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Building the Brand Image: An Empirical Examination of Antecedents and Consequences

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Abstract: This study aims to analyze the effect of service quality on student satisfaction and its impact on the brand image of private universities in North Sumatra, with word of mouth (WOM) as a mediating variable. This study uses a quantitative approach with a survey method of active students from several private universities. The results of the analysis show that service quality has a significant effect on student satisfaction; satisfaction affects brand image; and WOM affects brand image. In addition, WOM has been shown to mediate the effect of satisfaction on brand image. This finding confirms that student satisfaction directly impacts brand image and WOM, an influential informal communication channel. This research provides theoretical contributions to the development of consumer behaviour models in the higher education sector and practical implications for higher education management to improve services and strengthen the institution's image.
Keywords: Service Quality; Student Satisfaction; Word of Mouth; Brand Image.

Abstrak: Penelitian ini bertujuan untuk menganalisis pengaruh kualitas layanan terhadap kepuasan mahasiswa serta dampaknya terhadap brand image perguruan tinggi swasta di Sumatera Utara, dengan word of mouth (WOM) sebagai variabel mediasi. Penelitian ini menggunakan pendekatan kuantitatif dengan metode survei terhadap mahasiswa aktif dari beberapa perguruan tinggi swasta. Hasil analisis menunjukkan bahwa kualitas layanan berpengaruh signifikan terhadap kepuasan mahasiswa, kepuasan berpengaruh terhadap brand image dan WOM, serta WOM berpengaruh terhadap brand image. Selain itu, WOM terbukti memediasi pengaruh kepuasan terhadap brand image. Temuan ini menegaskan bahwa kepuasan mahasiswa tidak hanya berdampak langsung pada citra merek, tetapi juga melalui WOM sebagai saluran komunikasi informal yang berpengaruh. Penelitian ini memberikan kontribusi teoritis dalam pengembangan model perilaku konsumen di sektor pendidikan tinggi, serta implikasi praktis bagi manajemen perguruan tinggi untuk meningkatkan layanan guna memperkuat citra institusi.
Keywords: Kualitas Layanan; Kepuasan Mahasiswa; Word of Mouth; Brand Image.

INTRODUCTION

Higher education is no longer simply a knowledge-producing institution in the increasingly competitive era of globalization and digitalization. However, it has transformed into an entity involved in market competition. Universities are now competing to attract students by offering the best educational services. In this context, higher education operates according to market logic, which requires institutions to provide a superior quality of service and student experience. This competition occurs not only at the local level but also on a global scale. Universities from different countries compete fiercely for international students by highlighting their academic services, digitalization, and institutional brands. According to Ali et al. (2024), students' perceived service quality significantly impacts their satisfaction and loyalty to the college.

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With the increasing number of higher education institutions, both public and private, the need for differentiation strategies has become very urgent. One strategy that is increasingly prominent in this context is the strengthening of brand image. Brand image is the collective perception of students and the public towards higher education institutions, shaped by academic experience, administrative services, and institutional identity. In service marketing management, brand image is an initial attraction and determines student loyalty and advocacy. Research by Nguyen et al. (2024) states that brand image can moderate the relationship between service quality and student loyalty, thereby strengthening the role of reputation in forming long-term relationships.

Higher education services are no longer limited to classroom teaching and learning. Service quality now extends to include easy access to academic information, speed of administrative response, and convenience in digital services. Therefore, the service dimension has become one of the factors students most consider when assessing their overall academic experience. Studies by Forid et al. (2022) show that high service quality significantly increases student satisfaction and intention to remain at the same college. This shows that service is not only a supporting factor but the center of the strategic advantage of higher education institutions.

Student satisfaction is now one of the main indicators of the success of higher education institutions in facing global competition. Students who are satisfied with their academic and administrative experience tend to show high loyalty to the institution (Wong & Chapman, 2023). This loyalty is reflected in the tendency to complete studies on time, actively participate in campus activities, and promote the college through digital word of mouth. Daud & Mohd Amin (2023) emphasize that student loyalty cannot be separated from service quality, including digital services, and from positive perceptions of the institution's brand. Therefore, universities must design an integrated service system holistically focusing on students' needs and expectations.

Digital transformation is an important catalyst in redefining the relationship between universities and students. In the era of technology-driven education, universities are not only judged by their physical facilities but also by their digital excellence, including Learning Management Systems (LMSs), online administrative systems, and social media engagement. This shows that the institution's success in managing digital transformation strengthens student experience and satisfaction. As noted by Forid et al. (2022), digitalization directly affects students' perceptions of institutional efficiency, flexibility, and reliability.

However, the literature review results indicate a significant research gap in previous studies. Most studies still discuss the effects of service quality and brand image on student loyalty separately. Meanwhile, few studies have integrated the dimensions of physical and digital services, brand perception, and student satisfaction and loyalty into a single comprehensive model. The role of digital transformation as a mediator or moderator in the relationship remains underexplored empirically. This opens an important space for more integrative and contextual research in understanding student behavior in choosing and staying in higher education institutions.

Based on these research gaps, this study's novelty lies in developing an integrative model combining service quality (conventional and digital), brand image, and student loyalty. This study not only investigates the direct relationship between these variables but also explores the digital student experience as a strategic mediator. Thus, the main

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contribution of this study is to build a new conceptual framework that universities can use to develop more relevant student experience-based service strategies in the digital era.

Furthermore, student loyalty should be understood as an emotional and functional relationship that develops over time. When students feel they are treated as individuals, not just service users, the likelihood of them remaining involved in the alum network and contributing after graduation increases. This aligns with the findings of Ali et al. (2024), who found that students who feel satisfied and trust the institution tend to show high loyalty and voluntarily become ambassadors of the institution. To build such loyalty, universities must adopt a value- and experience-based approach. Service differentiation based on local culture, institutional values, and contextual student needs has been shown to increase universities' attractiveness. Nguyen et al. (2024) showed that brand images built from authentic experiences are more influential than conventional marketing approaches. Therefore, universities must design every digital and physical interaction point as part of a meaningful experience reflecting the institution's character.

Finally, to win in the highly competitive higher education industry, universities must integrate service strategy, digital transformation, and reputation management into a sustainable strategic approach. Excellent service, combined with a strong institutional image, will foster long-term student loyalty and enhance the competitiveness of higher education at the national and global levels. This research is expected to contribute to the higher education management literature and to provide a practical guide for higher education managers in designing a superior, competitive student experience.

THEORETICAL REVIEW

This study adopts Expectation–Confirmation Theory (ECT) to explain how service quality builds brand image through satisfaction and word of mouth. In ECT/ECM, satisfaction results from confirmation when perceived service performance meets or exceeds expectations, while disconfirmation reduces satisfaction (Kurniawan et al., 2024). In higher education services, superior service quality therefore signals positive confirmation and increases satisfaction, which then encourages recommendation behaviour and informal advocacy (Zeqiri et al., 2023). Expectation confirmation is also an important antecedent of consumers' willingness to generate positive electronic word of mouth, together with satisfaction (Nam et al., 2020). Word of mouth functions as a social-information mechanism: it amplifies experiential signals, reduces uncertainty for prospective users, and shapes collective evaluations of the institution. Consistent with this view, evidence shows that online consumer narratives can be translated into measurable brand-image associations (Mitra & Jenamani, 2020), and a recent synthesis confirms that eWOM systematically affects multiple brand outcomes, including image-related perceptions (Maru & Sai Vijay, 2024).

Brand Image. Since the concept of image was introduced in the mid-twentieth century in the context of organizations and corporations, it has gradually evolved into what is now recognized as brand image. This term refers to the perceptions, associations, beliefs, and emotional impressions consumers form toward a brand. According to Barreda et al. (2020), a brand image emerges from positive evaluations, emotional responses, and overall judgments based on consumer experiences, including interactions through digital platforms and social media. Emotional and cognitive elements create a lasting impression of the brand in consumers' minds, contributing to long-term loyalty and brand strength. In

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today's business environment, brand image includes visual elements such as names, logos, and symbols. It reflects how consistently an organization delivers its services, communicates with customers, and manages the overall experience across different platforms (Kotler & Armstrong, 2021). As such, brand image is a strategic tool that helps institutions differentiate themselves, gain consumer trust, and build lasting relationships.

From a theoretical perspective, brand image refers to the overall perception formed through consumer experiences and interactions with a brand. Mao et al. (2020) explain that emotional and rational components influence how consumers associate with product features and brand personality. Kato (2021) emphasizes that both functional benefits and emotional value are essential in building a compelling brand image, showing that brand alignment with practical needs and emotional expectations increases consumer interest and purchase intention. This combined effect is central to how customers view a brand's reputation and credibility. Recent findings by Foroudi et al. (2020) in higher education confirm that institutional reputation and perceived quality are critical in shaping a strong brand image.

Kotler & Armstrong (2021) further explain that a powerful brand image depends on three main factors: the strength of associations, the positivity of those associations, and their uniqueness. These factors are supported by Keller's Consumer-Based Brand Equity Model, which emphasizes the importance of building meaningful, memorable brand associations in consumers' minds. This model demonstrates that brand image is not only a reflection of identity but also a strategic asset that directly influences buying behaviour, customer loyalty, and an institution's overall reputation over time (Papista & Dimitriadis, 2022).

Service Quality. Quality varies depending on perspective, ranging from fitness for use and consistency to fulfilling consumer expectations and generating satisfaction. A more integrated view defines quality as a dynamic attribute encompassing products, services, people, systems, and environments, all of which contribute to meeting or exceeding user expectations (Bui et al., 2022). On the other hand, services are described as intangible, interactive processes between customers and service providers or systems designed to address needs or deliver value (Alvarez & Urbina, 2021). From the consumer's standpoint, the perceived quality lies in the outcome and the interaction experience (Chen & Chen, 2020).

The Service Quality theory outlines five core dimensions known as the RATER framework: tangibles, reliability, responsiveness, assurance, and empathy. This model is widely adopted in education, healthcare, and public service sectors. According to Idayati et al. (2020), these five dimensions reflect essential consumer expectations that directly influence satisfaction. Similarly, Asih & Setianto (2021) confirmed the RATER model's effectiveness in evaluating internal hospital services, while Sugiarto & Octaviana (2021) validated its relevance in the banking sector, where it significantly enhances customer satisfaction. Recent scholars, such as Fang et al. (2023), have adapted these dimensions to digital services, integrating new aspects such as usability, data security, personalization, and service fulfilment (Ighomereho et al., 2022). Rita et al. (2019) further emphasized that reliability and assurance are the strongest predictors of satisfaction in online platforms, while responsiveness and empathy build deeper emotional connections with users. In conclusion, the traditional SERVQUAL dimensions remain foundational but must be expanded with digital and relational attributes to reflect evolving consumer expectations in today's service landscape.

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H1: Service quality affects satisfaction.

Satisfaction. Customer satisfaction is a critical focus in the service sector, as it directly affects customer retention and long-term loyalty (Gazi et al., 2024). While price influences a minority of consumers, most prioritize product or service quality when making purchase decisions (Gontur et al., 2022). Kotler & Keller (2021) define satisfaction as the comparison of expected and actual performance. More recent studies extend this idea by emphasizing that a positive gap between expectations and perceived outcomes is a key driver of satisfaction and loyalty (Choi et al., 2024)

In higher education, satisfaction is shaped by both internal and external factors. Tessema et al. (2024) highlight that service quality, cost, facilities, and emotional experiences, such as comfort and recognition, significantly contribute to student satisfaction. This satisfaction, in turn, fosters loyalty, as seen in students' willingness to recommend or continue at the institution. In digital contexts, satisfaction is closely linked to e-service quality dimensions like reliability, security, accessibility, and responsiveness (Bhattacharya & Mulay, 2024; Venkatakrishnan et al., 2023). Additionally, Gazi et al. (2024) note that brand image and customer relationship management (CRM) mediate the satisfaction-loyalty link. Modern metrics for assessing satisfaction have evolved to include overall contentment, confirmation of expectations, repeat purchase intention, and referral likelihood (Zhang et al., 2021). These indicators reflect a comprehensive perspective that incorporates evaluative judgments, emotional responses, and behavioural intentions. Recent research also introduces "customer delight", a deeper emotional state that enhances loyalty and retention beyond what is achievable through basic satisfaction (Choi et al., 2024).

In summary, satisfaction is influenced by a complex mix of factors, including pricing, service quality (both physical and digital), emotional engagement, and brand perception. These findings highlight the need for a holistic service strategy that meets expectations and delivers emotionally meaningful experiences that encourage advocacy and long-term loyalty.

H2: Satisfaction affects word of mouth.

H3: Satisfaction affects brand image.

Word of Mouth. Word of Mouth (WOM) remains a highly influential communication channel shaping consumer perception in today's digital era. Its traditional form has evolved into Electronic Word of Mouth (e-WOM), where individuals share experiences through digital platforms and social media without prior acquaintance (Chen & Yuan, 2020). As a peer-driven exchange, e-WOM is perceived as trustworthy because of its organic, non-commercial nature. Ngo et al. (2024) describe e-WOM as consumer interactions involving feedback, comments, and the sharing of digital content, such as reviews and testimonials, facilitating the online exchange of information and recommendations.

Recent studies (Tafolli et al., 2025) suggest that the effectiveness of e-WOM (especially in terms of trustworthiness, information richness, and user connection) significantly impacts consumer attitudes and buying intentions. Moore et al. (2022) argue that e-WOM is a form of interpersonal communication that helps establish brand

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credibility, deepen trust, and strengthen emotional engagement with products or platforms. Its influence is further shaped by external variables, including corporate digital marketing budgets, audience targeting strategies, product attributes, and the product's life-cycle stage. De Canio & Fuentes-Blasco (2021) emphasize that strong branding, financially backed promotional efforts, and well-targeted messaging significantly enhance e-WOM's influence on purchasing decisions. The impact of e-WOM is also shaped by social factors such as tie strength, similarity among users (homophily), trust, and normative and informational influence. According to Tompos & Khair (2023), strong interpersonal ties, shared characteristics between sender and receiver, and high trust levels enhance the persuasiveness of e-WOM. Informational influence, in particular, is the most compelling force behind purchase intent via social media, making it essential for community-based digital marketing efforts.

In conclusion, WOM has transitioned into e-WOM, leveraging digital interactions and social connections to expand the credibility and reach of consumer information. Key elements (including trusted sources, content quality, relational strength, user similarity, and firm-driven support) are central in determining how e-WOM affects brand perception, satisfaction, and customer loyalty.

H4: Word of mouth affects brand image.

H5: Word of mouth mediates the effect of satisfaction on brand image.

METHODS

This research is categorized as basic research and employs a quantitative methodology to ensure a structured, systematic process. Its objectives include data classification, hypothesis testing, measurement, generalization, and conclusion. Gamage (2025) notes that quantitative methods are effective for explaining phenomena through mathematical and theoretical models and identifying causal relationships between variables. Researchers can uncover trends, correlations, and causal links across social and economic contexts by collecting numerical data and applying statistical techniques.

All variables in this study are measured using indicators supported by prior research. For the exogenous variable, service quality, five SERVQUAL dimensions are applied: tangibles, reliability, responsiveness, assurance, and empathy (Rasheed & Rashid, 2024). Student satisfaction, the first mediating variable, is assessed through academic quality, staff interaction, campus facilities, and digital systems (Tessema et al., 2024). The second mediating variable, word of mouth, includes indicators such as the likelihood of recommending the institution, sharing positive experiences, and promoting the institution via social media (Pranoto et al., 2020). Lastly, brand image as the endogenous variable is evaluated using perceptions of institutional reputation, service distinctiveness, lecturer professionalism, and technological advancement, adapted from Tehci (2022).

The target population for this research includes university students in urban areas of North Sumatra. Determining an appropriate sample size using SEM is essential to ensure accurate and reliable model estimation. Prior research recommends a minimum sample size of 100 to 200 respondents, depending on model complexity and the number of indicators. A widely accepted guideline (Priyanath et al., 2020) is a 10:1 ratio, with ten

participants for each estimated parameter. Following this recommendation, the study involved 200 student respondents, meeting the basic requirement for SEM analysis.

Data were gathered through three main techniques. First, interviews were conducted with participants and key stakeholders familiar with the research variables. Second, questionnaires were distributed to university students across North Sumatra. Third, a review of relevant documents was conducted to gather supporting data. The analysis used SEM with SmartPLS 3.0 software. SEM integrates factor analysis and regression to examine relationships between indicators and their constructs, as well as connections among constructs within the model. Hair et al. (2020) explain that the PLS-SEM approach is particularly effective for analyzing complex models with multiple variables, especially in exploratory or predictive research settings.

Often in research using primary data, there is a potential for common method bias (CMB) because the predictor(s) and criterion(s) are collected from the same respondents, using the same instrument, and are often collected at the same time. Therefore, this study explicitly incorporates both procedural and statistical remedies to detect, prevent, and control CMB. Procedurally, the questionnaire design emphasizes anonymity/ confidentiality, reduces evaluation apprehension, and improves item clarity to minimize method-driven covariance (Podsakoff et al., 2024). Statistically, CMB is assessed through (1) Harman's single-factor test to evaluate whether a single factor accounts for the majority of variance, and (2) full collinearity assessment using VIF values as a diagnostic for method effects (Kock et al., 2021). The results of these CMB diagnostics are presented in the research findings section so readers can evaluate whether the model estimates are likely biased.

RESULTS

This research was analyzed using a quantitative method, descriptive statistics, and hypothesis testing with SmartPLS 3.0. The variables involved in this study were Service Quality, Satisfaction, Word of Mouth, and Brand Image.

Respondent Demographics. Table 1 presents the respondents' demographic profiles. Female participants accounted for a larger share at 54.300 per cent, while males accounted for 45.700 per cent. The majority were between 18 and 26 years old, representing 67.740 per cent of the sample. Regarding academic background, 59.680 per cent (111 respondents) were enrolled in social sciences and humanities programs, whereas 40.320 per cent (75 respondents) were enrolled in science and technology programs. Regarding the institutional type, most respondents (66.670 per cent, or 124 individuals) studied at private universities, 6.450 per cent (11 respondents) attended public institutes, and the remaining 55 were from higher education institutions classified as colleges.

Table 1. Characteristics of Respondents

No.	Variable	Classification	Total (People)	Percentage
1	Gender	Male	101	54.300
		Female	85	45.700
Total			186	100
2	Age	18 to 21	126	67.740
		21to 24	40	21.510
		25 to 28	15	8.060

		More than 29	5	2.690
Total			186	100
3	Major	Science Technology	75	40.320
		Social Humanities	111	59.680
Total			186	100
4	Form of College	University	124	66.670
		Institute	11	6.450
		Colleges	55	26.880
Total			186	100

Source: Processed Data (2025)

Common method bias. We evaluated the dataset using the full collinearity test to mitigate potential common method bias (Kock, 2021). Under this approach, VIF values above 3.300 indicate that the model may be affected by common method bias. As reported in **Table 2**, all latent-variable VIFs are below 3.300, suggesting that common method bias is not a concern in this study.

Outer model analysis. In PLS-based structural modelling, assessing the outer model is essential to confirm that the indicators accurately represent their respective latent constructs. SmartPLS typically evaluates this through three key criteria: convergent validity, discriminant validity, and composite reliability. Convergent validity measures how strongly indicators relate to the construct they represent, with loading values above 0.700 considered ideal, though 0.600 is acceptable in exploratory research (Cheung et al., 2023).

Table 2. Analysis of Common Method Bias

	Brand Image	Satisfaction	Service Quality	Word Of Mouth
Brand Image				
Satisfaction	2.325			1.000
Service Quality		1.000		
Word Of Mouth	2.325			

Source: Research Primary Data (2025)

Composite reliability assesses the internal consistency of indicators; scores exceeding 0.700 indicate strong reliability (Tessema et al., 2024). Discriminant validity ensures that constructs remain conceptually distinct from one another. These criteria are vital for assessing the measurement model's accuracy and trustworthiness, particularly in social science and higher education studies that use PLS-SEM.

Table 3. Outer Loading

	Brand Image	Satisfaction	Service Quality	Word Of Mouth
BI*1	0.783			
BI*2	0.725			
BI*3	0.746			
BI*4	0.776			
BI*5	0.766			
BI*6	0.712			
BI*7	0.822			
BI*8	0.802			

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BI*9	0.757			
SF*1		0.762		
S*10		0.727		
S*2		0.794		
S*3		0.719		
S*4		0.739		
S*5		0.723		
S*6		0.821		
S*7		0.750		
S*8		0.707		
S*9		0.747		
SQ*1			0.717	
SQ*10			0.738	
SQ*2			0.701	
SQ*3			0.856	
SQ*4			0.763	
SQ*5			0.848	
SQ*6			0.817	
SQ*7			0.799	
SQ*8			0.826	
SQ*9			0.747	
WOM*1				0.726
WOM*2				0.813
WOM*3				0.787
WOM*4				0.808
WOM*5				0.837
WOM*6				0.893
WOM*7				0.856
WOM*8				0.737

Source: Processed Data (2025)

Table 3 indicates that all outer loading values exceed 0.600, confirming that each indicator has a sufficiently strong relationship with its intended construct. This threshold is generally acceptable in PLS-SEM, especially in the early phases of model development. The indicators demonstrate good convergent validity and consistently measure their respective constructs.

Assessing discriminant validity is essential for evaluating reflective models in PLS-SEM, which is typically conducted using tools such as SmartPLS. Two common methods are cross-loading analysis and the Fornell-Larcker criterion. Cross-loading is acceptable when each indicator correlates more strongly with its construct than with any other construct. Meanwhile, the Fornell-Larcker approach requires that a construct's AVE exceed the squared correlations with other constructs to confirm distinctiveness (Hair et al., 2021). Cheung et al. (2023) also support these techniques for ensuring that constructs are conceptually and statistically unique. The discriminant validity values for each indicator are presented below.

Table 4. Discriminant Validity

	Brand Image	Satisfaction	Service Quality	Word Of Mouth
BI*1	0.783	0.537	0.614	0.607
BI*2	0.725	0.515	0.477	0.538

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BI*3	0.746	0.579	0.603	0.591
BI*4	0.776	0.511	0.533	0.463
BI*5	0.766	0.526	0.571	0.512
BI*6	0.712	0.486	0.550	0.549
BI*7	0.822	0.551	0.542	0.478
BI*8	0.802	0.578	0.560	0.540
BI*9	0.757	0.577	0.525	0.548
SF*1	0.507	0.762	0.580	0.579
S*10	0.522	0.727	0.587	0.590
S*2	0.536	0.794	0.545	0.610
S*3	0.395	0.719	0.366	0.413
S*4	0.536	0.739	0.504	0.491
S*5	0.580	0.723	0.591	0.541
S*6	0.599	0.821	0.657	0.648
S*7	0.494	0.750	0.552	0.629
S*8	0.592	0.707	0.483	0.518
S*9	0.505	0.747	0.565	0.586
SQ*1	0.575	0.454	0.717	0.546
SQ*10	0.632	0.636	0.738	0.666
SQ*2	0.519	0.505	0.701	0.566
SQ*3	0.639	0.569	0.856	0.637
SQ*4	0.548	0.522	0.763	0.595
SQ*5	0.586	0.531	0.848	0.635
SQ*6	0.500	0.597	0.817	0.634
SQ*7	0.476	0.505	0.799	0.619
SQ*8	0.493	0.589	0.826	0.609
SQ*9	0.652	0.726	0.747	0.698
WOM*1	0.531	0.537	0.617	0.726
WOM*2	0.566	0.615	0.651	0.813
WOM*3	0.589	0.617	0.656	0.787
WOM*4	0.619	0.653	0.702	0.808
WOM*5	0.610	0.650	0.697	0.837
WOM*6	0.586	0.647	0.660	0.893
WOM*7	0.559	0.606	0.633	0.856
WOM*8	0.473	0.545	0.543	0.737

Source: Processed Data (2025)

Table 4 demonstrates that each indicator loads most strongly on its intended construct, confirming that discriminant validity is well established. No indicator shows a stronger correlation with a different construct, indicating clear conceptual boundaries and no overlap among variables. This reflects a well-structured instrument design, where each indicator accurately represents its corresponding dimension. As a result, the measurement model shows both conceptual soundness and statistical validity, making it suitable for further testing in the structural phase of the PLS-SEM analysis.

Cronbach's Alpha and Composite Reliability are commonly used to assess construct reliability in reflective PLS-SEM models. Cronbach's Alpha is a conservative measure of internal consistency, while CR provides a more precise estimate by accounting for each indicator's weight. Reliability is generally acceptable when these values exceed 0.700, though values above 0.600 may suffice in exploratory studies (Hair et al., 2021). Dijkstra-Henseler's rho (ρA) is also recommended as a supplementary measure, offering a balanced estimate between Alpha and CR, especially in reflective models (Cheung et al., 2023). These metrics confirm that the constructs exhibit strong internal consistency and are appropriate for structural model evaluation.

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Table 5. Composite Reliability

	Cronbach's Alpha	Composite Reliability
Brand Image	0.912	0.927
Satisfaction	0.913	0.928
Service Quality	0.929	0.940
Word Of Mouth	0.924	0.938

Source: Processed Data (2025)

Table 5 shows that all constructs in the model demonstrate strong reliability. Composite reliability scores are 0.927 for brand image, 0.928 for student satisfaction, 0.940 for service quality, and 0.938 for word of mouth. Cronbach's alpha values are also consistently high (0.912, 0.913, 0.929, and 0.924, respectively). These figures exceed the commonly accepted minimum of 0.600 for exploratory research and surpass the ideal 0.700 threshold used in confirmatory studies. This indicates that each construct has strong internal consistency, supported by both Cronbach's Alpha (a conservative metric) and composite reliability (a more flexible measure), confirming that the indicators consistently reflect their corresponding latent variables and are suitable for further structural analysis.

In PLS-SEM, Average Variance Extracted (AVE) is a key indicator for validating reflective constructs, as it indicates how much of the indicator variance is explained by the construct rather than measurement error. Hair et al. (2021) suggest that an AVE above 0.500 signifies acceptable convergent validity, meaning the construct accounts for more than half of the variance in its indicators. A construct with high AVE is thus considered well-represented by its indicators. Supporting this, Khuzainey et al. (2020) emphasize that AVE values below 0.500 suggest insufficient explanatory power and are grounds for excluding a construct from the final model.

Table 6. Average Variance Extracted (AVE) Results

	Average Variance Extracted (AVE)
Brand Image	0.587
Satisfaction	0.562
Service Quality	0.613
Word Of Mouth	0.655

Source: Processed Data (2025)

Table 6 presents the AVE values for each construct, showing 0.587 for brand image, 0.562 for student satisfaction, 0.613 for service quality, and 0.655 for word of mouth. Since all values exceed the minimum requirement of 0.500, as Hair et al. (2021) recommended, they confirm that each construct explains over half of the variance in its indicators. This finding indicates strong convergent validity, suggesting that the indicators adequately represent their respective latent constructs.

The HTMT is widely recommended for assessing discriminant validity in reflective measurement models using PLS-SEM. Unlike older methods, such as the Fornell-Larcker criterion, HTMT addresses its limitations by comparing correlations across constructs with those within a given construct. If the HTMT value remains below 0.900, it indicates adequate discriminant validity, showing that constructs are conceptually distinct (Hair et al., 2021). HTMT is considered more precise and effective, especially for identifying issues in complex models, and is now a commonly used standard in PLS-SEM research

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across various disciplines in the social sciences and management.

Table 7. Heretroit-Monotoroit Ratio (HTMT)

	Brand Image	Satisfaction	Service Quality
Brand Image			
Satisfaction	0.768		
Service Quality	0.779	0.773	
Word Of Mouth	0.761	0.813	0.855

Source: Processed Data (2025)

Table 7 shows that all HTMT values fall below the 0.900 threshold, indicating that the constructs are conceptually distinct and do not overlap. Furthermore, the indicators demonstrate stronger correlations with their respective constructs than with other constructs, thereby reinforcing the model's discriminant validity. This confirms that the measurement model is well-structured, with indicators appropriately and consistently aligned with their intended constructs.

Table 8. Fornell-Larcker Criterion

	Brand Image	Satisfaction	Service Quality	Word Of Mouth
Brand Image	0.766			
Satisfaction	0.707	0.750		
Service Quality	0.724	0.733	0.783	
Word Of Mouth	0.703	0.755	0.800	0.809

Source: Processed Data (2025)

Inner model test. Table 8 indicates that, according to the Fornell-Larcker criterion, the square root of AVE for each construct exceeds its correlations with other constructs. This result confirms that the constructs demonstrate strong discriminant validity. This means that each variable aligns more closely with its indicators than others, and the consistent pattern of indicator loadings confirms that the constructs are well-defined and appropriately measured.

In PLS-SEM, assessing the structural (inner) model involves examining the strength and significance of relationships between latent variables. This includes analyzing R^2 values to evaluate how well independent constructs explain variance in dependent constructs; an R^2 of 0.500 or higher indicates strong predictive power (Purwanto & Sudargini, 2021). Path significance is further tested using t-statistics and p-values. According to Hossan et al. (2020), accurately assessing the structural model is essential for validating hypotheses and understanding the direction and strength of inter-construct relationships. The R^2 estimates from SmartPLS are summarised in **Table 9**.

Table 9. R-Square Test Results

	R Square	R Square Adjusted
Brand Image	0.567	0.562
Satisfaction	0.538	0.535
Word Of Mouth	0.570	0.568

Source: Processed Data (2025)

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Table 9 shows that WOM and student satisfaction account for 56.700 per cent of the variance in the brand image (R^2 equals 0.567), indicating a strong model fit. In comparison, other factors influence the remaining 43.300 per cent. Similarly, service quality explains 53.800 per cent of the variance in satisfaction (R^2 equals 0.538), and satisfaction explains 57.000 per cent of the variation in WOM (R^2 equals 0.570), both of which are considered substantial contributions.

In PLS-SEM, the f-square (f^2) metric assesses the extent to which an independent variable contributes to the explained variance of a dependent variable by measuring the change in R^2 when that construct is excluded. Based on standard benchmarks, an f^2 of 0.020 suggests a small effect, 0.150 a medium effect, and 0.350 a large effect (Purwanto & Sudargini, 2021; Suleiman & Abdulkadir, 2022). This analysis helps determine the statistical significance and practical strength of each relationship. Using SmartPLS 3.0, the f^2 values for each structural path are presented in the following table and figure as a reference for evaluating the relative impact of each construct in the model.

Table 10. F-Square

	Brand Image	Satisfaction	Word Of Mouth
Brand Image			
Satisfaction	0.167		1.325
Service Quality		1.163	
Word Of Mouth	0.154		

Source: Processed Data (2025)

Referring to **Table 10**, service quality strongly influences student satisfaction, with an effect size (f^2) of 1.163, categorized as large. Satisfaction also strongly impacts WOM (f^2 equals 1.325) and moderately influences the brand image (f^2 equals 0.167). Additionally, word of mouth moderately affects the brand image, with an f^2 value of 0.154.

After evaluating these effect sizes, the model's predictive relevance was assessed using the Q-square (Q^2) metric, calculated through blindfolding. This technique omits parts of the data to test how well the model can predict omitted values. According to Hair et al. (2021), a Q^2 value above zero indicates that the model has meaningful predictive capability, whereas a value of zero or below indicates no predictive power. Q^2, derived from cross-validated redundancy, complements R^2 and path coefficients by accurately reflecting the model's ability to predict endogenous constructs. It is a key metric in validating PLS-SEM models in real-world applications.

Table 11. Predictive Relevance (Q^2)

	SSO	SSE	Q^2 (equals 1-SSE/SSO)
Brand Image	1674.000	1131.084	0.324
Satisfaction	1860.000	1342.926	0.278
Service Quality	1860.000	1860.000	
Word Of Mouth	1488.000	956.242	0.357

Note: SSO-Sum of Squares of Observations; SSE - Sum of Squares of Prediction Errors; while Q2 value equals 1-SSE/SSO

Source: Processed Data (2025)

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Table 11 presents the model's predictive relevance (Q^2) scores: 0.324 for brand image, 0.278 for student satisfaction, and 0.357 for WOM. These values indicate that the model has solid predictive power for its endogenous constructs, confirming its suitability for further analysis.

Test of hypothesis. In PLS-SEM, the significance of hypothesized paths is assessed through bootstrapping, a nonparametric resampling method that does not assume normality. This technique is particularly useful in PLS, which is sensitive to small samples and nonnormality. As noted by Usakli & Rasoolimanesh (2023), bootstrapping enhances the accuracy of significance testing and confidence intervals for path coefficients. The resulting t-statistics and p-values from this process, as shown in Table 10, provide key evidence for evaluating model validity, underscoring the importance of bootstrapping in PLS-SEM analysis.

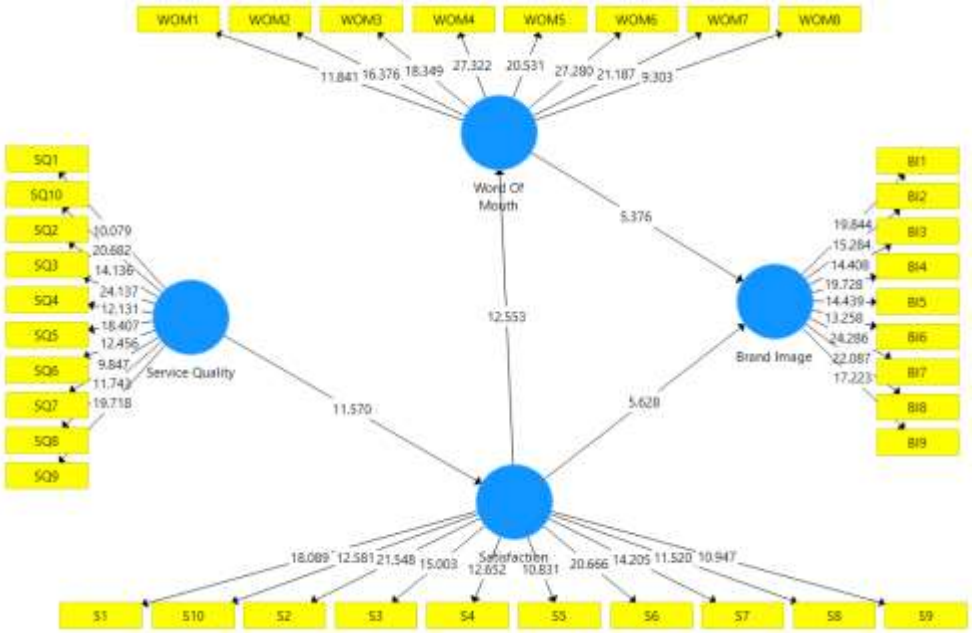

Figure 1. Path Coefficient
Source: Processed Data (2025)

The outcomes of the direct effect hypotheses are summarized in the path coefficient table below:

Table 12. Path Coefficient

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Satisfaction -> Brand Image	0.410	0.405	0.073	5.628	0.000
Satisfaction -> Word Of Mouth	0.755	0.753	0.060	12.553	0.000
Service Quality -> Satisfaction	0.733	0.730	0.063	11.570	0.000

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Word Of Mouth -> Brand Image	0.394	0.395	0.073	5.376	0.000

Source: Processed Data (2025)

The mediating effects between the independent and dependent variables in this research are outlined as follows:

Table 13. Specific Indirect Effects

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Satisfaction -> Word of Mouth -> Brand Image	0.297	0.298	0.065	4.575	0.000

Source: Processed Data (2025)

DISCUSSION

The Effect of Service Quality on Student Satisfaction. H1 is supported, indicating that service quality increases student satisfaction in private universities in North Sumatra. Students form satisfaction judgments from SERVQUAL cues: reliability and assurance that signal dependable processes, responsiveness and empathy that make support timely and caring, and tangibles that shape the service setting (Camilleri, 2021). This relationship is strong because these indicators reduce perceived risk and build trust, especially when staff and digital systems solve problems consistently (Surya Bahadur et al., 2024; Seitova et al., 2024). The finding aligns with prior evidence that service quality predicts satisfaction and downstream loyalty outcomes (Mulyono et al., 2020; Tessema et al., 2025). However, results can vary across contexts: physical evidence may be negative or non-significant, and some dimensions may not translate into satisfaction when expectations differ (Amoako et al., 2023; Gürbüz & Bayraktar, 2023). Universities should therefore strengthen high-contact services and service recovery, while aligning facility upgrades with students' priorities. This should improve retention and reduce switching to competing institutions.

The Effect of Student Satisfaction on Brand Image. H2 is supported, showing that higher student satisfaction strengthens the university's brand image. This indicates that satisfaction across academic quality, faculty engagement, campus facilities, and reliable administrative and digital services serves as a salient signal of professionalism and modernity that external audiences can recognize through students' narratives and recommendations (Moslehpour et al., 2020; Hossain et al., 2025). This occurs because satisfied students attribute positive meaning to institutional performance, which increases perceived credibility and reputational distinctiveness, particularly when learning experiences and support services are consistent (Shehzadi et al., 2021). This matters because universities should monitor satisfaction drivers, close service gaps quickly, and institutionalize feedback loops so that satisfaction translates into a stable reputational asset (Seow & Hussain, 2024). However, prior evidence is mixed: university reputation does not always increase satisfaction (Qazi et al., 2022), and some studies treat brand image as an antecedent rather than a consequence, suggesting the possibility of reverse causality (Tahir et al., 2024).

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The Effect of Student Satisfaction on Word of Mouth. H3 is supported, indicating that satisfied students are more likely to recommend the university, share positive experiences, and post favorable comments. Satisfaction forms across academic quality, staff interaction, facilities, and digital and administrative services, and students translate this evaluation into advocacy. Expectancy disconfirmation logic proposes that when performance meets or exceeds expectations, students are motivated to communicate benefits and reduce peers' uncertainty (Nam et al., 2020). Prior evidence likewise shows that satisfaction strengthens WOM directly and via trust-related mechanisms (Giantari et al., 2021; Tessema et al., 2024). However, the satisfaction-to-WOM link can weaken when loyalty and course experience differ or when brand knowledge is high, making recommendations less dependent on personal experience (Rehman et al., 2022; Lin et al., 2025). Other work suggests that commitment, identification, or delight can be more proximal triggers of eWOM than satisfaction alone (Rabah et al., 2024; Lam et al., 2025). For universities, improving responsiveness and service recovery by using feedback loops can convert satisfaction into referrals.

The Effect of Word of Mouth on Brand Image. H4 is supported: students' recommendations, sharing positive experiences, and social media advocacy translate into stronger perceptions of reputation, lecturer professionalism, and distinctiveness. This occurs because peer-to-peer messages act as diagnostic cues that reduce information asymmetry and strengthen brand associations, especially when reviewers and platforms are perceived as credible (Mitra & Jenamani, 2020; Verma et al., 2023). Our result aligns with evidence that WOM reinforces brand equity and transmits service-quality signals to brand outcomes in higher education (Peng et al., 2024; Tessema et al., 2025). However, prior work notes boundary conditions: brand image can precede WOM among alums, implying potential reverse influence (Schlesinger et al., 2023), and incentive-driven or low-trust eWOM may trigger scepticism and limit information adoption, weakening image effects (Chen et al., 2023; Ngo et al., 2024). Negative WOM can also be disproportionately harmful after service failures (Dalman et al., 2020). Practically, universities should invest in authentic experiences, service recovery, and active online review management.

The Effect of Student Satisfaction on Brand Image Through Word of Mouth. H5 is supported, indicating that WOM mediates the link between satisfaction and brand image in private universities in North Sumatra. Satisfied students, shaped by academic quality, supportive staff interactions, adequate facilities, and reliable digital services, are more likely to recommend the university, share positive experiences, and advocate online, thereby enhancing the university's perceived reputation and professionalism. Expectancy disconfirmation explains why: when experiences confirm or exceed expectations, satisfaction motivates voluntary communication that spreads favorable associations (Nam et al., 2020; Maru & Sai Vijay, 2024). This aligns with evidence that satisfaction and trust transmit service quality effects to WOM in higher education (Tessema et al., 2024), and satisfaction can fully mediate key antecedents of WOM in international education (Stribbell & Duangekanong, 2022). However, findings are not uniform. Alum studies report that brand image can drive WOM intentions, suggesting reverse causality (Schlesinger et al., 2023), and incentivized WOM may trigger scepticism that dilutes brand benefits (Chen et al., 2023). Universities should therefore strengthen satisfaction drivers, encourage authentic testimonials, and actively monitor reviews.

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CONCLUSION

This research indicates that the quality of services provided by private universities in North Sumatra plays a pivotal role in shaping student satisfaction, subsequently influencing the development of the institution's brand image. This effect manifests both directly and indirectly through WOM communication. The results underscore that student satisfaction is critical in enhancing public perception of the university. The relationship between satisfaction and brand image demonstrates how positive student experiences contribute to a favorable institutional reputation. Furthermore, the strong association between satisfaction and WOM, along with WOM's mediating role in the relationship between satisfaction and brand image, indicates that satisfied students are likely to act as advocates for the university through positive word of mouth.

Based on these insights, it is recommended that private higher education institutions consistently improve the quality of both academic and non-academic services. Providing prompt, personalized, professionally delivered services will help create meaningful student experiences, foster positive WOM, and strengthen the institution's brand image. Marketing strategies should incorporate student-centred approaches, such as showcasing alum testimonials, leveraging authentic promotional content, and running testimonial-driven digital campaigns. Additionally, universities should actively nurture long-term relationships with current students and alumni as a key component of their strategic branding efforts. Institutions can build a strong and reputable image and enhance their competitiveness in an increasingly crowded higher education landscape.

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