**Determination of Factors Affecting Loyalty through Partial Least Squares Structural Equation Modeling (PLS-SEM)**

**Abstract**

**Objective**

Loyalty is important for hospitals because it not only enhances the quality of care and outcomes for individual patients but also contributes to the overall success, reputation, and sustainability of the healthcare institution. Based on the Theory of Planned Behavior developed by Icek Ajzen, this study aims to examine the mediating role of social media usage and behavioral intention in the impact of trust on loyalty.

**Methods**

Data were collected from 387 individuals through Web 2.0. The study was designed considering the most recent hospital experience (public-private). Variables predicting loyalty were identified using Partial Least Squares Structural Equation Modeling. For the model, the SRMR value was calculated as 0.045, NFI value as 0.872, and GoF value as 0.52, determining a good fit of the model.

**Results**

The study revealed that the patient's trust directly influences loyalty. Additionally, it was determined that social media usage (excluding patient satisfaction) and behavioral intention mediate between trust and loyalty.

**Conclusion**

In an ever-changing healthcare landscape, loyalty is of significant importance for enhancing the competitive edge and improving both the financial and non-financial performance of hospitals. This study provides a model highlighting the critical roles of trust, social media and behavioral intention elevating loyalty."

**KEYWORDS**

Loyalty, trust, social media, behavioral intention, partial least squares structural equation modelling, hospital.

**Key points**

Trust plays a critical role in loyalty and is often linked to perceptions of quality.

Trust relationships between patients and healthcare institutions often lead to positive word-of-mouth and social media recommendations, influencing others to choose the same organization and reinforcing the link between trust and loyalty.

Social media and behavioral intention are considered important variables between trust and loyalty in hospitals.

1. **INTRODUCTION**

The primary goal of healthcare service providers is to meet the health needs of individuals and communities. Hospitals operating in a constantly changing environment and a highly competitive landscape have been compelled to develop new business strategies to meet the needs of patients and gain their trust1. The creation of highly loyal patients is a crucial component of this strategy.

Loyalty refers to a psychological inclination of a patient to seek services from the same healthcare provider again and recommend it to others. In the literature, the antecedents of loyalty include professional competence, satisfaction, quality, friendly staff, accurate billing, effective communication skills, prompt service delivery, and brand image. Trust, satisfaction, and communication are highly significant in improving patient loyalty. In recent years, loyalty has been acknowledged as a crucial success factor for organizations and a catalyst for the growth of the healthcare sector2,3. Singh et al.'s4 study highlights the substantial impact of reliability, affordability, and user-friendliness in online customer services on patients, suggesting that organizations focus on these variables to foster loyalty. Management's emphasis on these factors is recommended for cultivating loyalty within their organizations.

Trust, which is influenced by a patient's perception regarding the foundation of their relationship with a doctor or healthcare provider, is an important variable in the healthcare sector, affecting efficiency and commitment4. Patient trust is defined as the belief of the patient that doctors possess the necessary information/skills for diagnosis and treatment, can prioritize the interests of patients, and thus, patients can confidently accept healthcare services. Interaction with other staff members, continuity of care, waiting times, and service environments among patients, alongside medical services, also impact trust. With trust, patients develop strong and deep relationships with the hospital, reflected in their behavioral loyalty5,6. In situations where a patient perceives relatively high levels of risk, trust is considered a significant precursor to loyalty. The concept of trust, which acts as a driving force for establishing and maintaining a long-term positive patient relationship with a direct impact on satisfaction, not only fosters loyalty but also facilitates the transmission of positive word-of-mouth messages5,7,8. Rahim and colleagues9 have emphasized that service providers need to focus on both the present and the future when determining the necessities of earning the trust of service recipients.

Social media, referred to as the 'media of the people' or the 'network of individuals,' primarily seeks to bring people together and facilitate interactions among them7. The creation of preference and loyalty is influenced both within face-to-face service delivery environments and on social media platforms beyond the hospital. In the digital era, users seeking access to health information and making decisions about their subsequent health behaviors predominantly favour social media platforms10. Social media tools such as chat rooms, forums, social websites, or blogs enable many institutions to advertise and communicate effectively with customers. Social networking sites like Facebook, YouTube, and Twitter offer opportunities for organizations to collaborate with service recipients to enhance their visibility11,12. Patients are becoming increasingly active online and are using social media more frequently in the field of healthcare. Patients' use of social media for health-related purposes generally involves seeking more information about their illnesses, expressing their emotions, sharing their experiences with diseases and treatments, communicating with doctors, finding answers to their questions, seeking advice, and obtaining education13. Satisfaction is considered one of the determinants of loyalty, representing the outcome that emerges from the comparison between expectations and perceptions after service. Satisfaction is closely related to reliability, responsiveness, trust, empathy, and tangible attributes2. Satisfaction, a dominant factor in the healthcare sector, is considered a valuable asset since it enables patients to choose the same institution again and demonstrate loyalty4. Another significant concept for loyalty, hospital image, is the combination of patients' perceptions and attitudes towards a hospital.

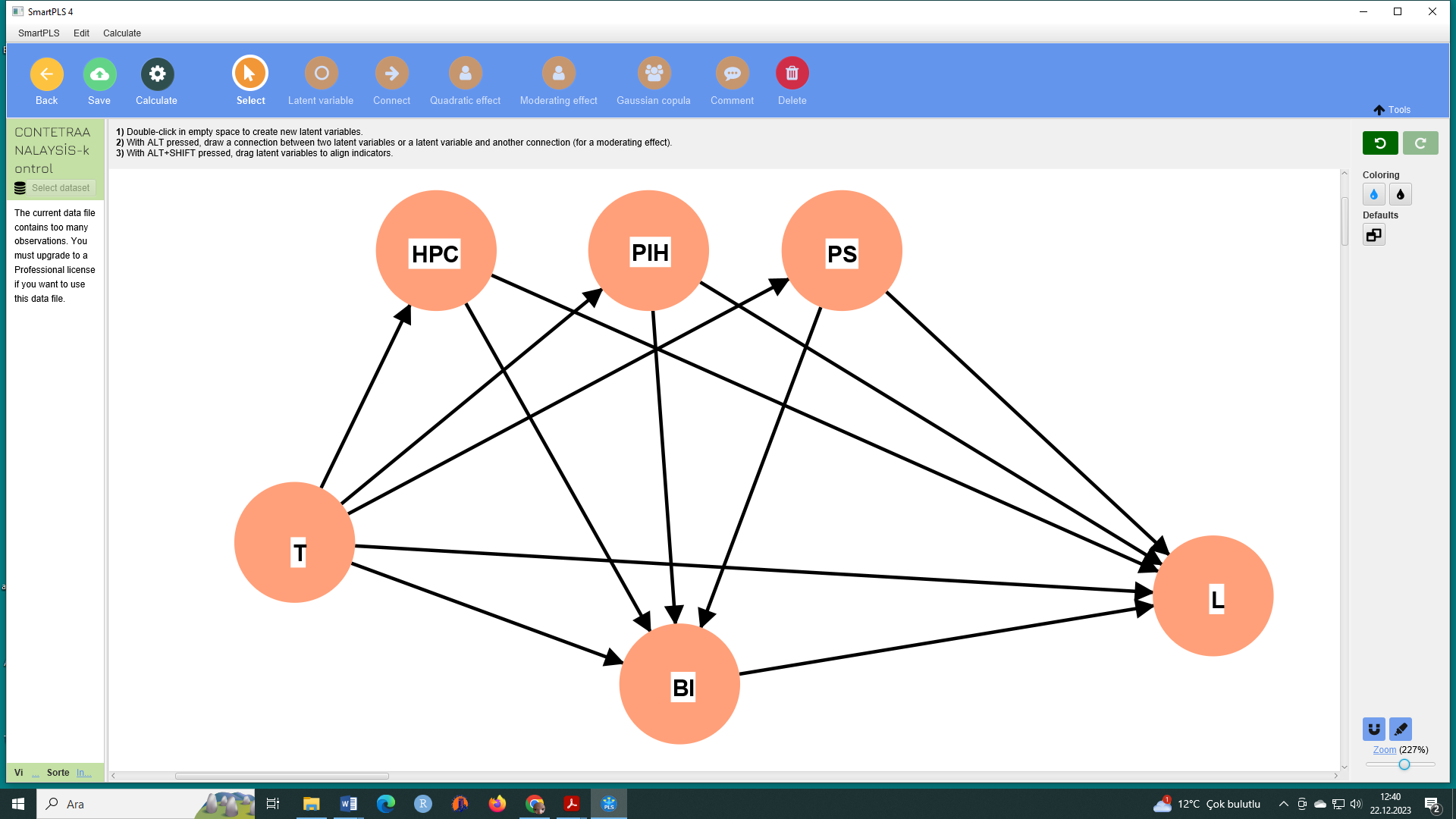
In other words, it is the perception of services formed and established in patients' minds. The image plays a significant role in strategic business plans as it represents an organization's tangible and intangible aspects. The tangible dimension encompasses products and facilities, while the intangible dimension includes emotional elements like the organization's identity and the perception of service recipients. A hospital image is considered a compilation of the outcomes of an evaluation process that involves the patient's thoughts, emotions, and previous experiences related to the hospital, and it transforms into an impression in the patient's memory. A strong brand image is the foundation for a hospital to maintain its position in the market as it plays an influential role in the decision-making process of service recipients11,14.

Service recipients' behavioral intentions reflect their likelihood of engaging in a specific behavior15. Ajzen16 proposed that behavioral intention is determined by attitude toward the behavior (beliefs about the behavior), subjective norms (beliefs about others' attitudes toward the behavior), and perceived behavioral control (beliefs about one's ability to perform the behavior). This theory, the Theory of Planned Behavior (TPB), is commonly employed to investigate individuals' responses to products and services. In the theory, behavioral intention is the most significant determinant of behavior. In other words, behavioral intention serves as a precursor to enacting a behavior. In the literature, a strong relationship between intention and behavior, with a correlation ranging from .90 to .96, has been noted, suggesting that behavioral intention explains an average of 27% of the variance in behavior17.

1. **METHODS**

**2.1 The model of the research**

The study aims to examine the mediating role of social media usage and behavioral intention in the impact of trust in the institution on loyalty. The research model is based on the Theory of Planned Behavior (TPB), developed by Ajzen16, which focuses on explaining the relationship between attitudes and behaviors (Figure 1). According to TPB, behavior is determined by intentions, attitudes towards behavior, subjective norms, and perceived behavioral control. Attitudes towards behavior are based on beliefs about the potential outcomes of the behavior and the evaluation of those outcomes. It represents the readiness to perform a behavior. Subjective norms are based on beliefs about the normative expectations of others and the motivation to comply with these expectations. It reflects the perceived social pressure to engage in the behavior. It corresponds to the perceived behavioral expectations of significant referent individuals or groups, such as spouses, family members, and colleagues. Perceived behavioral control refers to beliefs about the presence and perceived power of factors that may facilitate or hinder the performance of the behavior. Other variables that are potentially relevant to the behavior, such as gender, age, education, and personality traits, are considered background factors within the TPB framework and indirectly influence behavioral intention only through attitudes towards behavior, subjective norms, and perceived behavioral control. Therefore, by measuring these three factors, a reliable prediction of behavioral intention can be obtained.



**Fig. 1.** Diagram of the Theoretical Model

(T: Trust, HPC: Hospital-Patient Communication, PIH: Perceived image of hospital, PS: Patient Satisfaction, BI: Behavioral Intention, L: Loyalty)

According to TPB, personal variables such as gender, age, and income shape behavioral beliefs by influencing attitudes such as trust, the perceived image of the hospital, hospital-patient communication, and patient satisfaction. Behavioral beliefs also influence an individual's attitudes toward behavior. Additionally, individuals take into account the hospital preferences of reference groups. In an individual's intention to choose a hospital, the control over the preference (within the realm of possibility) also plays a significant role. Therefore, intention shaped through these three variables will also lead to loyalty to the chosen hospital.

In line with the research purpose, the hypotheses formulated are presented below.

**Hypotheses:**

H1. The behavioral intention has an impact on loyalty.

H2. Perceived image of hospital has an impact on loyalty.

H3. Hospital-patient communication has an impact on loyalty.

H4. Patient satisfaction has an impact on loyalty.

H5. Trust in the institution has an impact on loyalty.

H6. Perceived image of hospital has an impact on behavioral intention.

H7. Hospital-patient communication has an impact on behavioral intention.

H8. Patient satisfaction has an impact on behavioral intention.

H9. Trust has an impact on behavioral intention.

H10. Trust has an impact on perceived image of hospital.

H11. Trust has an impact on hospital-patient communication.

H12. Trust has an impact on patient satisfaction.

H13. Hospital-patient communication mediates the relationship between trust and loyalty.

H14. Patient satisfaction mediates the relationship between trust and loyalty.

H15. Perceived image of hospital mediates the relationship between trust and loyalty.

H16. Behavioral intention mediates the relationship between trust and loyalty.

H17. Hospital-patient communication and behavioral intention mediate the relationship between trust and loyalty.

H18. Patient satisfaction and behavioral intention mediate the relationship between trust and loyalty.

H19. Perceived image of hospital and behavioral intention mediates the relationship between trust and loyalty.

**2.2 Research Methodology**

This study examines the mediating role of social media and behavioral intention regarding the impact of trust (in the institution) on loyalty. Respondents were requested to provide answers considering the type of the most recent hospital visited (public-private). Based on a review of the literature, the research model was designed drawing upon certain studies8,18–21.

**2.3 Measures**

The first section of the data collection form includes questions related to participants' demographic characteristics and social media usage. The Institution Trust Scale, Patient Satisfaction Scale for Social Media Use, Hospital-Patient Communication Scale, Perceived Image of Hospital Scale, Behavioral Intention Scale, and Loyalty Scale were utilized in the second section.

**Demographic characteristics and social media usage questions**: The form includes questions regarding participants' age, gender, marital status, educational background, income, social media platforms, frequency of social media usage, and the type of hospitals they most recently received services from.

**Social Media Usage Scales**: The patient satisfaction scale, hospital-patient communication scale, and perceived ımage of hospital scale were used to explain the data related to social media use in the study.

**Patient Satisfaction Scale:** A 4-item scale adapted from the study of Tosyalı et al. (2013) and Derin and Demirel (2013), as well as Kim et al. (2007), was utilized. The scale was designed using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The Cronbach's Alpha value for the scale was found to be 0.9020.

**Hospital-Patient Communication Scale:** A 7-item scale adapted from the works of Laroche, Habibi, and Richard (2013), Severi and Ling (2013), Househ, Borycki, and Kushniruk (2014), among other authors, and further developed by Tosyalı et al. (2019) was employed. The scale was designed using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The Cronbach's Alpha value for the scale was found to be 0.8620.

**Perceived Image of Hospital Scale**: A 5-item scale adapted from the works of Kim and Kim (2005), Severi and Ling (2013), and further developed by Tosyalı et al. (2019) was employed. The scale was designed using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The Cronbach's Alpha value for the scale was found to be 0.7620.

**Trust Scale:** The Institution Trust scale, developed by Newell and Goldsmith (2001), consists of 8 items and two sub-dimensions: reliability and expertise. The 4th question in the expertise sub-dimension is reverse-coded. In Tosun's (2019) study, Cronbach's Alpha value of the Trust scale was found to be 0.969, with the sub-dimensions of Reliability scoring 0.924 and Expertise scoring 0.95722 In this study, trust has been considered as a whole.

**Behavioral Intentions Scale**: To measure Behavioral Intentions, the Customer Intentions Scale developed by Wang (2012) was used. The 3-item Behavioral Intentions scale is in a 5-point Likert format, ranging from 1 (strongly disagree) to 5 (strongly agree). In Durmuş's23 study, the Cronbach's Alpha value of the scale was found to be 0.91.

**Loyalty Scale:** The "loyalty" dimension from the study titled "Behavioral Outcomes of Service Quality" by Zeithaml and colleagues (1996) has been included in the scope of this study. The scale consists of 5 items, rated on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). In Kurtuluş's (2019) study, the Cronbach's Alpha value of the scale was found to be 0.8324.

**2.4 Data collection**

The participants of the study were comprised of social media users in Turkey. As of January 2022, there were 69.95 million internet users in Turkey. The daily internet usage per individual was reported to be 8 hours25. The minimum sample size for the study was calculated using the Open Epi Version 3.01 software, with a confidence level of 95%, a margin of error of ± 5, and a prevalence of 50%, resulting in a sample size of 385 individuals26. To achieve the necessary sample size, the convenience sampling method was utilized. The study's target audience, which consists of social media users, was reached through social media platforms such as WhatsApp, Facebook, and Twitter (Web 2.0). The study was conducted between 01/08/2022 and 01/09/2022. A total of 404 surveys were completed. However, after excluding incomplete and erroneous surveys, a total of 387 surveys were considered for analysis within the scope of the study.

**2.5 Data Analysis**

Descriptive statistics were initially utilized for the analysis of the data. Additionally, the SmartPLS (Partial Least Squares Structural Equation Modeling) demo package program was employed to evaluate the research model. In assessing the model, quantitative data were analyzed through Partial Least Squares Structural Equation Modeling (PLS-SEM)27. Structural Equation Modeling (SEM), initially developed in social sciences, is now widely used in various disciplines. SEM is a general term for multivariate statistical analyses involving factor analysis and regression analysis, typically used for testing models containing both observed and latent variables. Package programs such as SmartPLS, WarpPLS, AMOS, and Lisrel are commonly used for testing models utilizing SEM. In this study, the SmartPLS program was employed, capable of analyzing variance-based data, handling non-normally distributed data, and conducting analyses with both categorical and continuous variables28.

1. **RESULT**

The descriptive statistics of the study are presented in Table 1.

**TABLE 1** Descriptive statistics

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | **N** | **%** |
| Gender | Male | 132 | 34,1 |
| Female | 255 | 65,9 |
| Marital status | Single | 219 | 56,6 |
| Married | 168 | 43,4 |
| Educational status | Primary school | 6 | 1,6 |
| Bachelor's degree | 186 | 48,1 |
| Graduate School | 77 | 19,9 |
| High school | 51 | 13,2 |
| Secondary school | 7 | 1,8 |
| Associate Degree | 60 | 15,5 |
| Income status | Income less than expenses | 131 | 33,9 |
| Income is more than expense | 99 | 25,6 |
| Income is equal to the expense | 157 | 40,6 |
| Connecting to Social Media | Mobile phone | 375 | 96,9 |
| Desktop / Laptop computer | 12 | 3,1 |
| Frequency of Social Media Usage | Sometimes | 53 | 13,7 |
| Always | 133 | 34,4 |
| Rarely | 15 | 3,9 |
| Often | 186 | 48,1 |
| Healthcare Service Searching on Social Media | Yes | 205 | 53,0 |
| No | 182 | 47,0 |
| The Last Hospital Where Service Was Received | Public hospital | 204 | 52,7 |
| Private hospital | 183 | 47,3 |
| Your or Your Loved One's Preferred Choice When Facing Health Issues | Public hospital | 189 | 48,8 |
| Private hospital | 198 | 51,2 |

As seen in Table 1, 65.9% of the participants are female, 56.6% are single, and 48.1% have a bachelor's degree. It was determined that 40.6% of the participants have an income equal to their expenses. In other words, they break even.

Furthermore, 96.9% of the participants connect to social media via mobile phones, and 48.1% use social media platforms frequently. While 53% exhibit the behavior of searching for healthcare services on social media platforms, 52.7% have most recently received services at a public hospital, and 51.2% stated that they or a family member would prefer a private hospital when seeking healthcare services.

**TABLE 2** Social media platforms used by participants

|  |  |  |  |
| --- | --- | --- | --- |
| **Social media platforms** | **N** | **User** | **%** |
| Facebook | 387 | 324 | 90,4 |
| Google+ | 387 | 83 | 83,7 |
| Instagram | 387 | 350 | 68,0 |
| Twitter | 387 | 229 | 59,2 |
| Youtube | 387 | 263 | 25,8 |
| LinkedIn | 387 | 100 | 25,3 |
| Pinterest | 387 | 98 | 21,4 |
| Forums | 387 | 35 | 9,0 |
| Foursquare | 387 | 21 | 6,7 |
| Personal blog | 387 | 26 | 5,4 |
| Tumblr | 387 | 9 | 2,3 |

In Table 2, it has been determined that the most commonly used social media platforms by the participants are, in order, Facebook (90.4%), Google+ (83.7%), Instagram (68%), and Twitter (59.2%).

**3.1 Evaluation of the Measurement Model (Reflective Measurement Model)**

In PLS-SEM, the measurement model is primarily tested. The appropriateness of the measurement model is assessed by examining the alignment of variables with their respective latent constructs' specified threshold values. When evaluating the measurement model, Cronbach's Alpha (CA) and Composite Reliability (CR) values are considered. Hair et al. (2017) have indicated that both values should be above 0.70 for satisfactory results. Secondly, Convergent Validity needs to be established. For this purpose, it is recommended that the Average Variance Extracted (AVE) value should be ≥0.50. As shown in Table 3, factor loadings should be greater than 0.70. Factor loadings below 0.40 should be removed from the measurement model. AVE and CR values are examined when factor loadings are between 0.40 and 0.70. If the AVE value is ≥0.50 and the CR value is higher than 0.70, the respective indicator should be retained in the model21,29,30. In this study, due to two items (G4-G8) of the trust dimension having factor loadings below 0.40, they were removed from the model. Although the factor loadings of two items related to the perceived image of the hospital and four items related to hospital-patient communication fall between 0.40 and 0.70, the AVE (≥0.50) and CR (≥0.70) values surpass the threshold values, leading to the retention of these indicators in the model. As shown in Table 3, the factor loadings of the variables range from 0.960 to 0.646; internal consistency reliability (Cronbach's alpha) coefficients range from 0.951 to 0.859; construct reliability (CR) coefficients range from 0.951 to 0.859, and the explained average variance (AVE) values range from 0.516 to 0.847 (Table 3). The obtained results demonstrate that the threshold values have been exceeded and that the data is ready for the structural model, indicating the readiness of the dataset for the proposed model.

**TABLE 3** Measurement model results

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Expressions** | **Factor load** | **Internal consistency reliability (Cronbach's alpha)** | **Construct validity (CR)** | **Explained average variance (AVE)** | **Average** | **Std. Divergence** |
| **Perceived image of hospital** | A1 | 0.773 | 0.859 | 0.859 | 0.550 | 15,892 | 5,442 |
| A2 | 0.777 |
| A3 | 0.695 |
| A4 | 0.766 |
| A5 | 0.691 |
| Hospital-patient communication | I1 | 0.654 | 0.882 | 0.881 | 0.516 | 27,659 | 6,493 |
| I2 | 0.835 |
| I3 | 0.747 |
| I4 | 0.789 |
| I5 | 0.648 |
| I6 | 0.683 |
| I7 | 0.646 |
| Patient satisfaction | M1 | 0.783 | 0.895 | 0.896 | 0.685 | 12,530 | 5,197 |
| M2 | 0.739 |
| M3 | 0.960 |
| M4 | 0.811 |
| Trust | G1 | 0.860 | 0.951 | 0.951 | 0.765 | 21,186 | 6,375 |
| G2 | 0.894 |
| G3 | 0.899 |
| G5 | 0.905 |
| G6 | 0.820 |
| G7 | 0.866 |
| Behavioral intention | N1 | 0.894 | 0.943 | 0.943 | 0.847 | 11,925 | 3,408 |
| N2 | 0.940 |
| N3 | 0.927 |
| Loyalty | S1 | 0.928 | 0.940 | 0.941 | 0.763 | 18,253 | 5,672 |
| S2 | 0.930 |
| S3 | 0.862 |
| S4 | 0.810 |
| S5 | 0.829 |

As stated in the literature, the decision regarding the establishment of discriminant validity of the model was made by examining the Heterotrait-Monotrait Ratio (HTMT) criteria. Using HTMT as a criterion requires comparing it with a predefined threshold. If the value of HTMT exceeds this threshold, it is concluded that discriminant validity is not achieved. However, the literature has no complete consensus on the HTMT value. Some authors propose a threshold value of 0.85, while others suggest 0.90. It is indicated that the HTMT value should be below 0.90 for closely related concepts and below 0.85 for distant concepts29,31. HTMT values can be seen in Table 4. The values show that the loyalty variable, behavioral intention, and trust are closely related concepts, leading to HTMT values exceeding 0.85. However, as mentioned earlier, it is considered acceptable for closely related concepts to be below 0.90.

**TABLE 4** Discriminant validity results (HTMT criterion)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Behavioral intention** | **Loyalty** | **Perceived image of hospital** | **Hospital-patient communication** | **Patient satisfaction** |
| Behavioral intention |  |  |  |  |  |
| Loyalty | 0.869 |  |  |  |  |
| Perceived image of hospital | 0.261 | 0.399 |  |  |  |
| Hospital-patient communication | 0.379 | 0.345 | 0.625 |  |  |
| Patient satisfaction | 0.176 | 0.242 | 0.394 | 0.549 |  |
| Trust | 0.802 | 0.895 | 0.432 | 0.387 | 0.245 |

**3.2 Evaluation of the Structural Model**

Above, in Figure 1, the Structural Equation Model developed to test the hypotheses in the study is presented. After evaluating the measurement model, it is imperative to assess the structural model. In this study, the Partial Least Squares Structural Equation Modeling method was employed to analyze the structural model. The data utilized in this study were processed using the SmartPls 4 demo software. Concerning the structural model, the Partial Least Squares algorithm (PLS) was utilized to calculate R2, effect size (f2), and VIF values. Furthermore, to compute predictive relevance (Q2), Blindfolding analyses were conducted.

For the model to exhibit an acceptable fit, it is indicated that the value of Standardized Root Mean Square Residual (SRMR) should be less than 0.8, signalling a good fit29. In this study, the SRMR value for the model was calculated as 0.045. The Normed Fit Index (NFI) value is expected to range between 0 and 1. An NFI value close to 1 indicates that the model fits well. In this study, an NFI of 0.872 was found. As the literature mentions, an NFI value at this level also indicates that the model fit is good32.

Tenenhaus et al. (2004), as cited by Kinaş (2021), have proposed the Goodness-of-Fit (GoF) index as another indicator for assessing model fit. The GoF index aims to evaluate the performance of the measurement and structural models, providing a standardized measure for the overall prediction performance of the entire model. This index takes values between 0 and 1. The goodness-of-fit levels for the GoF index are GoF = 0.10 (low), GoF = 0.25 (moderate), and GoF = 0.36 (very good). The GoF index is obtained by taking the square root of the product of the averages of the obtained Average Variance Extracted (AVE) and R2 values for latent variables33.

In the study, with an average R2 value of 0.39 and an average AVE value of 0.69, the Goodness-of-Fit (GoF) index was found to be 0.52. The obtained value of 0.52 is above the threshold of 0.36, suggesting that the model exhibits a very good fit. Based on the model fit indices obtained within the scope of the study, it can be concluded that the model demonstrates a strong level of fit. The results of the structural model analysis, including R2, f2, and Variance Inflation Factor (VIF) values, along with Q2 values, are presented in Table 5. It is expected that the VIF values for the variables should be below 5. The table shows that the VIF values are below 5, indicating the absence of multicollinearity issues29.

**TABLE 5** Structural model results

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | **VIF** | **R2** | **f2** | **Q2** |
| Behavioral intention | Loyalty | 3,118 | 0,875 | 0,603 | 0,639 |
| Perceived image of hospital | 1,919 | 0,061 |
| Hospital-patient communication | 2,204 | 0,064 |
| Patient satisfaction | 1,449 | 0,022 |
| Trust | 3,363 | 0,570 |
|  | | | | | |
| Perceived image of hospital | Behavioral intention | 1,78 | 0,679 | 0,078 | 0,534 |
| Hospital-patient communication | 2,041 | 0,080 |
| Patient satisfaction | 1,436 | 0,009 |
| Trust | 1,263 | 1,662 |
|  | | | | | |
| Trust | Perceived image of hospital | 1.000 | 0,186 | 0,228 | 0,095 |
|  | | | | | |
| Trust | Hospital-patient communication | 1.000 | 0,150 | 0,176 | 0,072 |
|  | | | | | |
| Trust | Patient satisfaction | 1.000 | 0,059 | 0,063 | 0,038 |

When examining the R2 values of the model, the independent variables explain approximately 88% of loyalty, 68% of behavioral intention, 19% of perceived image of hospital, 15% of hospital-patient communication, and 0.06% of patient satisfaction (Table 5).

Table 5 presents the effect size (f2) values. Effect sizes are categorized into small, medium, and large categories (Cohen, 1988). An effect size of 0.02 is small, 0.15 is medium, and 0.35 is large. Upon examining the effect size coefficients (f2), it has been determined that the impact of behavioral intention and trust on loyalty is substantial. However, the influence of perceived image of hospital, hospital-patient communication, and patient satisfaction on loyalty is relatively low.

Regarding behavioral intention, the effect of trust is significant, while the impact of perceived image of hospital and hospital-patient communication are relatively minor. The effect of trust on both perceived image of hospital and hospital-patient communication is of moderate magnitude. However, the effect of trust on patient satisfaction is at a lower level.

The computed cross-validated redundancy coefficients (Q2) for endogenous variables greater than zero indicate that the structural model possesses predictive power for these endogenous variables28,33. Given that the Q2 values in Table 5 are greater than zero, it can be stated that the structural model can predict the factors of loyalty, behavioral intention, perceived image of hospital, hospital-patient communication, and patient satisfaction.

**3.3 Path Coefficients and Hypothesis Testing**

To assess the significance of PLS-SEM path coefficients, 5000 subsamples were drawn using resampling (bootstrapping), and t-values were calculated accordingly. This resampling approach helps determine whether the path coefficients obtained through PLS-SEM are statistically significant.

**TABLE 6** Direct effect coefficients

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Variables** | | **β** | **SH** | **T** | **P** | **Result** |
| H1. Behavioral intention | Loyalty | 0,484 | 0,060 | 8,045 | 0,000 | Supported |
| H2. Perceived image of hospital | 0,121 | 0,042 | 2,916 | 0,004 | Supported |
| H3. Hospital-patient communication | -0,134 | 0,048 | 2,794 | 0,005 | Supported |
| H4. Patient satisfaction | 0,063 | 0,042 | 1,505 | 0,132 | Not Supported |
| H5. Trust | 0,490 | 0,065 | 7,501 | 0,000 | Supported |
| H6. Perceived image of hospital | Behavioral intention | -0,211 | 0,060 | 3,530 | 0,000 | Supported |
| H7. Hospital-patient communication | 0,229 | 0,067 | 3,423 | 0,001 | Supported |
| H8. Patient satisfaction | -0,064 | 0,047 | 1,359 | 0,174 | Not Supported |
| H9. Trust | 0,821 | 0,036 | 22,499 | 0,000 | Supported |
| H10. Trust | Perceived image of hospital | 0,431 | 0,054 | 8,013 | 0,000 | Supported |
| H11. Trust | Hospital-patient communication | 0,387 | 0,056 | 6,885 | 0,000 | Supported |
| H12. Trust | Patient satisfaction | 0,243 | 0,056 | 4,304 | 0,000 | Supported |

Note: β = Beta Coefficient; SE = Standard Error; T = t-Statistic; P = Significance Value

As seen in Table 6, loyalty is significantly influenced by behavioral intention (β=0.484; p<0.01), perceived image of hospital (β=0.121; p<0.01), hospital-patient communication (β=-0.134; p<0.01), and trust (β=0.490; p<0.01).

Behavioral intention is influenced by perceived image of hospital (β=-0.211; p<0.01), hospital-patient communication (β=0.229; p<0.01), and trust (β=0.821; p<0.01).

Additionally, trust also influences perceived image of hospital (β=0.431; p<0.01), hospital-patient communication (β=0.387; p<0.01), and patient satisfaction (β=0.243; p<0.01).

Thus, except for hypotheses H4 and H8, the other hypotheses (H1, H2, H3, H5, H6, H7, H9, H10, H11, H12) are supported.

**Testing Mediation Effects**

The steps outlined by Zhao et al. (2010), as cited by Hair et al.’s29, were followed for conducting the mediation model analysis.



**Fig. 2** General mediation model29

The presence and magnitude of a mediating effect are associated with the values p1, p2, and p3. In complementary mediation, both the indirect effect (p1 \* p2) and the direct effect (p3) are significant, and since the products are positive, they have the same sign. In competitive mediation, both indirect and direct effects are significant, but the products are negative, leading to different signs (Figure 2).

**TABLE 7** Significance analysis of indirect effects

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Indirect effect** | **December of confidence** | | **T** | **P** | **Result** |
|  | **5.0%** | **95.0%** |
| H13. T → HPC → L | -0.030 | -0.056 | -0.009 | 2.121 | 0.017 | Supported |
| H14. T → PS → L | 0.011 | -0.001 | 0.027 | 1.286 | 0.099 | Not Supported |
| H15. T → PIH → L | 0.036 | 0.016 | 0.060 | 2.685 | 0.004 | Supported |
| H16. T → BI → L | 0.342 | 0.279 | 0.414 | 8.433 | 0.000 | Supported |
| H17. T → HPC → BI → L | 0.028 | 0.014 | 0.047 | 2.762 | 0.003 | Supported |
| H18. T → PS → BI → L | -0.004 | -0.013 | 0.002 | 0.973 | 0.165 | Not Supported |
| H19. T → PIH → BI → L | -0.025 | -0.042 | -0.012 | 2.731 | 0.003 | Supported |

Note: T = t-Statistic; P = Significance Value T: Trust, PS: Patient Satisfaction, HPC: Hospital-Patient Communication, PIH: Perceived image of hospital , BI: Behavioral Intention, L: Loyalty.

As seen in Table 6, it is determined that the dependent variable, trust, significantly influences loyalty (Trust → Loyalty). This direct relationship indicates the significance of the direct effect.

Table 7 also demonstrates the importance of indirect relationships.

1. The indirect path from trust to loyalty through hospital-patient communication is significant. In other words, hospital-patient communication plays a mediating role between trust and loyalty. The significant negative direct and indirect effects suggest the presence of a competitive partial mediator (H13 supported).
2. The indirect path from trust to loyalty through patient satisfaction is not significant. It can be concluded that patient satisfaction does not mediate between trust and loyalty. While the direct effect of trust on loyalty is significant, the indirect effect is not significant. Therefore, only a direct effect exists, and no mediating effect exists (H14 not supported).
3. The indirect path from trust to loyalty through perceived image of hospital is significant. Perceived image of hospital serves as a mediator between trust and loyalty. The significant positive direct and indirect effects indicate the presence of a complementary partial mediator (H15 supported).
4. The indirect path from trust to loyalty through behavioral intention is significant. Behavioral intention acts as a mediator between trust and loyalty. The significant positive direct and indirect effects indicate the presence of a complementary partial mediator (H16 supported).
5. The indirect path from trust to loyalty through hospital-patient communication and behavioral intention is significant. Hospital-patient communication and behavioral intention play a mediating role between trust and loyalty. The significant positive direct and indirect effects suggest the presence of a complementary partial mediator (H17 supported).
6. The indirect path from trust to loyalty through patient satisfaction, and behavioral intention is insignificant. It can be suggested that patient satisfaction and behavioral intention do not act as mediators. While the direct effect is significant, the indirect effect is not significant. Therefore, only a direct effect exists, and no mediating effect exists (H18 not supported).
7. The indirect path from trust to loyalty through perceived image of hospital and behavioral intention is significant. Perceived image of hospital and behavioral intention mediate trust and loyalty. The significant negative direct and indirect effects suggest the presence of a competitive partial mediator (H19 supported).
8. **DISCUSSION AND CONCLUSIONS**

In recent years, within a dynamic environment, the importance of patient loyalty has increasingly grown for healthcare organizations providing services in changing and evolving internal and external environmental conditions. Maintaining existence, gaining competitive advantage, increasing market share, and achieving strategic superiority for healthcare organizations heavily depend on patient loyalty34,35. Considering the competition, success in healthcare services relies on possessing excellent technical skills among employees and ensuring patient satisfaction, encouraging them to choose the hospital again36. This study examines the mediating role of social media usage and behavioral intention in the relationship between trust and patient loyalty, based on the widely used Theory of Planned Behavior model in social sciences. The scope of the study includes social media users. Participants completed the relevant survey by considering the most recent hospital they received services from (public hospital-private hospital). Accordingly, it was determined that 52.7% of the participants received services from a public hospital, while 47.3% received services from a private hospital. Therefore, it can be suggested that both hospital preferences are in close proportion.

In this study, it has been determined that trust directly impacts patient loyalty. The study found that social media usage (excluding patient satisfaction) mediates between trust and loyalty, and behavioral intention also acts as a mediator between trust and loyalty. Simultaneously, both social media usage and behavioral intention were found to mediate the relationship between trust and loyalty. Based on the findings, it can be concluded that trust is crucial for loyalty, and social media and behavioral intention mediate this relationship. A study conducted with 175 patients in a private healthcare unit in Portugal revealed that patient satisfaction affects patient trust, and trust influences loyalty37. In a study involving tertiary patients in China, it was found that trust significantly affects loyalty. According to the structural equation model, both satisfaction and trust variables mediate the relationship between loyalty and hospital service quality1. Another study conducted in private dental clinics in China found that satisfaction affects loyalty, but clinic brand image does not have an effect38. In a study conducted by Shabbir et al. (2016) with patients admitted to public and private hospitals in Pakistan, it was determined that patient satisfaction has a positive relationship with patient loyalty, and patient satisfaction also mediates the relationship between health service quality and patient loyalty39. Gambarov et al.40 (2017) in Albania found a significant relationship between trust and patient loyalty. Tosyalı et al.20, in their study with social media users in Turkey, identified that patient satisfaction shared on social media plays a mediating role between predictor variables (patient trust, strength of hospital-patient communication on social media, perceived image of hospital on social media) and patient loyalty. In correlation analysis, significant relationships were also found between patient loyalty and patient trust, hospital-patient communication, and perceived image of hospital. Ganiyu et al.9 argued that satisfaction alone does not create a loyal customer base, and in theory and practice, trust emerges as an important precursor to loyalty. Singh et al. (2023) proposed that trust will lead to satisfaction, and trust factors (reduced anxiety, belief in the service provider, reduced risk perceptions, and knowing what to expect) will contribute to increased satisfaction4. In a hospital-based study, Trisno and Berlianto41 found that trust does not directly affect loyalty, while brand image and patient satisfaction influence loyalty.

Brand image is considered one of the key factors influencing how service recipients perceive products or services. Brand image, used to create awareness among potential customers and attract new ones, is the perception that forms and settles in consumers' minds regarding specific products and services11. From this perspective, in the context of this study, the impact of perceived image from social media dimensions on loyalty, both directly and through mediation, becomes significant for organizations. Satisfaction, regarded as a critical topic in the marketing field, is closely related to loyalty, and satisfaction is believed to contribute to building loyalty among patients5,37. However, in this study, it was found that neither direct nor mediating effects of patient satisfaction from social media dimensions have an impact on loyalty. There could be several reasons for this finding, including the possibility that respondents did not fully recall their service experiences while completing the survey, they might not have experienced a service level sufficient to generate loyalty, or the diversity of services offered at the most recent hospital visited. Selecting a hospital with a limited range of services might lead to a patient not developing loyalty to that hospital, even if their satisfaction level is above average. They might prefer hospitals with a broader range of services. Studies in the literature suggest that believing that satisfied customers are always loyal can be misleading37,42,43. Liu et al.6 (2021) have attributed the impact of satisfaction on loyalty to the high degree of specialization in the medical industry. According to the authors, when making choices, patients compare multiple hospitals and ultimately prefer the one that can provide them with the maximum benefit for their specific condition. Therefore, even if patients are satisfied with the service, it might not necessarily increase their loyalty. In their study with private clinic patients, Moreira and Silva37 did not find a statistically significant effect between patient satisfaction and commitment or between patient commitment and loyalty. The authors concluded that even though patients receiving private health services were satisfied, it did not have an impact on commitment, and commitment did not have an impact on loyalty. As a result, they suggested that these patients might be willing to discontinue using private services. One of the reasons they provided was quicker access to the same services in competing institutions.

Ramli and Sjahruddin19 also found in their study that patient satisfaction did not directly affect patient loyalty. Still, it had an indirect effect on loyalty through the mediating variable of trust. The study determined that having high patient trust had a significant impact on patient loyalty. The authors attributed the lack of a significant direct effect of satisfaction on loyalty to the absence of a mechanism for patients to openly communicate their complaints and concerns. A study conducted with patients of a public hospital in China found that patient satisfaction did not directly affect patient loyalty. Still, it indirectly affected loyalty through the trust variable6. Different studies contradict our study findings and show a relationship between patient satisfaction and loyalty, highlighting the significant role of patient satisfaction as a determinant of loyalty44,45. Fatima et al.5 conducted a study in Pakistan with patients from private hospitals and found that patient satisfaction mediated between service quality and patient loyalty. Similar findings were reported by Caruana (2002). In a study by Deniz and Çimen (2023) conducted with individuals receiving services from private hospitals in Turkey (online), it was determined that the perceived corporate image had both a direct and an indirect effect on patient loyalty through patient satisfaction. In addition to the mentioned studies, significant relationships between patient satisfaction and loyalty have been identified in the healthcare sector46–48.

**4.1 Managerial Implications**

Acquiring new patients is initially a costly endeavour. Therefore, enhancing brand value and loyalty to retain existing service recipients is still considered one of the most effective business strategies8. The extensive reach, cost-effectiveness, and popularity of social media and its virtual nature have prompted organizations to utilize these platforms more frequently. Institutions can establish mechanisms through social media platforms to address patients' opinions, suggestions, and issues, emphasizing prompt responsiveness. These mechanisms should offer incentives (such as priority in the next service acquisition, service convenience, discounts on healthcare fees, etc.) to enhance service recipients' motivation and contributions to management. However, social media platforms may not always be an ideal environment for organizations. As service recipients become more empowered, organizations can face a potentially risky environment. Organizations must devise strategies to address this. Indeed, information generated by negative users can be highly perilous49.

In conclusion, hospitals should strive to enhance their visibility on social media and cultivate trust-based relationships to foster loyalty. By providing accurate information on service accessibility, utilization, waiting times, shared experiences, physicians' expertise, hospital facilities, and health-related matters on their websites and social media platforms, hospitals can bolster patients' confidence in the institution, ultimately elevating their loyalty.

**4.2 Limitations And Future Research Directions**

The data for this study were collected from social media users who consented to participate in the study in the Web 2.0 environment. Therefore, the study's findings cannot be generalized. It is recommended that future research be conducted with patients from hospitals of different ownership types in face-to-face settings. As a cross-sectional study, this research design necessitates longitudinal analysis to evaluate causality between variables and time-dependent effects. The study examined the relationship between loyalty, trust, behavioral intention and social media variables. In future studies, it is suggested to incorporate variables such as service quality, patient complaints, and healthcare costs into the model.

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**CONFLICT OF INTEREST ST ATEMENT**

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**DATA AVAILABILITY ST ATEMENT**

The data are not publicly available due to privacy reasons.

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