

## Enhancing Customer Loyalty in Digital Health Services: The Role of Business Model Innovation and Service Quality through Customer Satisfaction

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### ABSTRACTS

The rapid development of digital healthcare services has significantly transformed healthcare delivery systems and intensified competition among digital healthcare providers. Companies are therefore required to continuously innovate their business models and improve service quality in order to maintain customer satisfaction and strengthen customer loyalty. This study aims to analyze the influence of business model innovation and service quality on customer loyalty through customer satisfaction among users of the Halodoc application in Indonesia. This research employed a quantitative approach using Partial Least Squares Structural Equation Modeling (PLS-SEM). Data were collected through questionnaires distributed to 93 respondents who had experience using the Halodoc application. The findings indicate that business model innovation has a positive and significant effect on customer satisfaction. Service quality also positively affects customer satisfaction. Furthermore, customer satisfaction demonstrates a strong positive influence on customer loyalty. However, business model innovation does not directly affect customer loyalty. The mediation analysis confirms that customer satisfaction mediates the relationship between business model innovation and customer loyalty, as well as the relationship between service quality and customer loyalty. These findings emphasize the strategic role of customer satisfaction in strengthening long-term customer loyalty within digital healthcare services. This study contributes to the development of digital healthcare marketing literature, particularly regarding the integration of innovation strategies and service quality in enhancing customer relationships.

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## **1. INTRODUCTION**

The rapid advancement of information technology has significantly transformed various sectors of human life, including communication, education, business, transportation, and healthcare services. The integration of digital technology into healthcare systems has created new opportunities for improving healthcare accessibility, efficiency, and service effectiveness. In recent years, the healthcare industry has experienced substantial digital transformation through the adoption of telemedicine, mobile healthcare applications, electronic medical records, and integrated digital healthcare platforms. These developments have changed the traditional healthcare service model into a more flexible and technology-oriented system that allows patients to access healthcare services remotely and efficiently.

Digital transformation in healthcare has become increasingly important, particularly after the growing public awareness of the importance of accessible and responsive healthcare services. Healthcare consumers today expect fast, practical, and user-friendly healthcare solutions that can be accessed anytime and anywhere. Consequently, digital healthcare applications have become an integral part of modern healthcare ecosystems. In Indonesia, the development of digital healthcare services has shown remarkable growth due to increasing internet penetration, smartphone usage, and public demand for practical healthcare services. Applications such as Halodoc have emerged as one of the leading digital healthcare platforms that provide various healthcare services, including online consultations, digital prescriptions, pharmacy delivery services,

laboratory services, and healthcare information access.

The growing adoption of digital healthcare platforms has also intensified competition among healthcare service providers. Companies operating in digital healthcare industries are required not only to provide healthcare services but also to continuously improve their capabilities in developing innovative strategies that can attract and retain customers. Competition in the digital healthcare market encourages organizations to create more efficient and customer-oriented business models. In this context, business model innovation has become an essential strategic approach that enables companies to adapt to changing consumer behavior, technological advancements, and market dynamics.

Business model innovation refers to the process of creating, modifying, or improving how companies create, deliver, and capture value (Osterwalder & Pigneur, 2010). Companies that successfully implement innovative business models are more likely to achieve competitive advantages and improve customer experiences. In digital healthcare services, business model innovation can include the integration of telemedicine systems, digital consultation features, online pharmacy services, electronic medical records, online payment systems, and personalized healthcare services. These innovations allow healthcare providers to deliver more effective and efficient healthcare solutions while simultaneously improving convenience and accessibility for users.

Moreover, business model innovation in digital healthcare services is not limited to

technological improvements alone. It also involves redesigning service delivery processes, enhancing communication channels, and creating integrated healthcare ecosystems that connect patients, doctors, pharmacies, and healthcare institutions in one digital platform. The implementation of innovative business models enables companies to provide value-added services that differentiate them from competitors. As competition in the healthcare technology industry becomes increasingly intense, companies that fail to innovate may struggle to maintain customer trust and long-term sustainability.

Besides innovation, service quality remains one of the most important determinants influencing customer perceptions, satisfaction, and behavioral intentions. Service quality plays a significant role in shaping customer experiences because healthcare services are closely related to trust, reliability, and customer safety. Parasuraman et al. (1988) explained that service quality reflects a company's ability to consistently fulfill customer expectations through reliable and responsive services. In digital healthcare services, customers expect healthcare platforms to provide accurate medical information, responsive consultation services, secure transactions, user-friendly applications, and empathetic interactions.

The quality of service delivered by digital healthcare providers can directly influence customer trust and satisfaction. Customers tend to evaluate healthcare services based on responsiveness, reliability, assurance, empathy, and system usability. If healthcare providers can consistently provide high-quality services, customers are more likely to perceive positive value from the services offered. Conversely, poor service quality may create

dissatisfaction, reduce trust, and encourage customers to switch to competing platforms. Therefore, maintaining service quality has become a critical challenge for companies operating in digital healthcare industries.

Customer satisfaction is considered one of the most important factors influencing customer loyalty. Oliver (1980) stated that customer satisfaction emerges when customers perceive that the actual performance of a product or service meets or exceeds their expectations. In the context of digital healthcare services, customer satisfaction may result from positive experiences such as fast consultation responses, ease of application usage, accurate healthcare information, affordable healthcare access, and reliable customer support services. Satisfied customers are more likely to continue using healthcare platforms, recommend services to others, and establish long-term relationships with service providers.

Furthermore, customer satisfaction serves as a strategic mechanism that strengthens customer retention and loyalty. Customer loyalty is highly important in digital business environments because loyal customers contribute to long-term organizational sustainability through repeated service usage and positive word-of-mouth communication. Customers who are satisfied with digital healthcare services are less likely to switch to competing platforms because they have already developed trust and positive experiences with the current service provider. Therefore, organizations need to prioritize customer satisfaction as part of their long-term business strategies.

Previous studies have demonstrated that business model innovation and service quality can influence customer loyalty either directly or indirectly through

customer satisfaction (Zeithaml et al., 1996; Auh et al., 2007). Studies in various industries indicate that innovation and service quality are important factors in shaping customer perceptions and behavioral intentions. However, studies investigating these relationships in the context of digital healthcare services remain relatively limited, particularly in Indonesia. Most previous studies primarily focus on e-commerce, banking, hospitality, or general online service industries, while digital healthcare services possess unique characteristics involving trust, healthcare accessibility, privacy concerns, and service reliability.

The digital healthcare sector requires a deeper understanding of customer behavior because healthcare services involve sensitive personal information and critical decision-making processes. Customers not only evaluate digital healthcare services based on convenience and efficiency but also based on trustworthiness, security, and the quality of healthcare interactions. Therefore, examining the relationships among business model innovation, service quality, customer satisfaction, and customer loyalty in digital healthcare services becomes highly relevant both academically and practically.

Based on these considerations, this study aims to analyze the effect of business model innovation and service quality on customer loyalty through customer satisfaction among users of the Halodoc application. This study is expected to provide theoretical contributions to the literature on digital healthcare marketing and customer relationship management. In addition, the findings are expected to provide practical implications for digital healthcare providers in developing innovative strategies and improving

service quality to strengthen customer satisfaction and long-term customer loyalty.

## **2. LITERATURE REVIEW**

### **2.1 Business Model Innovation**

Business model innovation refers to changes or improvements in the way organizations create, deliver, and capture value (Osterwalder & Pigneur, 2010). Business model innovation enables organizations to adapt to changing market dynamics and technological advancements. Companies that successfully implement innovative business models can improve operational efficiency, enhance customer experience, and strengthen their competitiveness.

In digital healthcare services, business model innovation can be reflected through telemedicine integration, online consultation services, digital pharmacy systems, electronic payment integration, and personalized healthcare services. Innovative healthcare platforms can provide more convenient healthcare access while improving the efficiency of healthcare delivery systems.

Several previous studies suggest that business model innovation positively affects customer perceptions and satisfaction because innovative services create additional value and convenience for consumers.

### **2.2 Service Quality**

Service quality is defined as the gap between customer expectations and perceived service performance (Parasuraman et al., 1988). Parasuraman et al. developed the SERVQUAL model consisting of five dimensions: tangibility, reliability, responsiveness, assurance, and empathy.

In digital healthcare services, service quality includes the responsiveness of medical consultation services, the reliability of healthcare information, application usability, transaction security, and empathy shown by healthcare providers. High-quality service is expected to strengthen customer trust and increase customer satisfaction.

Cronin and Taylor (1992) argued that service quality significantly influences customer satisfaction and future behavioral intentions. Customers who perceive high-quality service are more likely to develop positive attitudes toward the company.

### 2.3 Customer Satisfaction

Customer satisfaction refers to customers' emotional and psychological responses after comparing expected performance with actual service performance (Oliver, 1980). Satisfaction reflects the overall evaluation of customer experiences in consuming products or services.

In digital healthcare services, customer satisfaction may arise from fast consultation responses, ease of accessing healthcare services, accurate medical information, affordable prices, and overall convenience in using healthcare applications.

According to Kotler and Keller (2016), customer satisfaction plays a strategic role in retaining customers and strengthening customer relationships. Satisfied customers are more likely to engage in repeat purchases and provide positive word-of-mouth recommendations.

### 2.4 Customer Loyalty

Customer loyalty refers to a customer's commitment to continue using a product or service consistently over time (Zeithaml et al., 1996). Loyal customers tend to

repurchase products, resist competitors' offers, and recommend services to other people.

In digital healthcare services, customer loyalty is reflected through repeated use of healthcare applications, continuous engagement with platform services, and willingness to recommend the application to others.

Reichheld and Schefter (2000) emphasized that customer loyalty in digital environments is highly influenced by customer trust, satisfaction, and service experience.

### 2.5 Hypothesis Development

Based on the theoretical framework and previous empirical studies, the following hypotheses were proposed:

H1: Business model innovation positively affects customer satisfaction.

H2: Service quality positively affects customer satisfaction.

H3: Customer satisfaction positively affects customer loyalty.

H4: Business model innovation positively affects customer loyalty.

H5: Service quality positively affects customer loyalty.

H6: Customer satisfaction mediates the relationship between business model innovation and customer loyalty.

H7: Customer satisfaction mediates the relationship between service quality and customer loyalty.

### 2.5 Research Framework

This research framework examines the relationships among Business Model Innovation, Service Quality, Customer Satisfaction, and Customer Loyalty. The

model is developed to understand how strategic business improvements and service excellence contribute to strengthening customer loyalty, both directly and indirectly through customer satisfaction as a mediating variable.

First, Business Model Innovation is proposed as a critical strategic factor that influences customer perceptions and experiences. Organizations that continuously innovate their business models are more capable of delivering superior value, improving operational flexibility, and meeting evolving customer needs. Consequently, innovative business practices are expected to enhance customer satisfaction (H1). In addition, Business Model Innovation is also predicted to directly influence customer loyalty (H4), as customers tend to remain loyal to businesses that consistently offer innovative and relevant solutions.

Second, Service Quality is considered another important determinant of customer behavior. High-quality services characterized by reliability, responsiveness, assurance, empathy, and tangible aspects are expected to positively influence customer satisfaction (H2). Customers who receive excellent service experiences are more likely to develop positive evaluations toward the company. Furthermore, superior service quality is also expected to directly strengthen customer loyalty (H5), since customers generally prefer to maintain long-term relationships with businesses that consistently provide satisfactory services.

Third, Customer Satisfaction functions as a mediating variable and plays a central role in the framework. Satisfied customers are more likely to trust the company, repurchase products or services, and recommend the business to others.

Therefore, Customer Satisfaction is hypothesized to positively affect Customer Loyalty (H3).

Moreover, the framework proposes two mediation relationships. Customer Satisfaction is expected to mediate the relationship between Business Model Innovation and Customer Loyalty (H6). This indicates that innovative business strategies may enhance customer loyalty by first increasing customer satisfaction. Similarly, Customer Satisfaction is also hypothesized to mediate the relationship between Service Quality and Customer Loyalty (H7), suggesting that service quality contributes to loyalty through the creation of satisfying customer experiences.

Overall, this research framework emphasizes that both Business Model Innovation and Service Quality are essential drivers of Customer Loyalty, while Customer Satisfaction serves as a key psychological mechanism that strengthens these relationships. The framework provides a comprehensive understanding of how organizations can achieve sustainable customer loyalty through innovation and superior service delivery.

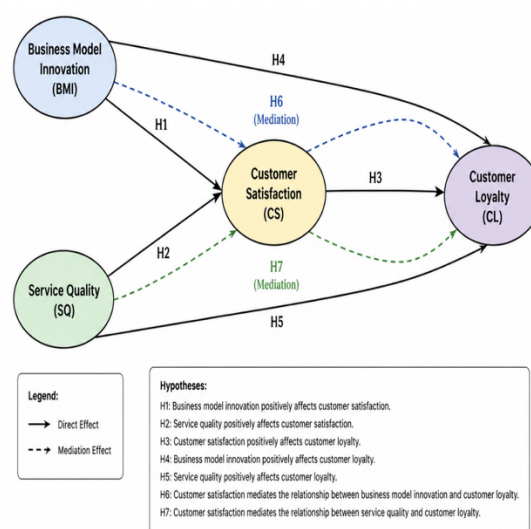


Figure 1. Research Framework

### 3. METHODS

#### 3.1 Research Design

This study employed a quantitative research approach using a survey method. Quantitative methods were selected because they allow researchers to measure relationships among variables objectively and statistically.

#### 3.2 Population and Sample

The population of this study consisted of users of the Halodoc application in Indonesia. The sample was selected using purposive sampling techniques, where respondents were chosen based on specific criteria, namely individuals who had experience using the Halodoc application. A total of 93 respondents participated in this study. The sample size is considered adequate for Partial Least Squares Structural Equation Modeling (PLS-SEM) analysis.

#### 3.3 Data Collection Technique

Data were collected using structured questionnaires distributed online to respondents. The questionnaire utilized a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

The research variables included:

1. Business Model Innovation (X1)
2. Service Quality (X2)
3. Customer Satisfaction (X3)
4. Customer Loyalty (Y1)

#### 3.4 Data Analysis Technique

Data analysis was conducted using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS software. According to Hair et al. (2017), PLS-SEM is suitable for exploratory and predictive research models involving multiple variables and mediation relationships.

The analysis stages included:

1. Convergent validity testing
2. Reliability testing
3. Structural model analysis
4. Coefficient of determination (R-square) analysis
5. Hypothesis testing
6. Mediation effect testing

### 4. RESULTS AND DISCUSSION

#### 4.1 Respondent Profile

The study involved 93 respondents who had experience using the Halodoc application. Based on gender characteristics, the majority of respondents were male, accounting for 58.1%, while female respondents represented 41.9%.

Table 1. Respondent Characteristics Based on Gender

| Gender | Frequency | Percentage |
|--------|-----------|------------|
| Male   | 54        | 58.1%      |
| Female | 39        | 41.9%      |
| Total  | 93        | 100%       |

Based on age characteristics, respondents aged 41–50 years represented the largest proportion at 29.0%, followed by respondents aged 31–40 years and above 50 years.

Table 2. Respondent Characteristics Based on Age

| Age Group   | Frequency | Percentage |
|-------------|-----------|------------|
| < 20 Years  | 9         | 9.7%       |
| 20–30 Years | 15        | 16.1%      |
| 31–40 Years | 21        | 22.6%      |
| 41–50 Years | 27        | 29.0%      |
| > 50 Years  | 21        | 22.6%      |
| Total       | 93        | 100%       |

## 4.2 Validity and Reliability Testing

The validity and reliability analysis indicated that all indicators met the required criteria. The loading factor values for all indicators exceeded 0.70, demonstrating good convergent validity. Furthermore, Cronbach's Alpha values for all variables were above 0.80, indicating strong internal consistency reliability.

Table 3. Validity and Reliability Results

| Variable                  | Loading Factor | Cronbach's Alpha | Result             |
|---------------------------|----------------|------------------|--------------------|
| Business Model Innovation | > 0.70         | > 0.80           | Valid and Reliable |
| Service Quality           | > 0.70         | > 0.80           | Valid and Reliable |
| Customer Satisfaction     | > 0.70         | > 0.80           | Valid and Reliable |
| Customer Loyalty          | > 0.70         | > 0.80           | Valid and Reliable |

These findings confirm that the measurement instruments used in this study are appropriate for measuring the proposed constructs.

## 4.3 Structural Model Analysis

Structural model analysis was conducted to evaluate the relationships among variables and test the proposed hypotheses. The structural model generated using SmartPLS is presented in Figure 1.

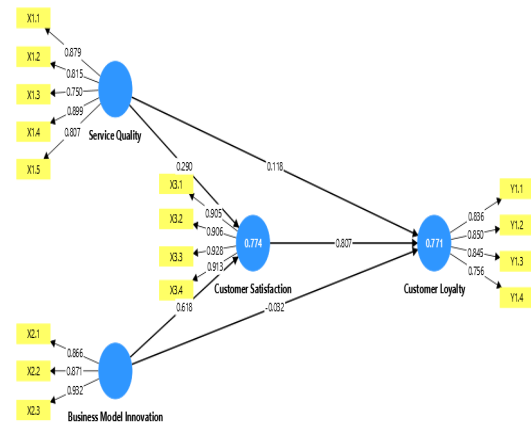


Figure 2. Structural Model Result

The structural model illustrates the relationships among Business Model Innovation, Service Quality, Customer Satisfaction, and Customer Loyalty. The model also presents the loading factor values of each indicator as well as the path coefficient values among constructs.

The results reveal that business model innovation significantly influences customer satisfaction with a path coefficient value of 0.618. This finding indicates that innovative healthcare features provided by Halodoc, such as online consultations, integrated pharmacy services, and digital healthcare accessibility, positively contribute to customer experiences and satisfaction.

Service quality also significantly affects customer satisfaction with a coefficient value of 0.290. This result supports the SERVQUAL theory proposed by Parasuraman et al. (1988), which emphasizes the importance of reliability, responsiveness, assurance, empathy, and tangibility in service delivery. Customers who perceive high-quality digital healthcare services tend to experience higher satisfaction levels.

Furthermore, customer satisfaction demonstrates the strongest influence on customer loyalty with a coefficient value of 0.807. This finding indicates that satisfied users are more likely to continue using the Halodoc application and recommend the platform to other users.

Interestingly, business model innovation does not directly influence customer loyalty, as indicated by the negative coefficient value of -0.032. This result suggests that innovation alone is insufficient to directly create customer loyalty unless customers first experience satisfaction from the services provided.

Meanwhile, service quality has a positive direct effect on customer loyalty with a coefficient value of 0.118, indicating that high-quality healthcare services can encourage customers to maintain long-term relationships with the platform.

Table 4. Path Coefficient Results

| Hypothesis | Relationship                                      | Coefficient | Result        |
|------------|---------------------------------------------------|-------------|---------------|
| H1         | Business Model Innovation → Customer Satisfaction | 0.618       | Supported     |
| H2         | Service Quality → Customer Satisfaction           | 0.290       | Supported     |
| H3         | Customer Satisfaction → Customer Loyalty          | 0.807       | Supported     |
| H4         | Business Model Innovation                         | -0.032      | Not Supported |

| Hypothesis | Relationship                                                         | Coefficient | Result    |
|------------|----------------------------------------------------------------------|-------------|-----------|
| H5         | → Customer Loyalty<br>Service Quality → Customer Loyalty             | 0.118       | Supported |
| H6         | Business Model Innovation → Customer Satisfaction → Customer Loyalty | 0.499       | Supported |
| H7         | Service Quality → Customer Satisfaction → Customer Loyalty           | 0.234       | Supported |

The results reveal that business model innovation significantly influences customer satisfaction. This indicates that innovative features provided by Halodoc, such as online consultations and integrated healthcare services, contribute positively to customer experiences.

Service quality also significantly affects customer satisfaction. This finding supports the SERVQUAL theory proposed by Parasuraman et al. (1988), emphasizing the importance of reliable and responsive healthcare services.

Customer satisfaction demonstrates the strongest influence on customer loyalty,

with a coefficient value of 0.807. This result indicates that satisfied customers are more likely to continue using the Halodoc application and recommend it to others. Interestingly, business model innovation does not directly influence customer loyalty. This suggests that innovation alone is insufficient to create customer loyalty unless customers perceive satisfaction from the services provided.

#### 4.4 Coefficient of Determination (R-Square)

The coefficient of determination analysis was conducted to evaluate the explanatory power of the research model.

| Table 5. R-Square Results |          |
|---------------------------|----------|
| Variable                  | R-Square |
| Customer Satisfaction     | 0.774    |
| Customer Loyalty          | 0.771    |

The R-square value of customer satisfaction was 0.774, indicating that business model innovation and service quality explain 77.4% of the variance in customer satisfaction.

Meanwhile, the R-square value of customer loyalty was 0.771, meaning that business model innovation, service quality, and customer satisfaction explain 77.1% of the variance in customer loyalty.

These results indicate that the proposed research model has strong explanatory power.

#### 4.5 Discussion

The findings demonstrate that business model innovation positively affects customer satisfaction. This result confirms that innovative healthcare services can

improve customer perceptions and experiences. The integration of telemedicine, digital prescriptions, and online healthcare access provides additional value for customers, resulting in higher satisfaction levels.

The positive relationship between service quality and customer satisfaction also confirms previous studies emphasizing the importance of responsiveness, reliability, and empathy in service delivery. In digital healthcare services, customers highly value fast responses, accurate healthcare information, and user-friendly applications.

Customer satisfaction was found to have the strongest effect on customer loyalty. This finding supports Oliver's (1980) theory, which explains that satisfied customers are more likely to become loyal customers. Satisfied users of the Halodoc application are more likely to reuse the platform and recommend it to others.

However, business model innovation does not directly affect customer loyalty. This result implies that innovation cannot automatically generate loyalty without creating customer satisfaction first. Customers may appreciate innovative services, but loyalty will only emerge when those innovations fulfill customer expectations and provide positive experiences.

The mediation analysis confirms that customer satisfaction acts as a strategic mediator connecting business model innovation and service quality with customer loyalty. Therefore, companies should prioritize customer satisfaction as a central objective in developing innovative digital healthcare strategies.

## 5. CONCLUSION

This study concludes that business model innovation and service quality positively influence customer satisfaction among users of the Halodoc application. Customer satisfaction also has a strong positive influence on customer loyalty.

The findings further indicate that business model innovation does not directly affect customer loyalty. Instead, customer satisfaction fully mediates the relationship between business model innovation and customer loyalty.

This study highlights the strategic importance of customer satisfaction in strengthening customer loyalty within digital healthcare services. Companies operating in digital healthcare industries should continuously improve innovation and service quality to create better customer experiences and maintain long-term customer relationships.

Future studies are recommended to expand the sample size, involve different digital healthcare platforms, and include additional variables such as trust, perceived value, and user experience to enrich the understanding of customer behavior in digital healthcare services.

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