

Analysis of the Influence of Perceived Usefulness, Perceived Ease of Use, Perceived Trustworthiness, Service Quality, and Brand Image on Customer Satisfaction in Using Telemedicine

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Abstract

The rapid expansion of telemedicine has significantly transformed healthcare delivery, particularly in developing countries such as Indonesia. Despite its increasing adoption, user satisfaction remains inconsistent, indicating a gap between technology acceptance and service experience. This study aims to examine the role of Perceived Usefulness, Perceived Ease of Use, and Perceived Trustworthiness in shaping Service Quality and their subsequent impact on Brand Image and Customer Satisfaction. A quantitative approach was employed using data collected from 305 telemedicine users through an online questionnaire. The data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The findings reveal that all three antecedents significantly influence Service Quality, with Perceived Trustworthiness emerging as the most dominant factor. Furthermore, Service Quality significantly affects both Brand Image and Customer Satisfaction, while Brand Image also contributes to Customer Satisfaction. These results highlight the critical role of trust and service quality in enhancing user satisfaction and sustaining telemedicine adoption.

Keywords

Service Quality; Perceived Trustworthiness; Customer Satisfaction; Brand Image; Telemedicine

1. Introduction

The rapid advancement of digital technologies over the past two decades has fundamentally reshaped global healthcare systems, positioning digital health and telemedicine as critical pillars for delivering more inclusive, efficient, and sustainable healthcare services (Said et al., 2024; Zhang et al., 2025). This transformation accelerated significantly during the COVID-19 pandemic, which created an urgent need for safe, remote healthcare solutions, leading to a substantial surge in telemedicine adoption worldwide (Garcia et al., 2024; Yao et al., 2025; Khatun et al., 2024). Notably, a large proportion of this increase has remained permanent, reflecting a structural shift rather than a temporary adaptation. Beyond the pandemic context, telemedicine has evolved into a long-term strategic component of healthcare reform, driven by increasing chronic disease prevalence, aging populations, urbanization, and persistent shortages of healthcare professionals. The World Health Organization (2023) emphasizes that digital health plays a crucial role in achieving Universal Health Coverage (UHC), particularly in developing countries where healthcare resources are unevenly distributed.

In Indonesia, the relevance of telemedicine is further amplified by structural disparities in healthcare access. A significant concentration of medical personnel is located in Java and Bali, while eastern regions such as Papua and

Maluku remain underserved (Muharam et al., 2024). This imbalance creates substantial barriers to equitable healthcare access, positioning telemedicine as a strategic solution to bridge geographical and resource gaps. Concurrently, Indonesia has experienced rapid growth in telemedicine adoption, particularly since the onset of the pandemic, with annual user growth remaining consistently high due to national digital health initiatives and increasing reliance on platforms such as Halodoc and Alodokter (Imran, 2024; Chairunnisa, 2024). This trend reflects a broader shift in consumer behavior, where users increasingly prefer flexible, on-demand digital healthcare services over traditional facility-based care.

Despite the strong growth in adoption, the sustainability of telemedicine usage remains a critical concern, primarily due to challenges related to user experience and satisfaction. Telemedicine is not merely a technological solution but a service system that integrates digital platforms with clinical interactions. As such, the quality of user experience, particularly during online doctor consultations, plays a decisive role in determining continued usage (Said et al., 2024; Shaw et al., 2022). Empirical evidence suggests that negative experiences in digital healthcare services have a disproportionately stronger effect on users' intention to discontinue usage compared to the positive influence of satisfactory experiences on reuse intentions (Deng et al., 2022). In the Indonesian context, low user retention is further influenced by varying levels of digital literacy, limitations in network infrastructure, and concerns regarding data privacy and security (Yakub et al., 2023; Noverinda & Sudaryono, 2023; Imran, 2024).

The complexity of telemedicine services is further heightened by their classification as high-credence services, where users cannot easily evaluate service outcomes due to the intangible and high-risk nature of healthcare decisions (Vannelli et al., 2025). Unlike other digital services such as e-commerce or ride-hailing, telemedicine involves clinical judgments that directly affect users' health conditions, thereby increasing perceived risk and the importance of trust. In such contexts, users rely heavily on their perceptions of service usefulness, system usability, and trust in both the healthcare provider and the platform. Research indicates that high perceived risk strengthens the role of trust as a key determinant of user satisfaction and continued usage (Deng et al., 2022). Moreover, user expectations are shaped by prior digital experiences, platform reputation, and marketing communications, making expectation–experience alignment a critical factor in determining satisfaction (Becker & Jaakkola, 2023; Valencia-Arias et al., 2024).

From a theoretical perspective, user behavior in telemedicine is commonly explained through the Technology Acceptance Model (TAM), which highlights Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) as primary determinants of technology adoption (Harst et al., 2019; Shaarani et al., 2023). In healthcare contexts, these constructs are extended by incorporating Perceived Trustworthiness (PT), reflecting the importance of trust in handling sensitive medical data and ensuring professional clinical interactions (Yao et al., 2025; Zhang et al., 2025). However, relying solely on technology acceptance factors is insufficient to fully explain user satisfaction in telemedicine, as the service inherently involves complex interactions between technological systems and human elements, particularly doctor–patient communication.

Therefore, service quality emerges as a critical factor in shaping user satisfaction, encompassing not only system performance but also the quality of clinical interactions, clarity of medical information, responsiveness, and continuity of care (Khatun et al., 2024; Meng et al., 2024). Service quality in telemedicine is formed through the integration of service design, service delivery, and post-service processes, reflecting users' holistic evaluation of their experience across multiple service touchpoints (Patrício et al., 2023; Wirtz et al., 2021). Empirical studies highlight that responsiveness of doctors, clarity of medical explanations, and reliability of the consultation process significantly influence user satisfaction and perceived value (Meng et al., 2024; Sutoyo & Permana, 2025). Importantly, even a single negative experience at any stage of the service journey can disproportionately lower overall service quality perception (Chairunnisa, 2024).

In addition to service quality, brand image plays a strategic role in shaping user perceptions and satisfaction in telemedicine services. Brand image reflects the reputation, credibility, and professionalism of the service provider, serving as a signal of quality in high-risk service contexts (Nguyen et al., 2021; Said et al., 2024). Strong brand image not only influences initial user expectations but also enhances trust and tolerance toward service limitations (Chen et al., 2023). In competitive telemedicine markets such as Indonesia, platforms with well-established reputations tend to achieve higher user loyalty, even when functional features are relatively similar (IPMI Repository, 2024). This highlights the importance of integrating both functional and symbolic dimensions of service evaluation in understanding user satisfaction.

Despite the increasing adoption of telemedicine, empirical findings reveal a persistent gap between user expectations and actual service experiences. A significant proportion of users report dissatisfaction, primarily due to issues related to communication quality, responsiveness, and trust in online consultations (Valencia-Arias et al., 2024; CoPAR, 2023). This indicates that technological availability alone is insufficient to ensure user satisfaction and long-term engagement. Instead, satisfaction is formed through the interaction of multiple factors, including perceived usefulness, ease of use, trustworthiness, service quality, and brand image. However, existing studies often examine these variables in isolation, with limited integration into a comprehensive framework that captures the full complexity of telemedicine service experiences (Venkatesh et al., 2022; Parasuraman et al., 2020).

Accordingly, there is a critical need for a more integrative approach that combines the Technology Acceptance Model (TAM), service quality, and brand image to better explain customer satisfaction in telemedicine services. Such a framework enables a deeper understanding of how technological perceptions are translated into service quality evaluations and ultimately into user satisfaction. This integrated perspective is particularly relevant in the Indonesian context, where rapid adoption is not yet matched by consistent service quality and user satisfaction. By addressing this gap, future research can provide more comprehensive insights into the mechanisms driving sustainable telemedicine usage and inform both academic discourse and practical strategies for improving digital healthcare services. Based on this gap, the study proposes the following research questions:

- a. Does perceived usefulness positively affect service quality?
- b. Does perceived usefulness positively affect brand image?
- c. Does perceived ease of use positively affect service quality?
- d. Does perceived ease of use positively affect brand image?
- e. Does perceived trustworthiness positively affect service quality?
- f. Does perceived trustworthiness positively affect brand image?
- g. Does service quality positively affect brand image?
- h. Does service quality positively affect customer satisfaction?
- i. Does brand image positively affect customer satisfaction?

1.1 Objectives

This study aims to examine the determinants of customer satisfaction in telemedicine services by integrating the Technology Acceptance Model (TAM), service quality, and brand image within a comprehensive framework. Specifically, the objectives of this research are:

- a. To analyze the effect of perceived usefulness on service quality in telemedicine services.
- b. To examine the effect of perceived usefulness on brand image in telemedicine services.
- c. To evaluate the influence of perceived ease of use on service quality in telemedicine services.
- d. To assess the impact of perceived ease of use on brand image in telemedicine services.
- e. To investigate the effect of perceived trustworthiness on service quality in telemedicine services.
- f. To analyze the influence of perceived trustworthiness on brand image in telemedicine services.
- g. To examine the relationship between service quality and brand image in telemedicine services.
- h. To evaluate the effect of service quality on customer satisfaction in telemedicine services.
- i. To assess the influence of brand image on customer satisfaction in telemedicine services.

Finally, this study aims to develop an integrated model that explains how technological perceptions, service quality, and brand image collectively influence customer satisfaction, particularly in the context of telemedicine services in Indonesia.

2. Literature Review

2.1 Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) is widely used to explain user acceptance of digital technologies; however, recent studies highlight the need to extend the model to capture the complexity of telemedicine services. In online healthcare consultations, users evaluate not only technological aspects but also the quality of clinical interactions and overall service processes. Therefore, TAM is expanded by incorporating Perceived Trustworthiness (PT) alongside Perceived Usefulness (PU) and Perceived Ease of Use (PEOU), making it more suitable for high-credence services such as telemedicine (Harst et al., 2019; Vannelli et al., 2025). PU reflects the perceived functional and clinical benefits, PEOU captures the ease of interaction with the system, and PT reduces perceived risk related to data security

and physician competence. These three constructs collectively shape users' cognitive evaluations, which are further translated into perceptions of service quality and brand image. Thus, TAM in this study is positioned as an extended framework to explain not only technology adoption but also post-usage evaluation and customer satisfaction in telemedicine contexts (Venkatesh et al., 2021; Liu & Jia, 2025).

2.2 Perceived Usefulness (PU)

Perceived Usefulness (PU) refers to the extent to which users believe that a system enhances their performance, and in telemedicine, it extends to improving healthcare decision-making and access to medical services (Venkatesh et al., 2021). PU encompasses practical, clinical, and psychological benefits, such as faster access to healthcare, time efficiency, and accurate medical information (Almathami et al., 2020; Holden & Karsh, 2022). As telemedicine is outcome-oriented, perceived benefits play a crucial role in shaping user evaluations. Empirical studies show that higher PU leads to more positive user experiences, stronger perceptions of service quality, and improved customer satisfaction (Yeo et al., 2024; Lin et al., 2024). Additionally, when users perceive significant benefits, they tend to associate the platform with professionalism and credibility, thereby strengthening brand image. Thus, PU serves as a fundamental determinant influencing service quality, brand image, and customer satisfaction in telemedicine services.

2.3 Perceived Ease of Use (PEOU)

Perceived Ease of Use (PEOU) refers to the degree to which users believe that a system is easy to use and requires minimal effort (Venkatesh et al., 2021). In telemedicine, PEOU includes both technical usability and the cognitive simplicity of understanding service processes and medical information. User-friendly interfaces, clear navigation, and simple consultation procedures are essential in enhancing user comfort and reducing barriers, particularly for users with limited digital literacy (Shaarani et al., 2023; Zhou et al., 2022). Studies indicate that ease of use significantly improves user confidence, perceived service efficiency, and overall satisfaction (Valencia-Arias et al., 2024; Lin et al., 2024). Furthermore, PEOU positively influences perceptions of service quality and contributes to the formation of a strong brand image by creating consistent positive digital experiences. Therefore, PEOU plays a critical role in shaping user evaluations and satisfaction in telemedicine services.

2.4 Perceived Trustworthiness (PT)

Perceived Trustworthiness (PT) reflects users' confidence in the integrity, reliability, and security of telemedicine platforms, which is particularly important given the high-risk nature of digital healthcare services (Sabli et al., 2021). PT encompasses trust in physician competence, data privacy, and platform credibility, as users cannot directly evaluate medical outcomes and must rely on trust signals such as reputation and transparency (McKnight et al., 2002). Trust functions as a risk-reduction mechanism that significantly influences user satisfaction and continued usage intentions (Deng et al., 2022; Vannelli et al., 2025). Empirical evidence shows that higher trust leads to more positive evaluations of service quality and strengthens brand image by enhancing perceptions of professionalism and reliability (Kumar et al., 2023; Liu & Jia, 2025). Therefore, PT is a key determinant in shaping user perceptions and satisfaction in telemedicine services.

2.5 Service Quality (SQ)

Service Quality refers to the extent to which a service meets or exceeds customer expectations and is commonly measured using dimensions such as reliability, responsiveness, assurance, empathy, and tangibles (Parasuraman et al., 1988). In the digital context, this concept evolves into e-service quality, incorporating system efficiency, accessibility, and data security (Simatupang et al., 2025). In telemedicine, service quality integrates both healthcare delivery and digital system performance, including platform reliability, responsiveness of doctors, clarity of medical communication, and overall user experience. Empirical studies consistently show that service quality significantly influences customer satisfaction, loyalty, and continued usage of telemedicine services (Victorya et al., 2024; Edhi & Heryjanto, 2024). Therefore, service quality serves as a central construct that translates technological perceptions into holistic service experiences and satisfaction outcomes.

2.6 Brand Image (BI)

Brand Image refers to users' perceptions and associations toward a platform formed through direct experiences and external information (Fathurahman et al., 2022). In telemedicine, brand image acts as a signal of quality and trust due to the intangible and high-risk nature of healthcare services (Chen et al., 2023). It is shaped by factors such as service quality, trust, user experience, and perceived professionalism of healthcare providers. A strong brand image reduces uncertainty, enhances perceived credibility, and positively influences user evaluations (Nguyen et al., 2021).

Moreover, brand image serves as a mediating factor between service quality and customer satisfaction, as high-quality service experiences strengthen brand perceptions, which in turn improve satisfaction. Thus, brand image plays a strategic role in influencing user behavior and satisfaction in telemedicine services.

2.7 Customer Satisfaction (CS)

Customer Satisfaction refers to the overall evaluation of a service based on the comparison between user expectations and actual performance (Oliver, 2014). In telemedicine, satisfaction reflects how well online consultation services meet users' healthcare needs and expectations. It is influenced by multiple factors, including service quality, ease of use, perceived usefulness, and trust (Brady & Cronin, 2001). Studies indicate that satisfaction is a key determinant of continued usage and long-term engagement in digital healthcare services (Yeo et al., 2024). High service quality and strong brand image significantly enhance satisfaction by improving user experience and reducing perceived risk. Therefore, customer satisfaction represents the ultimate outcome of the interaction between technological perceptions, service delivery, and brand evaluation in telemedicine services.

2.7 Hypothesis Development

Perceived Usefulness (PU) reflects the extent to which users believe that telemedicine services provide meaningful benefits in improving healthcare access and decision-making. In digital service contexts, users who perceive high functional value tend to evaluate the overall service process as more structured, effective, and reliable. Prior studies suggest that perceived usefulness enhances users' evaluation of service delivery processes, as it signals that the system successfully fulfills their needs (Venkatesh et al., 2022; Rahi et al., 2023). In telemedicine, PU indicates the effectiveness of service design, responsiveness, and clarity of medical information. When users experience tangible benefits, they are more likely to perceive the overall service quality as high. Empirical findings confirm that perceived usefulness significantly influences users' evaluation of digital service quality (Alalwan et al., 2024; Yoon & Kim, 2025). Therefore, higher perceived usefulness leads to more positive perceptions of service quality.

H1: Perceived Usefulness positively affects Service Quality.

Perceived Usefulness also plays a strategic role in shaping Brand Image. When users perceive that telemedicine services provide clear benefits such as efficiency, accessibility, and relevant medical recommendations, they associate the platform with professionalism and credibility. Previous studies indicate that functional value significantly strengthens brand perception in digital services (Mason et al., 2023; Chen et al., 2023). In telemedicine, perceived usefulness contributes to a positive image by signaling that the platform is capable of delivering effective healthcare solutions (Nguyen et al., 2021; Said et al., 2024). Thus, higher perceived usefulness enhances brand image.

H2: Perceived Usefulness positively affects Brand Image.

Perceived Ease of Use (PEOU) refers to the extent to which users perceive telemedicine platforms as easy to use and require minimal effort. Ease of use reduces technical and cognitive barriers, allowing users to interact more effectively with the system. Studies show that user-friendly systems improve perceptions of service efficiency, reliability, and responsiveness (Tamilmani et al., 2023; Gao et al., 2024). In telemedicine, ease of navigation and clarity of consultation processes contribute to users' evaluation of service quality. When users experience smooth interactions, they are more likely to perceive the service as well-designed and high-quality (Dwivedi et al., 2023; Park & Kim, 2025).

H3: Perceived Ease of Use positively affects Service Quality.

In addition to influencing service evaluation, PEOU contributes to the formation of Brand Image. Platforms that provide seamless and intuitive user experiences are perceived as more professional and user oriented. Research suggests that usability is a key determinant of brand credibility in digital platforms (Nguyen & Lee, 2024). Positive user experiences driven by ease of use strengthen users' perceptions of modernity and reliability (Chen et al., 2023; Mason et al., 2023). Therefore, higher perceived ease of use leads to a stronger brand image.

H4: Perceived Ease of Use positively affects Brand Image.

Perceived Trustworthiness (PT) reflects users' confidence in the security, integrity, and reliability of telemedicine services. In high-risk services such as healthcare, trust is essential for enabling users to engage fully in digital interactions. Trust reduces perceived risk and shapes how users evaluate service processes. Users who trust a platform are more likely to perceive service delivery as professional and consistent (Alshurideh et al., 2022; Zhou et al., 2023).

Empirical studies confirm that trustworthiness significantly enhances perceived service quality in digital healthcare services (Dwivedi et al., 2023; Alalwan et al., 2021).

H5: Perceived Trustworthiness positively affects Service Quality.

Trustworthiness is also fundamental in shaping Brand Image, particularly in telemedicine, where services involve sensitive health information and high perceived risk. Users who trust a platform perceive it as credible, ethical, and professional. Prior studies indicate that trust significantly strengthens brand reputation and reduces uncertainty (Kumar et al., 2023; Chen et al., 2023). In telemedicine, trust enhances brand associations related to safety and reliability.

H6: Perceived Trustworthiness positively affects Brand Image.

Service Quality (SQ) reflects the provider's ability to deliver consistent and valuable service experiences. High-quality service enhances users' perceptions of professionalism and reliability, which contribute to a stronger brand image. Empirical studies show that service quality significantly influences brand perception in digital services (Ebrahim et al., 2022; Lim & Ting, 2023). In telemedicine, consistent and reliable service interactions strengthen users' positive associations with the platform (Iglesias et al., 2023; Rana et al., 2024).

H7: Service Quality positively affects Brand Image.

Service Quality is one of the most important determinants of Customer Satisfaction in healthcare services. High-quality service delivery improves user experience and leads to positive evaluations. Studies consistently show that reliability, responsiveness, and assurance significantly influence patient satisfaction (Handoko & Handayani, 2024; Wulandari et al., 2024). In telemedicine, better service quality increases user satisfaction and the likelihood of continued usage.

H8: Service Quality positively affects Customer Satisfaction.

Brand Image plays a crucial role in shaping users' expectations and evaluations of telemedicine services. A positive brand image reduces perceived risk and enhances emotional comfort. Research indicates that strong brand image leads to higher satisfaction by influencing how users interpret service experiences (Chen et al., 2023; Mason et al., 2023). Users with positive brand perceptions are more likely to evaluate services favorably.

H9: Brand Image positively affects Customer Satisfaction (Figure 1 and Figure 2).

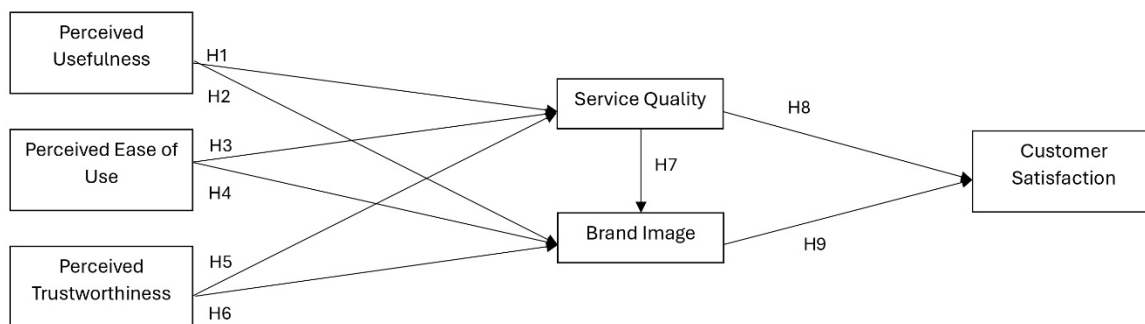


Figure 1. Research Framework

3. Methods

This study adopts a quantitative, descriptive, and cross-sectional research design to examine user perceptions of telemedicine services in Indonesia. The cross-sectional approach captures data at a single point in time, providing a snapshot of current user evaluations without aiming to establish causal relationships. The study focuses on active telemedicine users as the unit of analysis.

Data analysis was conducted using Partial Least Squares–Structural Equation Modeling (PLS-SEM), supported by descriptive statistics. PLS-SEM was selected due to its flexibility in handling complex research models and its suitability for studies with moderate sample sizes. The analysis procedure involved two main stages: evaluation of the measurement model and assessment of the structural model. The measurement model was assessed through validity and reliability testing, while the structural model was evaluated using R^2 values, path coefficients, and bootstrapping.

techniques to determine the significance of relationships among variables. This approach enables a comprehensive understanding of the proposed research model.

4. Data Collection

The target population of this study consists of active telemedicine users in Indonesia who have conducted online consultations at least once per month over the past six months. A purposive sampling technique was employed to ensure that respondents met the specified criteria. A total of 305 valid responses were collected, exceeding the minimum required sample size of 180 based on a 5:1 sample-to-item ratio for 32 measurement items. Data was collected through an online questionnaire distributed via Google Forms over a one-month period. The questionnaire was structured into three sections: screening questions, demographic information, and measurement items for each research variable. All items were measured using a five-point Likert scale.

5. Results and Discussion

5.1 Outer Model Test Result

The outer model evaluation demonstrates that all constructs in this study meet the criteria for convergent validity, discriminant validity, and reliability. Convergent validity is confirmed by outer loading values exceeding 0.70 across all indicators, with Perceived Usefulness (0.927–0.945), Perceived Ease of Use (0.934–0.953), Perceived Trustworthiness (0.933–0.953), Service Quality (0.934–0.945), Brand Image (0.931–0.942), and Customer Satisfaction (0.939–0.949). Additionally, all Average Variance Extracted (AVE) values are above 0.50 (ranging from 0.877 to 0.893), indicating that each construct explains more than half of the variance of its indicators. Reliability is also well established, as Cronbach's Alpha values range from 0.965 to 0.970 and Composite Reliability values range from 0.973 to 0.977, both exceeding the recommended threshold of 0.70. Discriminant validity is supported by the Fornell-Larcker criterion, where the square root of AVE for each construct is higher than its correlations with other constructs, and further confirmed by HTMT values below 0.90, indicating no multicollinearity issues. Therefore, all constructs are considered valid, reliable, and suitable for subsequent structural model analysis (Table 1- Table 5).

Table 1. Validity and Reliability Test Result

Variabel	Items	Outer Loading	Cronbach's Alpha	Composite Reliability (rho_c)	Average Variance Extracted (AVE)
Perceived Usefulness (PU)	PU1	0,938	0,965	0,973	0,877
	PU2	0,945			
	PU3	0,938			
	PU4	0,927			
	PU5	0,933			
Perceived Ease of Use (PEOU)	PEOU1	0,953	0,969	0,976	0,889
	PEOU2	0,944			
	PEOU3	0,934			
	PEOU4	0,937			
	PEOU5	0,946			
Perceived Trustworthiness (PT)	PT1	0,938	0,969	0,976	0,889
	PT2	0,952			
	PT3	0,933			
	PT4	0,953			
	PT5	0,938			
Service Quality (SQ)	SQ1	0,934	0,966	0,974	0,881
	SQ2	0,945			

	SQ3	0,936			
	SQ4	0,935			
	SQ5	0,944			
Brand Image (BI)	BI1	0,940	0,966	0,974	0,881
	BI2	0,931			
	BI3	0,940			
	BI4	0,942			
	BI5	0,941			
Customer Satisfaction (CS)	CS1	0,945	0,970	0,977	0,893
	CS2	0,949			
	CS3	0,944			
	CS4	0,939			
	CS5	0,949			

Table 2. Fornell-Larcker Criterion Test Result

	BI	CS	PEOU	PT	PU	SQ
BI	0,939					
CS	0,767	0,945				
PEOU	0,783	0,795	0,943			
PT	0,781	0,801	0,801	0,943		
PU	0,738	0,752	0,757	0,784	0,937	
SQ	0,771	0,766	0,781	0,781	0,744	0,939

Table 3. Heterotrait-Monotrait Ratio (HTMT) Test Result

	BI	CS	PEOU	PT	PU	SQ
BI						
CS	0,792					
PEOU	0,809	0,819				
PT	0,807	0,826	0,827			
PU	0,764	0,776	0,782	0,811		
SQ	0,797	0,791	0,806	0,807	0,770	

The coefficient determination (R-square) test was conducted to assess the extent to which the independent variables explain the dependent variables in the research model. The results indicate that the R-square value for Brand Image is 0.713, with an adjusted R-square of 0.709, suggesting that 71.3% of the variance in the dependent variable can be explained by the model, while the remaining 28.7% is influenced by factors outside the model. Furthermore, Customer Satisfaction shows an R-square value of 0.664 (adjusted R-square = 0.662), and Service Quality has an R-square value of 0.694 (adjusted R-square = 0.691). These values indicate that the model demonstrates moderate to strong explanatory power. Overall, the R-square results suggest that the structural model has good predictive capability in explaining the endogenous variables.

Table 4. Coefficient of Determination Test Result

Variable	R ²	R ² Adjusted	Result
BI	0,713	0,709	<i>Moderate</i>
CS	0,664	0,662	<i>Moderate</i>
SQ	0,694	0,691	<i>Moderate</i>

5.2 Inner Model Test Result (Hypothesis Test Result)

Structural model testing was conducted to examine the relationships among latent variables using the bootstrapping method in SmartPLS with a significant level of 5% ($\alpha = 0.05$). A hypothesis is accepted when the t-statistics exceed 1.96 and p-values are below 0.05. The results indicate that all relationships are statistically significant, with p-values of 0.000 and t-statistics exceeding the threshold, confirming that all proposed hypotheses are supported. Perceived Usefulness (PU) has a positive and significant effect on Service Quality (SQ) ($\beta = 0.224$; $t = 4.170$) and Brand Image (BI) ($\beta = 0.148$; $t = 3.876$). Similarly, Perceived Ease of Use (PEOU) significantly influences SQ ($\beta = 0.352$; $t = 6.873$) and BI ($\beta = 0.275$; $t = 6.153$), while Perceived Trustworthiness (PT) also demonstrates positive and significant effects on SQ ($\beta = 0.324$; $t = 5.874$) and BI ($\beta = 0.248$; $t = 5.531$). In addition, Service Quality has a significant effect on Brand Image ($\beta = 0.252$; $t = 4.646$).

Furthermore, Brand Image significantly influences Customer Satisfaction (CS) ($\beta = 0.434$; $t = 8.923$), while Service Quality also has a strong and significant effect on CS ($\beta = 0.432$; $t = 12.876$), representing the strongest relationship in the model. Overall, these findings demonstrate that Perceived Usefulness, Perceived Ease of Use, and Perceived Trustworthiness play crucial roles in shaping Service Quality and Brand Image, which in turn contribute to Customer Satisfaction in the context of online consultation through telemedicine platforms such as Halodoc and Alodokter.

Table 5. Inner Model Test Result

Variable	Path	VIF	Path Coefficient	F ²	t-values	P-values	Supported
H1	PU → SQ	2,950	0,224	0,055	4,170	0,000	<i>Supported</i>
H2	PU → BI	3,113	0,148	0,024	3,670	0,000	<i>Supported</i>
H3	PEOU → SQ	3,174	0,352	0,128	6,873	0,000	<i>Supported</i>
H4	PEOU → BI	3,580	0,275	0,074	6,153	0,000	<i>Supported</i>
H5	PT → SQ	3,520	0,324	0,097	5,874	0,000	<i>Supported</i>
H6	PT → BI	3,862	0,248	0,055	5,631	0,000	<i>Supported</i>
H7	SQ → BI	3,266	0,252	0,068	4,646	0,000	<i>Supported</i>
H8	BI → CS	2,464	0,434	0,227	8,923	0,000	<i>Supported</i>
H9	SQ → CS	2,464	0,432	0,225	12,876	0,000	<i>Supported</i>

5.3 Discussion of Hypothesis Test Result

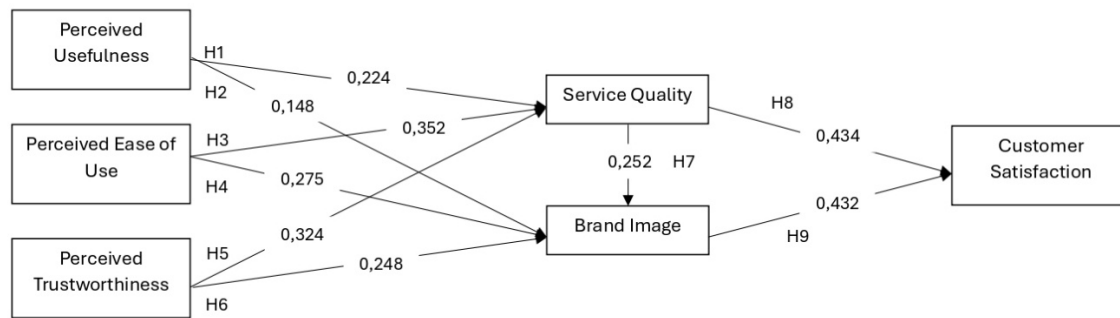


Figure 2. Research Framework with Path Coefficient

The findings indicate that Perceived Usefulness (PU) has a positive and significant effect on both Service Quality (SQ) and Brand Image (BI), although the strength of its influence is relatively small to moderate. This suggests that when users perceive telemedicine platforms as useful particularly in providing efficient, accessible, and practical healthcare solutions they are more likely to evaluate the service quality positively and form favorable brand perceptions. Beyond functional benefits, psychological comfort such as reduced anxiety and convenience also reinforces users' overall evaluation of service quality and brand associations.

Perceived Ease of Use (PEOU) demonstrates a stronger and more consistent impact, particularly on Service Quality and Brand Image. The results show that ease of use is a key determinant in shaping users' perceptions, as intuitive interfaces, simple navigation, and seamless processes enhance the overall service experience. In digital healthcare contexts, usability is not merely a technical feature but a core component of perceived quality. A system that is easy to operate reduces cognitive effort and increases user satisfaction, which in turn strengthens positive brand associations such as professionalism and efficiency.

Similarly, Perceived Trustworthiness (PT) has a significant and moderately strong influence on both Service Quality and Brand Image. Trust plays a fundamental role in telemedicine, where users rely on digital platforms without direct physical interaction. Factors such as data security, transparency, and the credibility of medical professionals contribute to building trust. When users feel confident in the platform's reliability and integrity, they are more likely to perceive the service as high-quality and develop a strong, positive image of the brand.

Service Quality itself is found to significantly influence Brand Image, highlighting the importance of user experience in shaping brand perceptions. High-quality service—characterized by responsiveness, clear communication, accurate diagnosis, and consistent performance—creates positive user experiences that translate into stronger brand associations. In telemedicine, where interactions are entirely digital, service delivery becomes the primary driver of how users perceive and evaluate the brand.

Furthermore, Brand Image has a substantial and significant effect on Customer Satisfaction (CS), making it one of the key determinants in the model. A strong and positive brand image shapes user expectations and enhances perceived value, leading to higher satisfaction when actual experiences align with or exceed these expectations. In addition, brand image acts as a psychological buffer, allowing users to remain satisfied even when minor service issues occur. Service Quality also has a strong and significant influence on Customer Satisfaction and is identified as the most dominant factor in the model. High-quality service that meets or exceeds user expectations leads to positive confirmation, thereby increasing satisfaction. In telemedicine, aspects such as responsiveness, professionalism, and clarity of medical information are critical in determining users' overall evaluation of the service.

Overall, the study highlights that PU, PEOU, and PT serve as key antecedents that shape Service Quality and Brand Image, which in turn significantly influence Customer Satisfaction. Among these, Service Quality and Brand Image play the most crucial roles in determining satisfaction levels. These findings emphasize that telemedicine providers

should prioritize usability, trust, and tangible benefits while maintaining high service quality to enhance user satisfaction and sustain long-term engagement.

In terms of practical implications, the findings of this study suggest that telemedicine providers should translate the key determinants such as Perceived Usefulness, Perceived Ease of Use, and Perceived Trustworthiness into concrete service improvements. Given the positive effect of PU, providers should enhance features that directly support efficiency and convenience, such as faster consultation processes, easy access to medical records, and clear follow-up systems, as these reinforce users' perceptions of practical value. The strong influence of PEOU indicates that platforms must prioritize intuitive design, including simple navigation, minimal steps to access services, and user-friendly interfaces that reduce effort and improve overall experience. At the same time, the significant role of PT highlights the importance of trust-building mechanisms, such as ensuring data security, clearly displaying physician credentials, and maintaining transparency in service processes.

Furthermore, since Service Quality and Brand Image are identified as the most influential factors affecting Customer Satisfaction, telemedicine providers should focus on delivering consistent, reliable, and responsive services. This includes improving communication clarity during consultations, ensuring professionalism of healthcare providers, and minimizing technical disruptions. High service quality not only directly enhances satisfaction but also strengthens brand image, which in turn further reinforces positive user evaluations. Therefore, telemedicine providers should adopt an integrated approach that simultaneously improves usability, trust, and service performance, as these elements collectively shape user satisfaction and long-term engagement with the platform.

6. Conclusion

This study concludes that customer satisfaction in telemedicine services is shaped by the combined influence of Perceived Usefulness, Perceived Ease of Use, and Perceived Trustworthiness, which significantly affect Service Quality and Brand Image as key mediating factors. Among these, Service Quality and Brand Image emerge as the most critical determinants of satisfaction, highlighting that successful telemedicine platforms must not only offer useful and easy-to-use technology but also ensure trustworthy systems, high-quality service delivery, and a strong brand reputation. However, this study is subject to several limitations. First, its limited geographic scope restricts the generalizability of the findings across all regions of Indonesia. Second, the use of a cross-sectional design limits the ability to capture changes in user perceptions and behavior over time, as well as to establish stronger causal relationships. Third, reliance on self-report data may introduce potential biases, such as common method bias and social desirability bias, which could affect the accuracy of respondents' evaluations. Additionally, this study focuses on specific telemedicine platforms, which may limit the applicability of the findings to other platforms with different features, service standards, or user segments. Finally, the exclusion of other potentially relevant variables—such as perceived risk, loyalty intention, and emotional factors—suggests that the model may not fully capture the complexity of user behavior in digital healthcare contexts. Therefore, future research is encouraged to adopt broader and more diverse samples, employ longitudinal or experimental approaches, and incorporate additional variables to provide a more comprehensive understanding of user behavior in telemedicine services.

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