

THE MEDIATING ROLE OF CUSTOMER SATISFACTION IN THE RELATIONSHIP BETWEEN SERVICE QUALITY, PERCEIVED VALUE, AND CUSTOMER LOYALTY AMONG PATIENTS AT LEONA GENERAL HOSPITAL, KUPANG



Mario Rosindo Menny¹
Universitas Ciputra Surabaya, Surabaya, Indonesia
mrosindo01@magister.ciputra.ac.id

Wirawan Endro Dwi Radianto²
Universitas Ciputra Surabaya, Surabaya, Indonesia
wirawan@ciputra.ac.id

Abstract

This study primarily examines the relationship between customer loyalty at Leona Hospital in Kupang and customer satisfaction, mediated by the influence of perceived value and service quality. Methodologically, this study employed a cross-sectional design and quantitative techniques to investigate the causal relationship between these variables. A closed-ended Likert-scale questionnaire was administered to 200 participants to collect data. Purposive sampling was used in this study, and participants were required to be willing to use the instrument, be at least 17 years old, and have completed the service. To process the data, the researcher used SmartPLS with the SEM-PLS technique through the stages of evaluating the measurement model (outer model) and the structural model (inner model). Meanwhile, the bootstrapping method was used to test the hypotheses. Empirical research indicates that customer loyalty is significantly influenced by customer satisfaction. Both perceived value and service quality have a significant impact on customer satisfaction. On the other hand, although service quality and perceived value do not have a direct impact on customer loyalty, both have an indirect impact through customer satisfaction, which acts as a mediating variable. The presented model provides a convincing explanation of the variation in satisfaction and loyalty, confirming that customer satisfaction is a key mediator in fostering patient loyalty.

Keywords: Service Quality, Perceived Value, Customer Satisfaction, Customer Loyalty

INTRODUCTION

In Indonesia, the management of modern hospitals increasingly depends on their ability to maintain patient satisfaction and patient loyalty. Intensifying competition among healthcare providers requires hospitals to deliver not only high-quality clinical services but also meaningful healthcare experiences that create value for patients. Akob et al. (2021) stated that patient loyalty toward a hospital increases as the quality of healthcare services improves. Their study also highlighted that the five SERVQUAL dimensions, namely tangibles, reliability, responsiveness, assurance, and empathy, are essential components in fostering patient satisfaction and patient loyalty within a competitive healthcare environment. Similarly, Chang et al. (2013) emphasized that improving service quality and perceived value is a fundamental strategy for maintaining patients' long-term trust. The importance of these factors has become even more evident in the post-pandemic era, during which public expectations of healthcare services have changed significantly.

One of the major challenges faced by hospitals in Indonesia is improving patient satisfaction and patient loyalty. In this regard, Akob et al. (2021), through a study conducted at a private hospital, found that the SERVQUAL dimensions had a positive effect on both patient satisfaction and patient loyalty. These findings indicate that service quality and perceived value are key determinants of favorable patient outcomes. Therefore, further investigation is necessary within the context of a public general hospital, such as Leona General Hospital, Kupang. This study develops a research model that integrates service quality, perceived value, customer satisfaction, and customer loyalty to examine the relationships among these variables more comprehensively.

As a public general hospital, Leona General Hospital, Kupang, faces increasing pressure to improve service quality amid intensifying competition within the healthcare sector. Patients no longer evaluate healthcare services solely based on the success of medical treatment. They also consider how healthcare professionals interact with them, the hospital's ability to fulfill its service commitments, the adequacy of healthcare facilities, and the convenience and comfort experienced throughout the treatment process (Zhou et al., 2017). In practice, patients continue to express concerns regarding delayed responses from nursing staff, limited access to clear information, and facilities that do not fully support their comfort during treatment. Consequently, some patients perceive that the value of the services received is not proportional to the time, financial cost, and effort they invest in obtaining healthcare services (Fatonah, 2019). Such conditions may reduce patient satisfaction and weaken patient loyalty, as reflected in patients' reluctance to revisit the hospital or recommend Leona General Hospital, Kupang, to others. Therefore, this study aims to provide a strong empirical foundation for hospital management in formulating more effective service improvement strategies to enhance patient satisfaction and strengthen patient loyalty.

The novelty of this study lies in its integrated examination of the effects of service quality and perceived value on patient satisfaction and patient loyalty, with patient satisfaction serving as the primary mediating variable within a single structural model. Unlike the study conducted by Eris (2022), which primarily focused on the relationships among perceived value, patient satisfaction, and patient loyalty in the general hospital context, the present study explicitly incorporates service quality as a key construct. Since service quality represents one of the most critical determinants of healthcare performance, its inclusion provides a more comprehensive understanding of the factors influencing patient loyalty.

Consequently, this study contributes to the existing literature by offering empirical evidence from the context of a public general hospital and by integrating a more comprehensive set of variables within a unified structural framework. Furthermore, Huang et al. (2021) and AlOmari and Hamid (2022) emphasized the important mediating role of patient satisfaction in enhancing both patient loyalty and treatment adherence in healthcare settings. Previous studies also indicate that many hospitals have not yet fully optimized service quality and perceived value. As a result, some patients remain hesitant to revisit or recommend a hospital despite being generally satisfied with the services received. This condition highlights the need for further empirical research examining the interaction among patient satisfaction, service quality, and perceived value as key determinants of patient loyalty in Indonesian hospitals (Kitapci et al., 2014).

Most previous studies in the healthcare sector have emphasized the effects of service quality and patient satisfaction as the primary determinants of patient loyalty, while perceived value has not always been incorporated comprehensively, particularly within the context of public general hospitals in Indonesia. Akob et al. (2021) and Gde and Sukawati (2021) primarily examined the relationships among service quality, brand image, patient satisfaction, and patient loyalty without positioning perceived value as a major construct within their structural models. Conversely, studies investigating perceived value and patient loyalty, including those by Huang et al. (2021) and Eris (2022), were generally conducted outside the context of Indonesian public general hospitals or were presented as broader literature-based studies. Consequently, limited empirical evidence is available regarding the extent to which service quality and perceived value influence patient loyalty in a specific public general hospital, particularly Leona General Hospital, Kupang, with patient satisfaction acting as the mediating variable. This research gap demonstrates the need for empirical investigation into the relationships among these variables to better understand the factors influencing patient loyalty at Leona General Hospital, Kupang.

This study aims to examine the effects of service quality and perceived value on patient satisfaction and patient loyalty at Leona General Hospital, Kupang. In addition, it investigates the mediating role of patient satisfaction in the relationship between service quality, perceived value, and patient loyalty within the context of the ongoing digital transformation of hospital services.

From a theoretical perspective, this study contributes to the existing literature by extending the understanding of patient satisfaction as a mediating mechanism within healthcare services, particularly in the era of digital transformation. From a practical perspective, the findings are expected to provide hospital management with valuable insights for developing effective service improvement strategies and strengthening patient loyalty by enhancing patients' service experiences and perceived value throughout the digital transformation process of hospital services (Depkes, 2008).

This article is organized into five main sections. The first section presents the research background, problem formulation, research gap, research objectives, research significance, and the structure of the paper. The second section reviews the relevant literature, including the conceptual definitions of the research variables and previous studies on service quality, perceived value, patient satisfaction, and patient loyalty. The third section describes the research methodology, including the research design, measurement instruments, data collection procedures, and data analysis techniques. The fourth section presents the empirical

findings and discusses the research results. Finally, the fifth section summarizes the conclusions, outlines the theoretical and practical implications, acknowledges the study's limitations, and provides recommendations for future research.

REVIEW OF LITERATURE

Service quality and perceived value are two fundamental factors in fostering patient satisfaction and patient loyalty in healthcare services. Service quality is defined as a hospital's systematic effort to meet or exceed patients' expectations through the five dimensions of the SERVQUAL model. Akob et al. (2021) demonstrated that the implementation of the five SERVQUAL dimensions effectively enhances both patient satisfaction and patient loyalty by creating positive interactions between patients and healthcare professionals. Furthermore, patients are more likely to reuse healthcare services and recommend them to others when they experience high-quality care and responsive service delivery. Consistently delivering high-quality services also plays a vital role in establishing patients' trust and confidence, particularly in the era of digital transformation, which requires continuous innovation in healthcare procedures and service delivery.

In addition to service quality, perceived value represents another essential determinant of patient loyalty. Perceived value refers to patients' overall evaluation of the benefits obtained from healthcare services relative to the resources they invest, including financial cost, time, and personal effort. Recent studies have shown that patients who perceive emotional, functional, or economic benefits from hospital services are more likely to experience higher levels of satisfaction, which subsequently strengthens their loyalty toward the hospital (Eris, 2022). Within an increasingly competitive and digitally transformed healthcare environment, perceived value also encompasses the accessibility of online healthcare services, the flexibility of administrative procedures, and the hospital's ability to deliver personalized healthcare experiences.

This perspective is consistent with the Expectancy Disconfirmation Theory (EDT) proposed by Oliver (1980), which suggests that the gap between customers' expectations and their perceptions of actual service performance determines the level of satisfaction. Patients are more likely to remain loyal to a healthcare institution when their expectations are fulfilled or exceeded, resulting in higher levels of satisfaction (AlOmari & Hamid, 2022). Ultimately, patient loyalty represents a behavioral outcome of patient satisfaction and perceived value. It is reflected in patients' intentions to revisit the hospital, recommend its services to others, and maintain a positive attitude toward the hospital despite experiencing minor shortcomings in service delivery.

RESEARCH METHOD

This study employed a quantitative causal research design to examine the effects of service quality and perceived value on patient loyalty, with patient satisfaction serving as the intervening variable among patients at Leona General Hospital, Kupang. A cross-sectional research design was adopted, meaning that all data were collected at a single point in time from patients who had received healthcare services at the hospital. The study population consisted of all patients of Leona General Hospital, Kupang, during the research period. The sample was selected using purposive sampling. Respondents were required to be at least 17

years of age, have completed the healthcare service process, and be willing to participate in the survey. The research model consisted of 15 measurement indicators. Based on the recommendation of Hair et al. (2021), a minimum sample size of 150 respondents was required. To improve the robustness of the multivariate analysis, this study targeted a total of 200 respondents. Data were collected using a structured questionnaire with a five-point Likert scale ranging from 1 to 5 and were administered directly to patients.

The collected data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM), which is widely recognized as an effective approach for examining complex causal relationships among latent variables measured by multiple indicators. Using SmartPLS software, this method enables the simultaneous assessment of both direct and indirect effects through the mediating variable. Furthermore, PLS-SEM is flexible with respect to data distribution and is particularly suitable for prediction-oriented research and theory development (Hair et al., 2021).

The measurement model (outer model) and the structural model (inner model) were evaluated in two consecutive stages. Convergent validity was assessed using outer loadings and the Average Variance Extracted (AVE). Indicator loadings were required to exceed 0.70, while AVE values were required to be greater than 0.50. These criteria indicate that each construct explains more than half of the variance of its corresponding indicators (Hair et al., 2021). Discriminant validity was evaluated using the Fornell-Larcker criterion and cross-loadings. According to the Fornell-Larcker criterion, the square root of the AVE for each construct should be greater than its correlations with other constructs in the model (Hair et al., 2021). In addition, each indicator was expected to exhibit the highest loading on its associated construct compared with all other constructs, thereby confirming that each indicator measured its intended construct without substantial overlap with other constructs (Hair et al., 2021).

Construct reliability was assessed using Cronbach's Alpha and Composite Reliability. Values above 0.70 indicate satisfactory internal consistency and demonstrate that the indicators consistently measure the same underlying construct (Hair et al., 2021). To assess multicollinearity within the structural model, the Variance Inflation Factor (VIF) was examined. VIF values below 10 indicate the absence of multicollinearity among the independent variables (Ghozali, 2018).

The structural model was evaluated using several assessment criteria. The coefficient of determination (R^2) was used to assess the model's explanatory power. R^2 values of 0.75, 0.50, and 0.25 indicate substantial, moderate, and weak explanatory power, respectively (Hair et al., 2021). The effect size (f^2) was calculated to determine the relative contribution of each exogenous construct to the endogenous constructs. According to Hair et al. (2021), f^2 values of 0.02, 0.15, and 0.35 represent small, medium, and large effect sizes, respectively. Predictive relevance was evaluated using the Stone-Geisser Q^2 value, where values greater than zero indicate that the model has adequate predictive relevance for the endogenous constructs (Hair et al., 2021). Finally, hypothesis testing was performed using the bootstrapping procedure. A hypothesis was considered statistically supported when the p-value was less than 0.05 (Hair et al., 2021).

Research Hypothesis

Effect of Service Quality on Patient Satisfaction

Service quality is one of the primary determinants of patient satisfaction in healthcare services. High-quality service is reflected in a hospital's ability to consistently meet patients' needs and expectations through the dimensions of the SERVQUAL model. Akob et al. (2021) explained that improvements in service quality lead to higher levels of patient satisfaction because excellent healthcare services create positive perceptions of patients' treatment experiences. This finding is consistent with previous studies conducted in developing countries, which have demonstrated a positive relationship between service quality and patient satisfaction across various types of hospitals, including both private and public healthcare institutions (Nguyen et al., 2021). From a theoretical perspective, patients are more likely to feel valued when they receive high-quality services and adequate attention from healthcare providers. As a result, their overall satisfaction with the healthcare services received is expected to increase (Eris, 2022). In the context of Leona General Hospital, Kupang, the implementation of comprehensive service standards together with continuous innovation in healthcare technology is expected to enhance patient satisfaction and strengthen patients' long-term relationships with the hospital.

H1. Service quality has a significant effect on patient satisfaction.

Effect of Perceived Value on Patient Satisfaction

Perceived value refers to patients' subjective evaluation of whether the benefits received from healthcare services are proportional to the financial, time, and effort-related sacrifices they make. In the context of Leona General Hospital, Kupang, perceived value is influenced by several factors, including the accessibility of healthcare facilities, cost transparency, the quality of interactions with healthcare professionals, and patients' comfort throughout the treatment process. Eris (2022) argued that higher perceived value across functional, emotional, and social dimensions leads to greater patient satisfaction. The study further emphasized that perceived value serves as a key determinant of positive healthcare experiences by enabling patients to perceive that the services they receive meet or even exceed their expectations. Similarly, Baía and Baptista (2020) found that perceived value makes a significant contribution to patient satisfaction, particularly within the context of digital transformation and increasing competition in healthcare services. When patients perceive that a hospital provides greater value than competing healthcare providers through service innovation, prompt responsiveness, or patient-centered healthcare programs, they are more likely to experience higher levels of satisfaction and develop stronger loyalty toward the hospital. Therefore, hospitals should focus not only on improving the quality of medical services but also on creating superior value that enhances patients' overall perceptions and satisfaction.

H2. Perceived value has a significant effect on patient satisfaction.

Effect of Service Quality on Patient Loyalty

The relationship between service quality and patient loyalty has been widely supported by previous studies in the healthcare sector. Akob et al. (2021) demonstrated that the five dimensions of the SERVQUAL model collectively have a significant influence on patient loyalty. Patients who perceive higher service quality are more likely to revisit the hospital and recommend its services to others. These findings reinforce the view that

improvements in service quality contribute directly to stronger patient loyalty. Nguyen et al. (2021) further reported that, beyond its influence on patient satisfaction and perceived value, service quality also has a direct effect on inpatient loyalty. Their study emphasized that the competence of healthcare professionals and the consistency of both clinical and non-clinical services are important determinants of patient loyalty. Similarly, Vimla and Taneja (2021) argued that patient loyalty in healthcare settings is primarily established through patients' perceptions of service quality, either directly or indirectly through the mediating role of patient satisfaction.

H3. Service quality has a significant effect on patient loyalty.

Effect of Perceived Value on Patient Loyalty

Perceived value refers to patients' subjective evaluation of whether the benefits obtained from healthcare services justify the resources they invest. Numerous studies have demonstrated a strong relationship between perceived value and patient loyalty. Eris (2022) reported that patient loyalty in hospitals is substantially influenced by perceived value. Patients who perceive greater value from healthcare services are more likely to continue using the same healthcare provider and are less likely to switch to competing hospitals. Huang et al. (2021) also found that perceived value, together with trust and commitment, plays a crucial role in strengthening patient loyalty within the healthcare sector in Taiwan. Other studies have shown that perceived value, including its functional, emotional, and social dimensions, contributes to patient loyalty through both direct and indirect mechanisms involving mediating variables. Harmen et al. (2020) concluded that perceived value is positively associated with both patient satisfaction and patient loyalty. Consequently, enhancing patients' perceived value represents an effective strategy for improving patient retention. Furthermore, the literature review conducted by Zahra et al. (2022) confirmed that perceived value consistently emerges as one of the strongest predictors of patient loyalty across various healthcare settings.

H4. Perceived value has a significant effect on patient loyalty.

Effect of Patient Satisfaction on Patient Loyalty

The positive relationship between patient satisfaction and patient loyalty has been consistently supported by previous studies in healthcare services. Liu et al. (2021) found that patient satisfaction positively influences patient loyalty, with patient trust serving as a mediating variable in this relationship. These findings indicate that satisfied patients who trust their healthcare providers are more likely to remain loyal and continue utilizing the same healthcare services. Similarly, Zhang et al. (2022) demonstrated that patient satisfaction plays a significant mediating role in the relationship between patient engagement and patient loyalty in primary healthcare services. Their findings suggest that strong patient loyalty is largely developed through high levels of patient satisfaction. In addition, Najmuddin and Tan (2024), in a study conducted at a hospital in Cirebon, reported that patient satisfaction has a significant positive effect on patient loyalty. Hospitals that successfully improve patient satisfaction are therefore more likely to achieve higher revisit intentions and greater patient willingness to recommend their services to others.

H5. Patient satisfaction has a significant effect on patient loyalty.

The Mediating Role of Patient Satisfaction in the Relationship Between Service Quality and Patient Loyalty

In this study, patient satisfaction is proposed as a mediating variable that explains how service quality contributes to patient loyalty at Leona General Hospital, Kupang. From a theoretical perspective, patients' perceptions of service quality, including timely service delivery, the professionalism and friendliness of healthcare personnel, the clarity of information provided, and the comfort of healthcare facilities, are expected to enhance patient satisfaction. Satisfied patients are more likely to revisit the hospital and recommend its services to others. Previous studies in the healthcare sector have reported similar findings. Nguyen et al. (2021) found that service quality influences patient loyalty through improvements in patient satisfaction and perceived value, indicating that service quality first enhances patient satisfaction before strengthening patient loyalty. Likewise, the conceptual framework proposed by Vimla and Taneja (2021) identified perceived service quality as an antecedent of patient loyalty, with patient satisfaction serving as the primary mediating mechanism. These findings suggest that the effect of service quality on patient loyalty becomes stronger when patients experience higher levels of satisfaction.

H6. Patient satisfaction significantly mediates the relationship between service quality and patient loyalty.

The Mediating Role of Patient Satisfaction in the Relationship Between Perceived Value and Patient Loyalty

The influence of perceived value on patient loyalty has frequently been examined by incorporating patient satisfaction as an intervening variable. Eris (2022) reported that, within the healthcare context, perceived value is positively associated with both patient satisfaction and patient loyalty. When patients perceive that the benefits of healthcare services exceed the financial cost, time, and effort they invest, they are more likely to experience higher levels of satisfaction and develop stronger loyalty toward the healthcare provider. Similarly, Huang et al. (2021) found that perceived value, together with trust and commitment, contributes significantly to patient loyalty in healthcare services. This relationship is largely explained by patients' positive service experiences and their satisfaction with the healthcare services received. Furthermore, Zahra et al. (2022) concluded that perceived value consistently influences patient loyalty across various healthcare settings, while patient satisfaction and trust frequently function as key mediating variables linking perceived value to loyal behavioral intentions. Based on these theoretical and empirical findings, this study proposes that, in the context of Leona General Hospital, Kupang, perceived value positively influences patient satisfaction, which subsequently strengthens patient loyalty.

H7. Patient satisfaction significantly mediates the relationship between perceived value and patient loyalty.

Research Model

The proposed conceptual model focuses on explaining the contributions of service quality and perceived value to patient loyalty, both through direct relationships and indirect relationships mediated by patient satisfaction. The model is designed to examine the relationships among these variables simultaneously, thereby providing a comprehensive understanding of the key factors that determine patient satisfaction and patient loyalty at Leona General Hospital, Kupang.

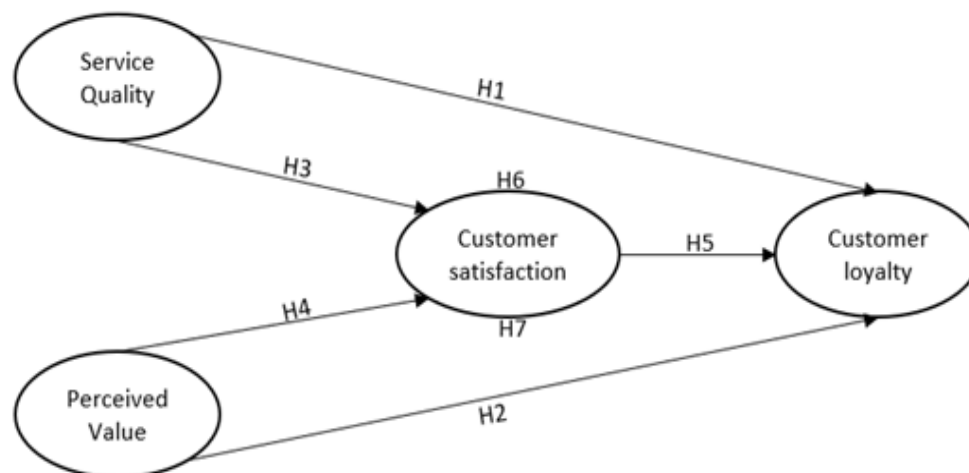


Figure 1.
Conceptual Framework

RESULTS AND DISCUSSION

Respondent Profile

This study involved 200 respondents who met the predetermined sampling criteria. The respondents were characterized based on demographic variables, including gender, age, occupation, place of residence, marital status, type of hospital visit, frequency of hospital visits, and previous treatment history at Leona General Hospital, Kupang.

Based on gender, female respondents accounted for the majority of the sample, representing 80.0%, while male respondents comprised the remaining 20.0%. Regarding age, the largest proportion of respondents was between 21 and 30 years old (36.5%), followed by those aged 31 to 40 years (18.5%), 51 to 60 years (13.5%), over 60 years (12.5%), below 20 years (11.0%), and 41 to 50 years (8.0%).

With respect to marital status, most respondents were married (52.5%), followed by unmarried respondents (46.0%) and those who were divorced or separated (1.5%). Based on the type of hospital visit, most respondents were inpatients (56.0%), followed by outpatients (39.0%) and hospital visitors (5.0%).

The occupational profile indicated that private-sector employees constituted the largest group of respondents (24.0%), followed by homemakers (16.5%). The remaining respondents were students, civil servants, military personnel, police officers, self-employed workers, farmers or fishermen, and individuals with other occupations.

Most respondents resided in Kupang (88.0%), whereas the remaining 12.0% lived outside the city. In terms of hospital utilization, the largest proportion of respondents reported visiting Leona General Hospital, Kupang, two to three times during the previous year (44.0%). Regarding treatment history, 69.5% of the respondents indicated that they had previously received inpatient care at the hospital.

Overall, the respondent profile indicates that the majority of participants were female, aged between 21 and 30 years, married, residing in Kupang, employed as private-sector workers or homemakers, admitted as inpatients, had visited the hospital two to three times during the previous year, and had previously received treatment at Leona General Hospital, Kupang.

Table 1
Outer Loading

Constructs and Measurement Items	Factor Loading	α	CR	AVE
Service Quality		0.938	0.954	0.806
Fasilitas rumah sakit ini sangat modern	0.775			
Rumah sakit ini memenuhi komitmennya kepada Pasien	0.899			
Interaksi antara perawat dan pasien bersifat positif	0.933			
Perawat selalu siap untuk mengatasi masalah pasien	0.942			
Perawat selalu siap untuk memecahkan masalah pasien	0.929			
Perceived Value		0.948	0.963	0.865
Saya percaya rumah sakit ini memberikan layanan medis dengan kualitas terbaik sesuai harapan saya sebagai pasien	0.915			
Saya merasa nyaman secara emosional selama menjalani perawatan di rumah sakit ini	0.937			
Saya merasa lebih tenang secara emosional ketika menjalani perawatan di rumah sakit ini	0.936			
Pelayanan di rumah sakit ini meningkatkan persepsi positif lingkungan sosial terhadap diri saya	0.933			
Customer Satisfaction		0.953	0.966	0.876
Perasaan keseluruhan yang saya rasakan dari rumah sakit ini sangat memuaskan	0.932			
Pilihan pembelian saya di rumah sakit ini adalah pilihan yang tepat	0.944			
Rumah sakit ini memenuhi harapan saya	0.938			
Dibandingkan dengan Rumah sakit lain, saya lebih senang dengan Rumah sakit ini	0.929			
Customer Loyalty		0.975	0.987	0.975
Saya akan merekomendasikan rumah sakit ini kepada kenalan saya	0.987			
Saya akan berbicara positif tentang rumah sakit ini kepada orang lain	0.988			

Table 1 summarizes the results of the measurement model (outer model) assessment, including factor loadings, Cronbach's Alpha, Composite Reliability (CR), and Average Variance Extracted (AVE) for each research construct. Construct reliability was evaluated using Cronbach's Alpha and Composite Reliability, with values exceeding 0.70 indicating satisfactory internal consistency (Hair et al., 2021). As presented in Table 1, all constructs achieved Cronbach's Alpha and Composite Reliability values above the recommended

threshold of 0.70. These findings confirm that the measurement instrument demonstrates satisfactory reliability.

The next stage of the analysis involved assessing convergent validity based on the factor loadings of the indicators and the AVE values of each construct. According to Hair et al. (2021), indicator factor loadings should exceed 0.70, while AVE values should be greater than 0.50, indicating that a construct explains more than half of the variance of its indicators. As shown in Table 1, all indicators included in this study exceeded the recommended factor loading threshold of 0.70, with most factor loading values exceeding 0.90. These results demonstrate that the measurement indicators possess strong convergent validity and accurately represent their respective constructs.

Specifically, the service quality construct, measured using five indicators, produced factor loading values ranging from 0.775 to 0.942 and an AVE value of 0.806. The perceived value construct, measured using four indicators, showed factor loading values ranging from 0.915 to 0.937, with an AVE value of 0.865. The patient satisfaction construct, also measured using four indicators, produced factor loading values ranging from 0.929 to 0.944 and an AVE value of 0.876. Finally, the patient loyalty construct, measured using two indicators, exhibited the highest factor loading values of 0.987 and 0.988, together with an AVE value of 0.975. These findings indicate that both indicators provide an excellent representation of the patient loyalty construct. Since all constructs satisfied the recommended criteria for convergent validity and reliability, the measurement model was considered adequate for subsequent structural model analysis (Hair et al., 2021).

Table 2
Fornell-Larcker

	Customer Loyalty	Customer Satisfaction	Perceived Value	Service Quality
Customer Loyalty	0.988			
Customer Satisfaction	0.705	0.936		
Perceived Value	0.673	0.881	0.930	
Service Quality	0.674	0.860	0.896	0.898

The results of the discriminant validity assessment using the Fornell-Larcker criterion are presented in Table 2. The findings indicate that the square root of the Average Variance Extracted (AVE) for each construct is greater than its correlations with all other constructs. This result demonstrates that each construct is empirically distinct and adequately discriminates itself from the other constructs included in the model. Therefore, the discriminant validity requirement has been satisfactorily fulfilled (Hair et al., 2021).

Among all constructs, patient loyalty exhibited the highest diagonal value, indicating that it is more strongly associated with its own indicators than with the other constructs, including patient satisfaction, perceived value, and service quality. Although the correlations among the constructs were positive and relatively strong, they remained within the acceptable range, confirming that the constructs are conceptually related while maintaining sufficient discriminant validity. In particular, patient satisfaction showed relatively strong correlations with both service quality and perceived value, reflecting their theoretical relationships

without compromising construct distinctiveness. Overall, the Fornell-Larcker assessment confirms that no substantial overlap exists among the constructs, indicating that each construct measures a distinct theoretical concept within the proposed research model.

Table 3
Cross Loading

	Customer Loyalty	Customer Satisfaction	Perceived Value	Service Quality
CL 1	0.987	0.687	0.649	0.647
CL 2	0.988	0.705	0.679	0.683
CS 1	0.713	0.932	0.814	0.796
CS 2	0.639	0.944	0.808	0.779
CS 3	0.670	0.938	0.865	0.860
CS 4	0.612	0.929	0.806	0.781
PV 1	0.710	0.809	0.915	0.806
PV 2	0.591	0.824	0.937	0.837
PV 3	0.595	0.825	0.936	0.850
PV 4	0.602	0.817	0.933	0.841
SQ 1	0.751	0.672	0.654	0.775
SQ 2	0.532	0.763	0.789	0.899
SQ 3	0.603	0.802	0.857	0.933
SQ 4	0.577	0.817	0.863	0.942
SQ 5	0.550	0.799	0.846	0.929

Table 3 presents the results of the discriminant validity assessment based on the cross-loading analysis of all measurement indicators across the constructs included in the research model. This analysis was conducted to verify that each indicator exhibits a higher loading on its corresponding construct than on any other construct in the model (Hair et al., 2021). As shown in Table 3, all indicators consistently demonstrated the highest loading values on their respective constructs, indicating the absence of substantial cross-loadings among the constructs. These findings confirm that all measurement indicators satisfied the discriminant validity criterion and accurately measured their intended latent constructs in accordance with the proposed research model (Hair et al., 2021).

Table 4
Multicollinearity test VIF

	VIF
Service Quality → Customer Satisfaction	5.061
Service Quality → Customer Loyalty	5.724
Perceived Value → Customer Satisfaction	5.061

Perceived Value → Customer Loyalty	6.616
Customer Satisfaction → Customer Loyalty	5.036

Table 4 presents the results of the multicollinearity assessment for the structural model using the Variance Inflation Factor (VIF). This assessment was conducted to detect the presence of excessive linear correlations among the predictor constructs. According to Ghozali (2018), VIF values below 10 indicate that multicollinearity is not a serious concern. As shown in Table 4, all structural paths produced VIF values below the recommended threshold of 10, indicating the absence of multicollinearity within the structural model. These findings suggest that each predictor construct contributes unique explanatory information to the endogenous constructs without causing estimation bias due to excessive collinearity. Consequently, the structural path coefficients can be interpreted with greater confidence and stability (Ghozali, 2018).

Table 5
R Square

	R-square	R-square adjusted
Customer Loyalty	0.516	0.509
Customer Satisfaction	0.801	0.799

Table 5 presents the results of the coefficient of determination (R^2) analysis for the structural model. The R^2 value of 0.516 for patient loyalty indicates that the model has moderate explanatory power in accounting for the variance of the patient loyalty construct. Meanwhile, the R^2 value of 0.801 for patient satisfaction demonstrates substantial explanatory power, indicating that the model explains a large proportion of the variance in patient satisfaction. The small difference between the R^2 and adjusted R^2 values further indicates that the model is stable and that the explanatory capability is not substantially affected by the number of predictors included in the model. Overall, these findings suggest that the proposed structural model has adequate predictive capability and provides a comprehensive explanation of the endogenous constructs examined in this study.

Table 6
F Square

	Customer Loyalty	Customer Satisfaction	Perceived Value	Service Quality
Customer Loyalty				
Customer Satisfaction	0.078			
Perceived Value	0.004	0.307		
Service Quality	0.015	0.131		

Table 6 presents the results of the effect size (f^2) analysis, indicating that the magnitude of the effects among the constructs varies across the structural model. Perceived value exhibited a moderate effect on patient satisfaction, whereas service quality demonstrated a small effect on patient satisfaction. In contrast, the effect sizes of the paths leading directly to patient loyalty were relatively small, particularly for perceived value and service quality. These findings suggest that patient loyalty is influenced primarily through

indirect relationships rather than direct effects. In this context, patient satisfaction serves as the principal mediating mechanism through which service quality and perceived value contribute to the development of patient loyalty.

Table 7
Hypothesis Testing Results

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values
Service Quality → Customer Satisfaction	0.363	0.363	0.093	3.921	0.000
Perceived Value → Customer Satisfaction	0.556	0.555	0.101	5.498	0.000
Service Quality → Customer Loyalty	0.203	0.194	0.167	1.216	0.224
Perceived Value → Customer Loyalty	0.108	0.088	0.179	0.602	0.547
Customer Satisfaction → Customer Loyalty	0.435	0.459	0.138	3.142	0.002
Service Quality → Customer Satisfaction → Customer Loyalty	0.158	0.164	0.059	2.687	0.007
Perceived Value → Customer Satisfaction → Customer Loyalty	0.242	0.259	0.105	2.312	0.021

Table 7 summarizes the results of the hypothesis testing conducted using the bootstrapping procedure in the PLS-SEM model. A hypothesis was considered supported when the corresponding p-value was below the significance level of 0.05 (Hair et al., 2021). The results indicate that service quality has a significant positive effect on patient satisfaction, with a path coefficient of 0.363 and a p-value of 0.000. Therefore, H1 is supported. Similarly, perceived value has a significant positive effect on patient satisfaction, as indicated by a path coefficient of 0.556 and a p-value of 0.000. Accordingly, H2 is also supported.

Regarding the direct effects, service quality does not have a significant direct effect on patient loyalty, as reflected by a path coefficient of 0.203 and a p-value of 0.224. Therefore, H3 is not supported. Likewise, the direct relationship between perceived value and patient loyalty is not statistically significant, with a path coefficient of 0.108 and a p-value of 0.547. Consequently, H4 is not supported. In contrast, patient satisfaction has a significant positive effect on patient loyalty, with a path coefficient of 0.435 and a p-value of 0.002. Thus, H5 is supported.

The mediation analysis further demonstrates that patient satisfaction significantly mediates the relationship between service quality and patient loyalty. This indirect effect is supported by an indirect path coefficient of 0.158 and a p-value of 0.007, indicating support for H6. Similarly, patient satisfaction significantly mediates the relationship between perceived value and patient loyalty, with an indirect path coefficient of 0.242 and a p-value of 0.021. Therefore, H7 is also supported. Overall, these findings demonstrate that patient satisfaction serves as the key mediating mechanism in the proposed research model. The results indicate that the effects of service quality and perceived value on patient loyalty are primarily transmitted through patient satisfaction rather than through direct relationships (Hair et al., 2021).

Table 8
Q square

	Q²predict
Customer Loyalty	0.471
Customer Satisfaction	0.795

Table 8 presents the Stone-Geisser's Q² values used to evaluate the predictive relevance of the structural model for the patient satisfaction and patient loyalty constructs. Since all Q² values are greater than zero, the results confirm that the structural model demonstrates adequate predictive relevance for the endogenous constructs. The Q² value of 0.795 for patient satisfaction indicates that service quality and perceived value jointly provide strong predictive capability for the patient satisfaction construct. Meanwhile, the Q² value of 0.471 for patient loyalty suggests that the structural model has satisfactory predictive relevance for explaining variations in patient loyalty. This finding further supports the important mediating role of patient satisfaction in transmitting the effects of service quality and perceived value to patient loyalty.

Discussion

The hypothesis testing results obtained from the PLS-SEM analysis indicate that service quality has a significant positive effect on patient satisfaction. This relationship is supported by a path coefficient of 0.363 and a p-value of 0.000, demonstrating that improvements in service quality lead to higher levels of patient satisfaction. These findings are consistent with those reported by Akob et al. (2021), who found that service quality significantly enhances patient satisfaction, and by Nguyen et al. (2021), who reported a positive relationship between service quality and patient satisfaction across various types of hospitals. From a theoretical perspective, these findings are also consistent with Eris (2022), who argued that patients who experience high-quality healthcare services feel more valued and receive greater attention, resulting in higher levels of satisfaction. In the context of Leona General Hospital, Kupang, dimensions of service quality such as reliable procedures, prompt responsiveness, empathy of healthcare professionals, service assurance, and adequate physical facilities constitute important determinants of patient satisfaction. Therefore, hospital management should prioritize continuous improvements in service quality as a fundamental strategy for enhancing patient satisfaction.

The findings further reveal that perceived value has a significant positive effect on patient satisfaction. This relationship is supported by a path coefficient of 0.556 and a p-value

of 0.000. The results are consistent with Eris (2022), who emphasized that patient satisfaction increases as patients perceive greater functional, emotional, and social value from healthcare services. Similarly, Baía and Baptista (2020) reported that perceived value makes a significant contribution to patient satisfaction, particularly in increasingly competitive healthcare environments. In the context of Leona General Hospital, Kupang, patients' perceived value may be enhanced through transparent medical costs, accessible healthcare services, efficient administrative procedures, comfortable facilities, and effective communication between healthcare professionals and patients. These findings suggest that perceived value primarily contributes to the development of patient satisfaction before subsequently influencing patient loyalty.

The present study also found that service quality does not have a significant direct effect on patient loyalty. The path coefficient of 0.203 and the p-value of 0.224 indicate that the direct relationship is not statistically significant. This finding differs from the results reported by Akob et al. (2021), who found that the SERVQUAL dimensions significantly influence patient loyalty in private hospitals. Likewise, the findings are inconsistent with Nguyen et al. (2021), who demonstrated that service quality positively affects inpatient loyalty while simultaneously enhancing patient satisfaction and perceived value. These differences suggest that, in the context of Leona General Hospital, Kupang, patient loyalty is not established directly through service quality but rather through intermediate mechanisms such as patient satisfaction. In addition, patient loyalty in healthcare settings is frequently influenced by situational factors, including hospital accessibility, medical needs, family referrals, and the availability of healthcare professionals. Consequently, high-quality healthcare services alone may not be sufficient to encourage patients to revisit the hospital.

On the other hand, the direct effect of perceived value on patient loyalty was found to be statistically insignificant. The path coefficient of 0.108 and the p-value of 0.547 indicate that the proposed direct relationship between perceived value and patient loyalty is not supported. This finding differs from previous empirical studies. Eris (2022) reported that perceived value has a positive influence on patient loyalty in hospital settings, while Huang et al. (2021) found that perceived value, together with trust and commitment, plays an important role in developing patient loyalty in healthcare services. The discrepancy suggests that, in the context of Leona General Hospital, Kupang, patients' perceived value alone is insufficient to directly foster patient loyalty. Patient loyalty is also shaped by psychological and emotional factors, including feelings of safety, trust, and overall satisfaction with healthcare services, in addition to patients' evaluations of the value they receive. Consequently, patients may perceive healthcare services as valuable without necessarily developing loyalty if their overall level of satisfaction has not been adequately established.

The insignificant direct effects of both service quality and perceived value on patient loyalty, together with the significant indirect effects through patient satisfaction, indicate that patient satisfaction functions as the primary mediating mechanism in the proposed research model. These findings are consistent with Mohammed et al. (2022), who reported that service quality does not directly influence patient loyalty but exerts a significant indirect effect through patient satisfaction. Likewise, Layardi et al. (2026) found that perceived value has no significant direct effect on loyalty but influences loyalty indirectly through customer satisfaction. Therefore, in the context of Leona General Hospital, Kupang, initiatives to improve service quality and enhance patients' perceived value should primarily focus on

increasing patient satisfaction, as satisfaction represents the essential mechanism through which patient loyalty is developed.

Conversely, the results demonstrate that patient satisfaction has a significant positive effect on patient loyalty among patients at Leona General Hospital, Kupang. The path coefficient of 0.435 and the p-value of 0.002 indicate that patient satisfaction is a key determinant of patient loyalty. This finding supports the study conducted by Liu et al. (2021), which demonstrated that patient satisfaction significantly promotes patient loyalty and that this relationship may be further strengthened through patient trust as an important psychological mechanism encouraging patients to remain with the same healthcare provider. The present findings are also consistent with Zhang et al. (2022), who reported that patient satisfaction plays a central role in fostering patient loyalty in primary healthcare services. Similarly, Najmuddin and Tan (2024) found that higher levels of patient satisfaction increase both revisit intentions and patients' willingness to recommend healthcare services to others. From a theoretical perspective, these findings indicate that patient loyalty is not established merely because patients have previously received healthcare services. Instead, loyalty develops when patients perceive their healthcare experiences to be satisfactory in terms of interactions with healthcare professionals, the comfort of hospital facilities, the clarity of information provided, and the efficiency of service procedures.

Furthermore, the mediation analysis confirms the significant mediating role of patient satisfaction in the relationship between service quality and patient loyalty. The indirect effect, represented by a path coefficient of 0.158 and a p-value of 0.007, indicates that improvements in service quality enhance patient loyalty through increased patient satisfaction. This finding is consistent with Nguyen et al. (2021), who argued that service quality influences patient loyalty by first improving patient satisfaction and perceived value before ultimately strengthening loyalty. Similarly, Vimla and Taneja (2021) proposed that perceived service quality functions as an antecedent of patient loyalty, with patient satisfaction serving as the primary mediating mechanism. Their framework suggests that the influence of service quality on patient loyalty becomes substantially stronger when patients experience higher levels of satisfaction. Therefore, the findings of the present study demonstrate that patient loyalty at Leona General Hospital, Kupang, is primarily developed through patient satisfaction rather than through the direct effect of service quality. This finding also provides a theoretical explanation for the insignificant direct relationship between service quality and patient loyalty. Overall, the results suggest that strategies aimed at strengthening patient loyalty should prioritize enhancing patient satisfaction through continuous improvements in service quality and the consistent creation of superior perceived value for patients.

The mediation analysis further demonstrates that patient satisfaction significantly mediates the relationship between perceived value and patient loyalty. The indirect effect, represented by a path coefficient of 0.242 and a p-value of 0.021, confirms the presence of a significant mediating effect. This finding is consistent with Eris (2022), who reported that the functional and emotional value perceived by patients influences patient loyalty either directly or indirectly through mediating mechanisms. The study further suggests that enhancing patient satisfaction strengthens the relationship between perceived value and patient loyalty. Similarly, Huang et al. (2021) explained that patient loyalty in healthcare services is largely shaped by positive service experiences that generate patient satisfaction, with perceived value serving as one of the primary antecedents of this process. Furthermore,

Zahra et al. (2022) concluded that perceived value consistently influences patient loyalty across various healthcare settings, while patient satisfaction frequently functions as the primary mechanism linking perceived value to loyal behavioral intentions. Therefore, in the context of Leona General Hospital, Kupang, initiatives aimed at enhancing patients' perceived value, such as improving cost transparency, simplifying service procedures, and increasing service efficiency, are likely to strengthen patient loyalty when they first lead to higher levels of patient satisfaction.

CONCLUSION

This study was conducted to examine the mediating role of patient satisfaction in the relationships between service quality, perceived value, and patient loyalty at Leona General Hospital, Kupang. The findings demonstrate that both service quality and perceived value have significant positive effects on patient satisfaction. These results indicate that improvements in healthcare service quality and the value perceived by patients contribute substantially to higher levels of patient satisfaction.

Furthermore, patient satisfaction was found to have a significant positive effect on patient loyalty. In contrast, neither service quality nor perceived value exhibited a significant direct effect on patient loyalty. These findings suggest that patients' evaluations of service quality and perceived value do not directly translate into loyalty. Instead, patient loyalty is primarily developed through the satisfaction patients experience with the healthcare services they receive.

The mediation analysis further confirmed that patient satisfaction plays a significant mediating role in the relationships between service quality and patient loyalty, as well as between perceived value and patient loyalty. These findings indicate that patient satisfaction serves as the principal mechanism through which service quality and perceived value influence patient loyalty. Given that the direct effects of service quality and perceived value on patient loyalty were not statistically significant while the indirect effects through patient satisfaction were significant, the proposed structural model supports a full mediation relationship.

From a practical perspective, the findings suggest that strategies to strengthen patient loyalty at Leona General Hospital, Kupang, should prioritize enhancing patient satisfaction through continuous improvements in service quality and the creation of greater perceived value. Initiatives such as improving the responsiveness of healthcare professionals, providing clear and accurate information, enhancing the comfort of hospital facilities, and delivering healthcare services that meet patients' expectations are expected to increase patient satisfaction and, consequently, foster long-term patient loyalty.

This study has several limitations. First, the research was conducted at a single hospital, which may limit the generalizability of the findings. Second, the cross-sectional research design does not allow the examination of changes in patient behavior over time. Third, the proposed model included only four constructs, namely service quality, perceived value, patient satisfaction, and patient loyalty. Future studies are therefore encouraged to include multiple hospitals with different organizational characteristics, adopt longitudinal research designs, and incorporate additional constructs such as trust, hospital image, patient engagement, or switching costs to provide a more comprehensive understanding of the factors influencing patient loyalty.

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