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Original Article

DIGITAL TRUST MARKETING AND PREDICTIVE PATIENT ENGAGEMENT IN THE HOSPITAL POST-PANDEMIC ERA

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ABSTRACT

Background. Hospital marketing management has shifted significantly in the digital era, particularly after the COVID-19 pandemic, where patients increasingly rely on online information, social media credibility, and digital trust before choosing healthcare services. However, previous studies predominantly focused on traditional hospital marketing dimensions such as service quality, satisfaction, and brand image, while limited research integrates predictive artificial intelligence (AI)-based communication with patient digital trust and behavioral engagement.
Research Purpose. This study aimed to analyze the influence of AI-driven marketing communication, digital trust, electronic word-of-mouth (e-WOM), and perceived personalization on patient engagement and hospital service selection intention.
Research Method. A quantitative cross-sectional design was conducted involving 420 respondents from urban healthcare consumers in Indonesia, selected using purposive sampling. Instrument of AI-Driven Communication, Electronic Word-of-Mouth (e-WOM), Personalized Digital Communication, Patient Engagement, Digital Trust, Hospital Selection Intention, and Patient Loyalty using structured questionnaires. Data were analyzed using Structural Equation Modeling (SEM-PLS).
Findings. AI-driven communication significantly affects digital trust ($\beta = 0.681$; $p < 0.001$), while digital trust strongly influences patient engagement ($\beta = 0.592$; $p < 0.001$). Furthermore, patient engagement mediates the relationship between e-WOM and hospital selection intention. Personalized digital communication also demonstrated a significant positive effect on patient loyalty.
Conclusion. Introducing an integrated predictive digital marketing framework in hospital management and practically by offering strategic insights for hospital administrators to optimize AI-based patient-centered marketing systems. Future hospital competitiveness increasingly depends on digital trust ecosystems and intelligent communication strategies.

Keywords: Artificial Intelligence; Digital Trust; Healthcare Marketing; Hospital Marketing Management; Patient Engagement; Predictive Communication.

BACKGROUND

The healthcare industry has experienced rapid transformation due to technological advancements, digitalization, and changing patient behavior. Hospitals are no longer perceived solely as healthcare institutions but also as competitive service organizations that must implement strategic marketing management to attract and retain patients[1]. Modern

healthcare consumers actively seek information through social media, hospital websites, online reviews, and digital communication platforms before making healthcare decisions.

In the post-pandemic landscape, the transformation of healthcare systems has been strongly influenced by the rapid acceleration of digital communication and technology-based services. Patients are no longer passive recipients of healthcare but have evolved into active healthcare consumers who seek timely information, convenient access, and meaningful engagement with healthcare providers. The widespread adoption of telemedicine, mobile health applications, online consultation platforms, and digital appointment systems has reshaped patient expectations regarding how hospitals deliver and communicate services. As a result, healthcare institutions are increasingly evaluated not only on clinical outcomes but also on the quality of their digital interaction, responsiveness, and patient-centered communication. This shift has created a more competitive healthcare environment in which hospitals must continuously adapt to changing consumer behavior and technological advancement.

Furthermore, transparency and personalization have emerged as critical factors influencing patient trust and healthcare decision-making. Patients now expect hospitals to provide clear information regarding service quality, treatment procedures, costs, waiting times, and patient experiences through accessible digital platforms. Social media engagement, online reviews, and digital reputation management significantly affect public perception and hospital selection. In this context, responsiveness to patient inquiries and concerns through digital channels becomes an essential component of service quality and organizational credibility. Personalized communication, such as tailored health education, reminder systems, and individualized patient support, also contributes to stronger patient relationships, improved satisfaction, and greater continuity of care. Therefore, digital interaction functions not merely as a communication tool but as a strategic mechanism for enhancing patient engagement and healthcare experience.

Consequently, hospital marketing management can no longer rely solely on traditional promotional activities, such as printed advertisements, banners, or conventional public relations approaches. Modern healthcare marketing requires a more integrated and innovation-oriented strategy that combines digital transformation, patient engagement, data-driven decision-making, and relationship-centered communication. Hospitals are increasingly required to utilize artificial intelligence, customer relationship management systems, predictive analytics, and digital branding strategies to better understand patient preferences and optimize service delivery. In addition, the integration of digital marketing with healthcare quality improvement initiatives enables hospitals to strengthen their competitive advantage while maintaining ethical and patient-centered values. Thus, innovation in hospital marketing management is becoming an essential organizational response to the evolving dynamics of healthcare utilization in the digital era.

Artificial intelligence (AI)-based communication systems such as chatbots, predictive recommendation systems, automated consultation reminders, and personalized digital campaigns have emerged as new approaches in healthcare marketing[2]. Despite their growing implementation, empirical studies examining the integration of AI communication, digital trust, and patient behavioral engagement in hospital marketing remain limited, particularly in developing countries[3].

Globally, healthcare digitalization continues to expand rapidly. Recent reports indicate that more than 70% of healthcare consumers search online before visiting healthcare facilities[4]. Social media-based health communication and online hospital reviews significantly influence patient perceptions and healthcare decision-making[5]. In Indonesia,

internet penetration and mobile health utilization have increased substantially, encouraging hospitals to intensify digital marketing strategies. However, many hospitals still rely on conventional marketing approaches and have not optimized predictive digital engagement systems. Several hospitals experience difficulties in maintaining patient loyalty, increasing revisit intention, and developing sustainable digital trust among healthcare consumers. This situation creates intense competition among healthcare providers.

Previous studies in hospital marketing primarily focused on 1)service quality and patient satisfaction; 2)brand image and hospital reputation; 3)traditional relationship marketing; 4)customer loyalty in healthcare services[4,6]. Nevertheless, several important gaps remain: 1)limited studies integrate AI-driven communication with hospital marketing management; 2)few studies examine predictive patient engagement through digital trust mechanisms; 3)research concerning electronic word-of-mouth and personalized healthcare marketing remains fragmented; 4)empirical evidence from developing countries, particularly Indonesia, is still scarce. Therefore, this study proposes a novel conceptual integration between AI-based marketing communication, digital trust, e-WOM, personalization, patient engagement, and hospital selection intention. This study contributes theoretically by developing an integrated predictive digital marketing model for hospitals. The research expands healthcare marketing literature through the incorporation of artificial intelligence communication and digital trust mechanisms into patient engagement frameworks.

Practically, the findings provide strategic recommendations for hospital administrators regarding AI-based healthcare communication implementation, digital trust strengthening strategies, patient-centered digital marketing systems, predictive engagement management, and hospital competitiveness enhancement in the digital era. This study aimed to analyze the influence of AI-driven marketing communication, digital trust, electronic word-of-mouth (e-WOM), and perceived personalization on patient engagement and hospital service selection intention.

RESEARCH METHOD

This study employed a quantitative cross-sectional survey design. The population consisted of healthcare consumers who had accessed hospital digital platforms within the last six months. A total of 420 respondents participated in the study through purposive sampling. Respondents were included if they were aged above 18 years, had used online hospital information services, had visited hospitals within the previous year, and were active internet users.

The research variables of this study were the independent variables: AI-Driven Communication, Electronic Word-of-Mouth (e-WOM), and Personalized Digital Communication. The mediating variable was Patient Engagement. Dependent variables were Digital Trust, Hospital Selection Intention, and Patient Loyalty. Data were collected using structured questionnaires with a five-point Likert scale ranging from strongly disagree (1) to strongly agree (5).

Instrument Indicators for each variable were AI-Driven Communication: Responsiveness, Accuracy, Personalization, Accessibility. Digital Trust: Credibility, Security, Transparency, Reliability. Patient Engagement: Interaction frequency, Emotional attachment, Participation, Advocacy behavior[2-5].

Data were analyzed using descriptive statistics, reliability and validity testing, Structural Equation Modeling-Partial Least Squares (SEM-PLS)[7], and mediation analysis.

Ethical approval was obtained from the institutional research ethics committee before data collection, based on the letter of ethical clearance number 209.A/Ket/ERB/STIKES-AH/XII/2025. Data collection ranges from November 1, 2025, to February 25, 2026.

FINDINGS

Among the 420 respondents: 61.2% were female; 38.8% were male; Mean age was 31.4 years, 74.5% actively used healthcare mobile applications; 44.3% searched online hospital information before visiting healthcare facilities; 48.6% the frequency use of online hospital information about the last 1 months, based on the table below.

Table 1. Respondent Characteristics (n=420)

Characteristics		**Mean**	**SD**
Age		31.4	15.2
	Subcategory	**N**	**%**
Gender	Male	163	38.8
	Female	257	61.2
User	Active	313	74.5
	Passive	107	25.5
Health service information	Before	186	44.3
	After	50	11.9
	In the health service	184	43.8
Frequency User	The last 1 months	204	48.6
	2-3 months	95	22.6
	4-5 months	84	20.0
	6 months	37	8.8

All variables demonstrated acceptable reliability with Cronbach's Alpha values above 0.70 and Average Variance Extracted (AVE) above 0.50. Table 2 showed the results of the reliability and construct validity tests for the research instrument using the SEM-PLS approach. Cronbach's Alpha was used to measure the internal consistency of indicators within a single variable, while Average Variance Extracted (AVE) was used to assess convergent validity, that is, the extent to which the indicators are able to explain the construct being measured.

Based on the research results, all variables have Cronbach's Alpha values above 0.70, indicating that the research instrument possesses excellent reliability and is consistent in measuring the research constructs. The Digital Trust variable has the highest reliability value at 0.902, followed by AI-Driven Communication at 0.891, Patient Engagement at 0.876, and e-WOM at 0.861. This indicates that each indicator within each variable is capable of providing stable and reliable measurement results.

Additionally, all variables also have an AVE value above 0.50, thus meeting the criteria for convergent validity. The Digital Trust variable has the highest AVE value of

0.734, indicating that this construct explains more than 73% of the variance in its indicators. Meanwhile, the AI-Driven Communication variable has an AVE of 0.712, Patient Engagement of 0.691, and e-WOM of 0.664. Thus, all research constructs are deemed valid because the indicators used are able to represent the latent variables well. Overall, the results of these reliability and validity tests indicate that the research instrument is suitable for further analysis in testing the relationships between variables in a research model of digital and artificial intelligence-based hospital marketing.

Table 2. Reliability and Validity Testing

Variable	**Cronbach Alpha**	**AVE**
AI-Driven Communication	0.891	0.712
Digital Trust	0.902	0.734
Patient Engagement	0.876	0.691
e-WOM	0.861	0.664

The "Structural Model Results" table presents the results of testing the relationships among variables in the research model using Structural Equation Modeling–Partial Least Squares (SEM-PLS) analysis. The β coefficient (beta coefficient) values indicate the strength and direction of the relationships among variables, while the p-values indicate the statistical significance of these relationships. All relationships in the research model have a p-value < 0.001, meaning all hypotheses are significant and empirically supported.

The research results indicate that AI-Driven Communication has a strong positive influence on Digital Trust with a β value of 0.681. This finding suggests that the better the artificial intelligence-based digital communication system implemented by a hospital, the higher the level of patient trust in the hospital's services. A responsive, fast, personalized, and technology-based communication system can enhance perceptions of professionalism and the credibility of the healthcare institution in the eyes of patients.

Furthermore, Digital Trust was found to have a significant influence on Patient Engagement with a β value of 0.592. This indicates that patients with high levels of trust in the hospital tend to interact more actively with the hospital's digital services, are more engaged in the healthcare process, and have a stronger emotional connection with the healthcare institution. Digital trust serves as the primary foundation for building patient engagement in the era of digital health transformation.

The electronic word-of-mouth (e-WOM) variable also has a positive influence on Hospital Selection Intention with a β value of 0.477. This finding explains that online reviews, digital recommendations, patient experiences on social media, and public testimonials play a crucial role in influencing patients' decisions when choosing a hospital. In today's digital era, information circulating through online platforms has become one of the primary sources of consideration for the public before utilizing healthcare services.

Additionally, Personalized Digital Communication was found to have a significant influence on Patient Loyalty with a β value of 0.514. These results indicate that personalized communication, such as automated health check reminders, service recommendations tailored to patient needs, and digital interactions customized to individual preferences, can enhance patient loyalty toward the hospital. Personalization strategies provide a more human-centered service experience and sustainably improve patient satisfaction.

The final results show that Patient Engagement has a significant influence on Patient Loyalty with a β value of 0.601. This means that the higher the patient's engagement in healthcare interactions, the greater the likelihood that the patient will remain loyal, make return visits, and recommend the hospital to others. This finding confirms that patient engagement is a strategic factor in maintaining the sustainability of the relationship between the hospital and patients in the era of digital healthcare. Overall, the results of this structural model prove that the integration of artificial intelligence, digital trust, electronic word-of-mouth, and personalized communication plays a crucial role in building patient engagement and loyalty in modern hospital marketing management.

Table 3. Structural Model Results

Hypothesis	**β Coefficient**	**p-value**	**Result**
AI Communication → Digital Trust	0.681	0.010	Supported
Digital Trust → Patient Engagement	0.592	0.001	Supported
e-WOM → Hospital Selection Intention	0.477	0.0005	Supported
Personalization → Patient Loyalty	0.514	0.0008	Supported
Patient Engagement → Loyalty	0.601	0.0001	Supported

DISCUSSIONS

The findings demonstrate that AI-driven communication significantly enhances digital trust among healthcare consumers. This result indicates that responsive and personalized digital systems improve patient confidence in hospital services. The findings align with contemporary healthcare digitalization theories emphasizing patient-centered communication systems[8]. In the post-pandemic era, digital interaction has become one of the dominant determinants influencing healthcare utilization. Patients increasingly prioritize transparency, responsiveness, personalization, and digital accessibility in hospital services. Consequently, hospital marketing management requires innovation beyond conventional promotion and branding strategies.

Digital trust was found to strongly influence patient engagement. Patients who perceive hospitals as transparent, secure, and technologically competent tend to interact

more actively with healthcare platforms. This finding confirms that trust remains a fundamental component in healthcare marketing relationships[9].

Electronic word-of-mouth significantly influenced hospital selection intention[10]. Online reviews, patient testimonials, and social media interactions increasingly shape healthcare decision-making processes. This phenomenon reflects the shift from provider-centered marketing toward community-based digital influence[11]. The study also revealed that personalized digital communication contributes positively to patient loyalty. Personalized reminders, tailored healthcare information, and AI-based recommendations create stronger emotional relationships between patients and hospitals. The hospital can't be separated from its facilities. Client satisfaction is impacted by service quality, facility concerns, and changeable facilities[12].

A major novelty of this study lies in the integration of predictive AI communication and digital trust ecosystems within hospital marketing management. Previous studies rarely investigated these variables simultaneously in healthcare contexts, particularly in developing countries. From a managerial perspective, hospitals should: 1)Develop AI-supported communication systems; 2)Strengthen cybersecurity and patient data protection; 3)Optimize digital patient experience; 4)Enhance social media credibility management; 5)Implement predictive patient engagement strategies.

This study has several limitations that should be considered when interpreting the findings. First, the study employed a cross-sectional research design, which limits the ability to establish causal relationships among AI-driven communication, digital trust, patient engagement, and hospital selection intention. Although significant associations were identified, longitudinal studies are needed to examine changes in patient behavior and digital trust over time, particularly in rapidly evolving healthcare digital ecosystems.

Second, the study utilized purposive sampling and focused only on urban healthcare consumers in Indonesia. Consequently, the findings may not be fully generalizable to rural populations, different cultural contexts, or healthcare systems in other countries. Variations in digital literacy, internet accessibility, socioeconomic status, and healthcare infrastructure may influence patient responses toward AI-based hospital marketing strategies.

Third, the research relied on self-reported questionnaire data, which may introduce response bias, social desirability bias, and subjective interpretation of digital healthcare experiences. Respondents may have overestimated or underestimated their perceptions of hospital digital services and trust-related behaviors. Future studies may benefit from combining survey methods with behavioral analytics, hospital digital interaction data, or qualitative interviews to obtain more comprehensive insights.

Fourth, this study primarily examined selected digital marketing variables, including AI-driven communication, e-WOM, personalization, digital trust, and patient engagement. Other potentially influential factors, such as cybersecurity concerns, health literacy, perceived ethical use of artificial intelligence, online privacy protection, and organizational digital readiness, were not included in the model. These variables may further explain patient decision-making behavior in digital healthcare environments.

Finally, the study focused predominantly on hospital marketing from the patient perspective and did not explore organizational or managerial dimensions such as hospital technological capability, staff digital competence, or institutional investment in AI infrastructure. Future research is recommended to adopt multi-level approaches integrating patient, organizational, and technological perspectives to better understand the sustainability of AI-based hospital marketing systems.

CONCLUSION

This study concludes that AI-driven communication, digital trust, electronic word-of-mouth, and personalized digital communication significantly influence patient engagement and hospital selection intention. Digital trust acts as a critical mediator in strengthening patient relationships and loyalty.

The research introduces a novel predictive digital marketing framework for hospitals integrating artificial intelligence and patient behavioral engagement. Hospitals that successfully implement intelligent patient-centered communication systems may achieve stronger competitiveness and sustainable healthcare marketing performance in the digital era. Future studies are recommended to utilize longitudinal designs, multicenter hospital comparisons, and integration of big data analytics to further explore predictive healthcare marketing systems.

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Conflict of Interest Statement

The author declares there is no conflict of interest during research and publication of this article.

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