



# The Effect of Digital Marketing and Digital Administration Policies on Patient Retention through Health Service Satisfaction at Advent Hospital Manado

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**Abstract.** The rapid digital transformation in healthcare has driven hospitals to adopt digital marketing and digital administration policies to improve patient satisfaction and retention. However, empirical evidence on the mechanisms linking these policies to patient retention remains limited, particularly in Indonesian private hospitals. This study examines the effects of digital marketing and digital administration policies on patient retention, with healthcare service satisfaction as a mediating variable, at Advent Hospital Manado. A quantitative cross-sectional survey was conducted using a structured questionnaire, and data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with all constructs specified as reflective. The respondents were predominantly female, with two dominant age groups (25–35 years and >55 years), indicating different digital behavior patterns. Facebook was identified as the main referral platform, reflecting its effectiveness in reaching adult and elderly patients. Overall, respondents reported high and homogeneous perceptions of digital services, suggesting positive evaluations, although a potential ceiling effect should be considered. The findings indicate that digital marketing and digital administration policies positively influence patient satisfaction, which in turn enhances patient retention. Demographic characteristics and digital literacy shape patient perceptions, highlighting the importance of optimizing digital platforms and administrative processes to strengthen long-term patient retention. This study contributes to the achievement of Sustainable Development Goal (SDG) 3 by highlighting how digital healthcare strategies enhance patient satisfaction and continuity of care, thereby promoting healthy lives and well-being. In addition, the findings support SDG 9 by demonstrating the role of digital marketing and digital administrative innovations in strengthening resilient healthcare service infrastructure and fostering innovation within private hospitals.

**Keywords:** Digital Marketing Policy; Digital Administration; Patient Satisfaction; Patient Retention; Hospital Services

## 1. Introduction

The acceleration of digital transformation within the healthcare sector has emerged as a strategic necessity for hospitals and clinics as they adapt to evolving patient behaviors and rapid technological innovation. Beyond improving internal operational performance, digitalization increasingly functions as a critical mechanism for fostering sustained relationships between healthcare providers and patients. Central to this transformation are digital marketing initiatives and the digitalization of healthcare administration, both of which

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contribute to expanding service accessibility while reinforcing patient retention as a key indicator of effective hospital management and long-term patient loyalty (Kotler et al., 2021).

Digital marketing initiatives substantially enhance patient engagement and institutional visibility through social media utilization, analytics-driven promotional strategies, and responsive online communication channels (Chaffey & Ellis-Chadwick, 2022). Concurrently, the adoption of digital administrative systems such as online appointment scheduling, electronic health records, and the automation of pharmaceutical administration streamlines service delivery and reduces procedural barriers for patients (Alawi & Ariyani, 2024). Empirical evidence provided by Alawi and Ariyani (2024) demonstrates that digital system implementation in healthcare settings significantly improves both operational efficiency and patient satisfaction, thereby supporting the premise that digital service innovation enhances the overall patient experience.

Within this framework, Adventist Hospital Manado represents a healthcare institution that has actively pursued digital policy implementation. Internal institutional data indicate a steady increase in digital engagement, with Instagram postings rising from 12 in January to 20 by April 2025 and total engagement increasing from 1,178 to 1,907 interactions. Over the same period, patient visits increased from 152 to 208. These trends suggest a potential association between intensified digital marketing efforts and increased patient utilization, aligning with the findings of Santoso et al. (2025), who reported that digital strategies in healthcare settings significantly enhance patient awareness and engagement with hospital services.

Despite growing interest in digital health initiatives, existing studies in Indonesia have predominantly examined service quality perceptions or the short-term effectiveness of digital promotional activities, with limited empirical attention given to sustainability-oriented outcomes such as patient retention (Burhanuddin et al., 2025). From a contemporary management perspective, patient retention reflects the cumulative success of healthcare organizations in cultivating trust and delivering consistently positive service experiences over time (Zeithaml et al., 2020). Nevertheless, digital transformation in Indonesia remains constrained by structural challenges. Deloitte (2024) reported that nearly 80% of healthcare facilities nationwide have yet to fully integrate digital technologies, while approximately 270 million medical records remain physically archived. This evidence highlights a substantial discrepancy between policy intentions and on-the-ground implementation of digital transformation initiatives.

Addressing this gap, the present study investigates the effects of digital marketing policies ( $X_1$ ) and digital healthcare service development ( $X_2$ ) on patient service utilization intensity ( $Y$ ), with patient retention ( $Z$ ) positioned as a mediating construct. The analytical framework employs Structural Equation Modeling–Partial Least Squares (SEM-PLS), which is well suited for examining complex causal relationships among latent variables under conditions of limited sample sizes and non-normal data distributions (Hair et al., 2021). Through this methodological approach, the study aims to generate robust empirical and practical insights into the role of digital policies in strengthening patient loyalty and retention within the broader context of healthcare digital transformation.

## 2. Methods

This study employs a quantitative research design with a descriptive–verificative approach. This approach is applied to examine the causal relationships among digital



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marketing policies, digital administration, healthcare service satisfaction, and patient retention. The data analysis is conducted using the Structural Equation Modeling–Partial Least Squares (SEM-PLS) method.

Data are collected through surveys and structured questionnaires designed to measure patients' perceptions of service quality, the implementation of digital administrative systems, and the influence of digital marketing policies on their satisfaction. The research is scheduled to be conducted from October to November 2025.

The study population comprises all registered patients who visited Adventist Hospital Manado during the period from January to June 2025. A total sample of 87 respondents is determined using a stratified random sampling technique to ensure representative coverage across patient groups.

In this study, patient retention is defined as the dependent variable. Digital marketing policies and digital administration function as the independent variables, while healthcare service satisfaction is positioned as the intervening (mediating) variable.

### 3. Results and Discussion

The distribution of respondents is illustrated in Table 1.

**Table 1.** Distribution of Respondents by Age and Sex Characteristics

Respondent Characteristics	n	(%)
Age (years)		
<25	24	24
25–35	23	23
36–45	17	17
46–55	15	15
Sex		
Male	28	28
Female	72	72
Total	100	100

Based on the data in Table 1, respondent characteristics indicate that the majority of participants were in the younger productive age groups, with 24% aged under 25 years and 23% aged 25–35 years. Respondents aged 36–45 years accounted for 17%, while those aged 46–55 years comprised 15% of the sample. In terms of sex distribution, most respondents were female (72%), whereas males accounted for 28%. A total of 100 respondents participated in this study.

The distribution of respondents based on referral sources is illustrated in Table 2.

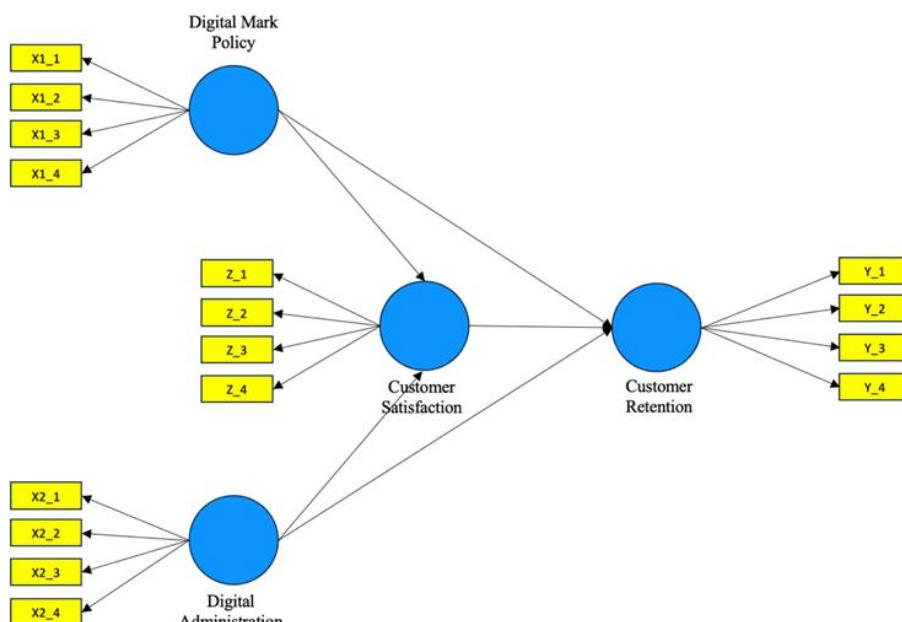
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**Table 2.** Frequency of Referral Sources

Referral Source	Frequency	Percentage
Facebook	50	50%
Google	17	17%
Instagram	13	13%
WhatsApp	20	20%
Total	100	100%

Based on the data in Table 2, referral sources show that Facebook was the most common source of information, accounting for 50% of referrals. This was followed by WhatsApp at 20%, Google at 17%, and Instagram at 13%. In total, 100 respondents were included in this analysis.

The structural model in this study illustrated in Figure 1, examines the relationships between Digital Marketing Policy (X1) and Digital Administration (X2) as independent variables, Service Satisfaction (Z) as a mediating variable, and Patient Retention (Y) as the dependent variable. In addition to direct effects, the model also tests the mediation mechanism, in which Service Satisfaction (Z) acts as a mediator bridging the effects of X1 and X2 on Y. Thus, the model enables a simultaneous assessment of both direct and indirect relationships within the context of digital-based healthcare services.

**Picture 1.** Path of Variable Analysis

The conceptual model illustrates the relationships among Digital Marketing Policy, Digital Administration, Customer Satisfaction, and Customer Retention. Digital Marketing Policy and Digital Administration are treated as exogenous variables, each measured by four indicators. Both variables are hypothesized to have a direct effect on Customer Satisfaction and a direct effect on Customer Retention.

Customer Satisfaction, measured by four indicators, also functions as a mediating variable, influencing Customer Retention. Customer Retention is the endogenous variable in <https://journal.scitechgrup.com/index.php/jsi>

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the model and is measured by four indicators. This framework suggests that improvements in digital marketing strategies and digital administrative services not only directly enhance customer retention but also indirectly strengthen retention through increased customer satisfaction.

All constructs in this study are modeled as reflective constructs, where the indicators are viewed as manifestations of the latent variables rather than the opposite. Reflective modeling is appropriate because theoretical changes in the latent variables are expected to consistently influence changes across all indicators. Digital Marketing Policy (X1) is measured by four indicators, Digital Administration (X2) by four indicators, Service Satisfaction (Z) by four indicators, and Patient Retention (Y) by four indicators, in accordance with the operationalization described in the Methods chapter. This structure then serves as the basis for testing the outer model and inner model using the SEM-PLS approach to assess construct validity, reliability, the strength of structural relationships, and the mediating role within the overall model.

### **3.1. The Effect of Digital Marketing Policy on Service Satisfaction**

The findings suggest that digital marketing policies do not directly influence service satisfaction in healthcare settings, indicating that promotional and online communication activities primarily shape patient awareness rather than evaluative judgments of service quality. Service satisfaction in clinical contexts is largely driven by experiential factors encountered during care delivery, such as communication effectiveness, service speed, and supporting facilities. This pattern is consistent with Expectancy-Disconfirmation Theory, which posits that satisfaction arises from the alignment between expectations and actual service experiences, rather than from pre-service information alone (Oliver, 1980). Similar findings in hospital-based studies have shown that patient satisfaction is more strongly influenced by service reliability and provider-patient interaction than by digital promotion efforts (Putri, 2022; Sari, 2023).

### **3.2. The Effect of Digital Administration on Service Satisfaction**

In contrast, digital administration demonstrates a significant contribution to service satisfaction by reducing procedural complexity and enhancing service efficiency. The digitalization of administrative processes such as online registration, electronic medical records, and system accessibility improves responsiveness and reliability, which are core dimensions of perceived service quality. This finding aligns with the SERVQUAL framework, which emphasizes the importance of process efficiency in shaping satisfaction perceptions (Parasuraman et al., 1988). Consistent with prior healthcare studies, digital administrative systems have been shown to reduce waiting times and service uncertainty, thereby improving patient satisfaction and overall service experience (Setyawan, 2021; Yunita, 2022).

### **3.3. The Effect of Digital Marketing Policy on Patient Retention**

Although digital marketing does not directly affect service satisfaction, it plays a significant role in strengthening patient retention by influencing behavioral intentions and relational continuity. Interactive and consistent digital engagement fosters trust, emotional attachment, and perceived organizational presence, which encourage repeat visits and long-term loyalty. This finding is consistent with Relationship Marketing Theory, which highlights the role of sustained interaction in building durable customer relationships (Morgan & Hunt,



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1994). Empirical studies in healthcare and telemedicine contexts further support the view that educational and interactive digital marketing strategies enhance revisit intention and patient loyalty, even in the absence of immediate satisfaction effects (Nurlita, 2021; Hasan, 2022).

### **3.4. The Effect of Digital Administration on Patient Retention**

The findings confirm that digital administration significantly enhances patient retention, indicating that administrative digitalization functions as a critical determinant of continued service use. By improving efficiency, reducing waiting time, and minimizing procedural uncertainty, digital systems strengthen patients' revisit intentions and word-of-mouth behavior. This result is consistent with the Information Systems Success Model, which links system and service quality to loyalty outcomes (DeLone & McLean, 2003), and aligns with prior evidence showing that administrative digitalization improves both operational efficiency and retention in healthcare settings (Sutanto, 2022; Wicaksono, 2023).

### **3.5. The Effect of Service Satisfaction on Patient Retention**

Service satisfaction emerges as a strong predictor of patient retention (Bobby et al., 2024), reaffirming its central role in explaining repeat utilization in healthcare services. Satisfaction derived from service speed, facilities, and provider communication increases patients' willingness to return and recommend the clinic, consistent with the Service-Profit Chain and customer satisfaction loyalty models. This finding supports prior studies in clinical and hospital contexts demonstrating that satisfaction is a key antecedent of long-term patient loyalty (Wijaya, 2021; Ratnasari, 2023; Bobby et al., 2024).

### **3.6. The Effect of Digital Marketing on Patient Retention via Service Satisfaction**

The mediation analysis reveals an indirect-only mediation effect, indicating that digital marketing influences patient retention through service satisfaction rather than through a direct pathway. Digital marketing operates primarily as a relational reinforcement mechanism that strengthens perceived value and post-service loyalty rather than immediate satisfaction. This pattern aligns with Expectancy-Disconfirmation Theory and customer loyalty formation models, which emphasize the role of informational cues in reinforcing satisfaction-loyalty linkages (Oliver, 1980; Hasan, 2022).

### **3.7. The Effect of Digital Administration on Patient Retention via Service Satisfaction**

Service satisfaction partially and complementarily mediates the relationship between digital administration and patient retention, suggesting that administrative digitalization generates both direct and experiential benefits. By streamlining workflows and enhancing service reliability, digital administration improves satisfaction, which in turn amplifies retention intentions. This finding is consistent with the Information Systems Success Model and the Service-Profit Chain, reinforcing the view that administrative digitalization serves as a primary pathway linking operational efficiency, patient experience, and long-term retention (DeLone & McLean, 2003; Sutanto, 2022).

## **Conclusions**

Based on the research objectives and structural model analysis, several conclusions can be drawn. Digital administration has a significant and strongest influence on service satisfaction and patient retention, confirming its role as a key experience builder that



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strengthens patient loyalty. Digital marketing does not significantly affect service satisfaction, indicating that satisfaction is driven more by actual service experiences than by digitally formed expectations. However, digital marketing has a significant effect on patient retention, suggesting its primary role in shaping behavioral intention and long-term patient relationships rather than clinical service quality evaluations. Service satisfaction partially mediates the relationship between digital administration and digital marketing on patient retention, indicating that retention is formed through both direct and indirect pathways. Overall, this study reinforces the distinction that digital marketing does not equate to service satisfaction, while digital administration serves as a core mechanism for patient value creation and service sustainability in medium-scale healthcare facilities.

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## Conflicts of Interest

The authors declare no conflict of interest.

## References

Agarwal, S. (2024). *Influence of Digital Marketing Strategies on Consumer Engagement in the Healthcare Industry*. *Journal of Visual Performing Arts*, 5(2), 762-767. DOI: 10.29121/shodhkhosh.v5.i2.2024.3281.

Alalwan, A. A., Dwivedi, Y. K., & Rana, N. P. (2020). *Factors Influencing Adoption of Mobile Banking by Jordanian Bank Customers: Extending UTAUT2 with Trust*. *International Journal of Information Management*, 37(3), 99-110.

Alharbi, H. F., Alzahrani, N. S., Almarwani, A. M., Asiri, S. A., & Alhowaymel, F. M. (2022). *Patients' Satisfaction with Nursing Care Quality Associated Factors: A Cross-sectional Study*. *Nursing Open*, 10:3253-3262. DOI: 10.1002/nop2.1577.

Alawi, A., & Ariyani, N. D. (2024). Pengimplementasian Sistem Digital dalam Meningkatkan Aksesibilitas dan Efisiensi Pelayanan Kesehatan di Rumah Sakit. *Jurnal Ilmu Kesehatan*, 3(1), 44-53.

American Hospital Association [AHA]. (2021). *Building Patient Loyalty with Effective Digital Engagement Strategies. Practical Report Summarizing Digital Engagement Practices*.

Parengkuan, B.A., Bernarto, I., Wuisan, D.S.S., Palupi, Y.C., Tahulending, J.M.F. (2024). Factors associated with patient satisfaction and behavioral intention by using the partial least squares structural equation modeling (PLS-SEM). *Holistik Jurnal Kesehatan*, Volume 18, No.3, Mei 2024: 369-376. DOI: <https://doi.org/10.33024/hjk.v18i3.139>

Burhanuddin, N., Darmawansya, Pasinringi, S. A., Amiruddin, R., Nurmala, D. R., & Mallongi, A. (2025). *The Influence of Hospital Digital Marketing on Patient Loyalty Through* <https://journal.scitechgrup.com/index.php/jsi>



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*Patient Experience: A Study of Hospitals in Makassar, Indonesia. Journal of Neonatal Surgery, 14(15), 820-829.*

Chaffey, D., & Ellis-Chadwick, F. (2022). *Digital Marketing* (bth ed.). Pearson. ISBN: 978-1292404792.

Dameria, K., & Jane, O. (2025). Konteks Transformasi Digital di Sektor Usaha Kesehatan. *Journal Manajemen Kesehatan Indonesia*, 5(1), 75-87.

Deloitte. (2024). *Digital Transformation in Healthcare: Indonesia Report. Deloitte Insights*.

Ferreira, D. C., Viera, I., Pedro, M. I., Caldas, P., & Varela, M. (2023). *Patient Satisfaction with Healthcare Service and the Techniques Used for its Assessment: A Systematic Literature Review and a Bibliometric Analysis. Healthcare*, 11, 639.

Guan, T., Chen, X., Li, J., & Zhang, Y. (2024). *Factors Influencing Patient Experience in Hospital Wards: A Systematic Review. BMC Nursing*, 23:527. DOI: 10.1186/s12912-024-02054-0.

Hair, J. F., Ortinau, D. J., & Harrison, D. E. (2021). *Essentials of Marketing Research* (5<sup>th</sup> ed.). McGraw-Hill Education.

Kingsnorth, S. (2022). *Digital Marketing Strategy: An Integrated Approach to Online Marketing* (3<sup>rd</sup> ed.). Kogan Page. ISBN: 978-1398609970.

Kotler, P., Keller, K. L., & Chernev, A. (2021). *Marketing Management* (16<sup>th</sup> ed.). Pearson Education.

Laudon, K. C., & Laudon, J. P. (2020). *Management Information Systems: Managing the Digital Firm* (16<sup>th</sup> ed.). Person.

Li, L., Zhang, Q., Zeng, G., Huang, H., Chen, Z., Zhou, X., Wang, X., Xu, Z., Wu, Z., Yang, D., Zhai, X., Yang, S., Lu, Z., Gan, Y., & Lu, Z. (2025). *Patient's Loyalty to Primary Care Institutions and Associated Factors in China: A Cross-sectional Study. BMC Health Service Research*, 245:162. DOI: 10.1186/s12913-025-12244-4.

Nadiya, & Rijali, S. (2021). Implementasi Sistem Informasi Manajemen Rumah Sakit (SIMRS) Dilihat dari Aspek Sumber Daya Manusia pada Unit Rawat Inap RSUD H. Dadaruddin Kasim Kabupaten Tabalong. *JPAB*, 4(1), 583-595.

Nugroho, A., & Fadilah, S. (2023). Administrasi Digital di Rumah Sakit Indonesia. *Journal Manajemen Rumah Sakit*, 12(2), 112-125.

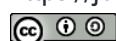
Parente, S. T. (2023). *Estimating the Impact of New Health Price Transparency Policies. INQUIRY: The Journal of Health Care*, 60: 1-7. DOI: 10.1177/00469580231155988.

Park, H. N., Park, D. J., Han, S. Y., Tae, J. Y., Jung, K., Bae, E. J., & Yoon, J. Y. (2022). *Effect of Onpatient Experiences on Patient Satisfaction and the Willingness to Recommend a Hospital: The Mediating Role of Patient Satisfaction: A Cross-sectional Study. Health Services Reports*, 1-9. DOI: 10.1002/hsr.2.925.

Purwanto, A., Asbari, M., & Santoso, T. I. (2021). *Analisis Data Penelitian Sosial dan Manajemen : Perbandingan Hasil antara Amos , SmartPLS , WarpPLS , dan SPSS Untuk Jumlah Sampel Medium*. 04, 43-53.

Santosa, I. V., Subekti, M. N., Jagadhdhito, G. S., & Susanti, A. D. (2024). Analisis Implementasi Sistem Informasi Manajemen Rumah Sakit (SIMRS) dalam Meningkatkan Pengelolaan Rumah Sakit yang Efisien di Rumah Sakit Umum Daerah Surakarta. *Sejahtera: Jurnal Inspirasi Mengabsi untuk Negeri*, 3(1), 189-197.

Sharma, J., Maheshwari, R., Khan, S., & Khan, A. A. (2022). Evaluating Performance of Different Machine Learning Algorithms for the Acute EMG Hand Gesture Datasets. *Journal of Electronics and Informatics*, 4(3), 192-201. <https://doi.org/10.36548/jei.2022.3.007>



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Shie, A., Huang, Y., Li, G., Lyu, W., Yang, M., Dai, Y., Su, Z., & Wu, Y. J. (2022). *Explorating the Relationship Between Hospital Service Quality, Patient Trust, and Loyalty from a Service Encounter Perspective in Elderly with Chronic Diseases*. *Frontiers in Public Health*, 10:876266. Doi: 10.3389/fpubh.2022.876266.

Ulucayli, S., Cek, K., & Oniz, A. (2023). *The Effect of Service Quality on Patient Citizenship Behaviors: Evidence from the Health Sector*. *Healthcare*, 11, 370.

World Health Organization. (2024). *Digital Health in Southeast Asia: Patient Engagement Strategies*. WHO Publications. ISBN: 978-92-4-009123-4.

Wulandari, R., Holipah, Ghofir, A. (2025). *Patient Preferences in Utilizing Digital Marketing for Hospital Selection: Study At A Private Hospital in East Java*. *Journal of Community Health and Preventive Medicine*, 5(1), 129-135.

Zeithaml, V. A., Bitner, M. J., & Grempler, D. D. (2020). *Service Marketing: Integrating Customer Service Across the Firm (4<sup>th</sup> European Edition)*. McGraw-Hill/Europe. ISBN 978-1526847805.

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