, brand loyalty is achievable. Given the growing importance of managing brands in business, there must be more focus on the connection between brand perception and brand loyalty. Customers need to have confidence and trust in mobile phone brands. Thus, phone manufacturers must include the unique characteristics of their phones (Rather & Sharma, 2019). The previous study shows that brand experience and trust are essential because when it is pleasant, brand loyalty will be obtained. Connecting with customers fosters a sense of belonging Chinomona (2019) and Gözükarar and Çolakoglu (2016). When consumers think a brand cares about their needs, brand fulfilment ignites brand trust, which could lead to brand loyalty. Finally, cellphone service

providers must guarantee that their clients get value. Meeting or exceeding client expectations is critical to fostering brand loyalty (Fan *et al.*, 2016).

The results also give that experience in a particular brand impacts brand loyalty and keeping trust. As brand loyalty and trust grow, so is consumer fulfillment. According to the findings, there is a direct and positive correlation within brand loyalty and trust (H_7), which is in line with research by Menidjel and Bilgihan (2022). This suggests that as consumers develop stronger loyalty to a brand, they tend to trust it more, increasing satisfaction with their overall brand experience.

Table 8 summarizes the mediation analysis, revealing that brand trust plays a crucial mediating role in relationships within the influencing brand loyalty among Bangladeshi smartphone users. The results of the mediation analysis demonstrate that brand trust serves as a significant mediator in the associations between customer attitudes and brand loyalty (H_2) ($\beta = 0.033$; 0.190; P values = 0.000), as well as between service quality and brand loyalty (H_3) ($\beta = 0.044$; 0.192; P values = 0.000), for both techniques among Bangladeshi smartphone users. These findings emphasize the importance of brand trust as a critical mechanism through which customer attitudes and service quality impact brand loyalty in the Bangladeshi smartphone market. Our research supports the existing studies conducted in developed markets (Lou *et al.*, 2019; Vernuccio *et al.*, 2021) that have found a direct correlation between service quality and brand trust. The extent of this impact seems to be more noticeable in emerging markets, such as the setting of Bangladesh. Consumers in emerging economies may prioritize reliable service delivery while establishing brand trust. Additional investigation is required to delve into the fundamental causes of this disparity. By mediating these relationships, brand trust emerges as a crucial factor in shaping consumer perceptions and behaviors, highlighting its significance for smartphone manufacturers and marketers aiming to enhance brand loyalty and foster long-term customer relationships.

6.0 Conclusion

This study looked at how brand trust might act as a bridge between consumer attitudes and brand loyalty. According to the findings, brand trust has a favorable and statistically important effect on brand confidence as well as loyalty, and those two factors in turn have a favorable and statistically significant impact on operational and emotional brand loyalty. Brand engagement had a smaller impact than brand trust, which was discovered to mediate a connection between the other elements. The importance of brand credibility to businesses is thus highlighted in this article, especially in relation to the setting of local smartphone marketplaces. Increased brand trust strengthens the indirect effect of brand value between consumer opinions and brand loyalty, adding value to a company's brand. The study also gives businesses a theoretical foundation on which to build effective brand-promotion initiatives that will improve

consumer views. As a result, this study integrates practical experience with other factors, such as brand trust, that can help formulate strategies for boosting brand loyalty.

6.1 Theoretical and Practical Implications

In order to enhance brand loyalty in developing areas, smartphone businesses should prioritize establishing robust relationships with customers through tailored service and incentives. Marketing strategies that emphasize the ways in which products improve consumers' lives and are in harmony with local traditions have the potential to establish stronger emotional bonds. An essential aspect of promoting lasting customer pleasure and loyalty is comprehending and responding to local preferences by customizing product features and marketing strategies. The study introduces fresh theoretical insights by examining the role of institutions in the shift from contentment to loyalty, a perspective that has yet to be explored in existing literature. It investigates how emotive frameworks, like trustworthy interpersonal networks of businesses, influence this transition, shedding light on the complex dynamics of consumer behavior and brand relationships. Through the indirect effects analysis, the study uncovers the intricate pathways through which pleasure leads to loyalty via brand trust. It emphasizes the need to comprehend the diverse nature of consumer-brand interactions and the varying intensities along the loyalty continuum. The proposition that a product's pleasure stems from positive brand interactions represents the most minor intensive interaction and challenges traditional views on brand loyalty. Practically, these findings are significant for businesses seeking to enhance customer loyalty and brand relationships. Recognizing the role of institutions and emotive frameworks allows companies to tailor strategies that cultivate trust and emotional connections with their audience. Understanding the progression from satisfaction to loyalty underscores the importance of creating meaningful brand experiences that resonate emotionally and rationally with customers. The study advances theoretical understanding by uncovering new perspectives on the transition from contentment to loyalty and the interplay between pleasure, trust, and brand loyalty. From a practical perspective, these insights provide valuable guidance for businesses aiming to build enduring customer relationships and stand out in competitive markets.

6.2 Managerial Implications

The findings highlight the crucial importance of consumer satisfaction in elucidating brand loyalty, which has substantial consequences for management. Managers should acknowledge the strategic significance of the satisfaction factor and develop initiatives geared at improving customer contentment. The study revealed that brand loyalty is a robust indicator of post purchase behavior, particularly linked to the experience of brand choice. This revelation offers marketers a concrete objective, expanding their viewpoint on the significance of cultivating emotional bonds with customers. Marketers should prioritize improving operational and functional elements in order to boost consumer happiness, which is likely to lead to

increased repeat purchases and brand advocacy. Brand managers must acknowledge that consumers link items to their individual personality; hence, advertising should distinctly distinguish the product from rivals. In order to attain long-term expansion and establish dominance in developing markets, smartphone manufacturers should give priority to the enhancement of exceptional customer experiences. This involves executing a thorough plan that incorporates tailored customer service, emotionally captivating marketing, localized product offerings, and an efficient customer feedback system. By comprehensively comprehending consumer requirements and inclinations through market research and utilizing data driven insights for product development and customer interactions, these organizations can establish robust emotional connections, cultivate brand loyalty, and stimulate natural growth through customer advocacy.

6.3 Limitations and Future Guideline

Although this study is thorough, it is important to recognize various limitations that could affect how the results are understood. A key constraint is the employment of convenience sampling, which, although practical, might add bias and restrict the applicability of the results to other cultural situations. In order to improve the accuracy of future research, it is recommended to use probability sampling procedures, which will help ensure that the sample is representative and minimize any potential bias in the sampling process. In addition, the study specifically examined elements such as user credentials, brand success, and brand trust. Subsequent research endeavors could investigate additional pertinent variables, such as societal impact, brand image, and consumer happiness, which may also exert a pivotal influence on brand loyalty. Adopting this more comprehensive approach would yield a more thorough knowledge of the underlying dynamics. In addition, although our research did not focus on a particular brand, future studies could explore the impact of brand-specific characteristics on loyalty and purchase intentions. This would enable a more sophisticated examination of how various brands may utilize these insights to cultivate brand loyalty. Conducting cross-cultural studies is crucial to assess how applicable these findings are in different geographical and cultural contexts. This will improve the worldwide relevance and strength of the conclusions made.

Ethics statement: All individuals gave appropriate informed consent before data collection; the data collection was approved by the Ethics Committee of the institution.

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Appendix: Measurement scales

Constructs		Items	Source
Brand Loyalty	BL1:	This smartphone brand makes a strong impression on my visual sense.	Farhan & Aditya, (2019); Pu et al., (2023)
	BL2:	I find this smartphone brand interesting in a sensory way.	
	BL3:	I made the right decision to buy this smartphone brand.	
	BL4:	This mobile phone brand takes good care of me as customer.	
	BL5:	All the facilities of this brand make me loyal customer.	
Customer's Attitudes	CA1:	Customer's has particular feelings about this smartphone brand.	Othman & Mohd Amin, (2022b); Mardani, (2020)
	CA2:	As a customer, I love talking about this smartphone brand's good points to people know.	
	CA3:	I am very happy with this smartphone brand.	
	CA4:	This smartphone brand does a good job satisfying my need.	
	CA5:	I say positive things about using this brand smartphone.	
Service Quality	SQ1:	I am very satisfied with the service quality of this smartphone brand.	Asman, (2020); Adisak, (2022)
	SQ2:	This Smartphone brand stimulates my sense.	
	SQ3:	This Smartphone brand is activity oriented.	
	SQ4:	The key functions of this smartphone are very reliable.	
	SQ5:	It is easy to use this brand smartphone.	
Brand Trust	BT1:	I trust this smartphone brand.	Othman & Mohd Amin, (2022); Mardani, (2020)
	BT2:	I trust the billing system of this company.	
	BT3:	This company is reliable because it is mainly concerned with the customer's interests.	
	BT4:	I feel that I can rely on this company to serve well.	
	BT5:	This Company is very trustable.	
Public Self-Conscious	PSC1:	I am concerned about this smartphone.	Asman, (2020); Adisak, (2022)
	PSC2:	I am very interested which smartphone brand I use.	

	PSC3:	This smartphone brand stimulates my curiosity and problem solving.	
	PSC4:	When I think about this smartphone brand stimulates my curiosity and problem solving.	
	PSC5:	Public are very conscious about smartphone brand.	
Behavioral Brand Experience	BBE1:	I involve in physical activities behaviors which visiting this smartphone brand.	Farhan & Aditya, (2019); Pu et al., (2022)
	BBE2:	After using this smartphone brand, I think I can work my tasks more effectively.	
	BBE3:	This brand smartphone is fit with my needs and wills.	
	BBE4:	I will recommend my smartphone brand to other people.	
	BBE5:	Next time, I will definitely buy this brand smartphone again.	

Declaration of Competing Interest

We declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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