

Original Research Article

Digital Marketing Strategies and Patient Engagement in Healthcare: An Assessment from Patients' Perspectives

Ms. Isha Chakraborty¹, Dr. P. S. Ray Chaudhuri^{2*}, Prof. Soumen Mukherjee³

¹Department of Hospital Management, GitaRam Institute of Management (Affiliated to MAKAUT) Berhampore, West Bengal

²School of Management and Business Studies, Jamia Hamdard University, New Delhi

³The Neotia University, Sarisha, West Bengal

***Corresponding Author:** Dr. P. S. Ray Chaudhuri

School of Management and Business Studies, Jamia Hamdard University, New Delhi

Article History

Received: 09.07.2026

Accepted: 26.08.2026

Published: 29.08.2026

Abstract: The growing use of digital technology has brought noticeable changes to the healthcare sector. The rapid advancement of digital technology has brought a significant change to the healthcare sector. Digital marketing has become an important tool for healthcare sector providers to improve patient participation, strengthen engagement, and also make healthcare services more accessible to patients. The healthcare sector supports the development of long-term relationships between the healthcare sector and patients. Healthcare organisations use various digital platforms, which include social media, websites, mobile health applications, email, SMS, and telecommunication services, to share health-related information and communicate with patients. These platforms can help to create awareness about health and preventive care, and also provide timely reminders and encourage patients to take an active role in their healthcare decisions. Patient participation and engagement is important because patients who are actively involved in their care are more likely to follow the treatment recommendations, attend regular check-ups, and maintain communication with the healthcare providers. The study uses purposive sampling to select patients who reside nearby and have experience using digital healthcare tools. A descriptive and analytical research design is adopted, using correlation and regression analysis to examine the digital platforms used by healthcare organizations and assess their impact on patient satisfaction and engagement. Digital marketing strategies can also support the personalized communication and make it easier for the patient to access healthcare services quickly. These approaches may improve patient satisfaction and also contribute to better health outcomes. The use of digital technologies also involves some issues and challenges, such as accessibility, privacy concerns, technological limitations, and also the digital literacy among patients. This study mainly focuses on assessing the effectiveness of digital marketing strategies in enhancing and improving patient engagement in the healthcare sector. It also examines the different digital platforms that are used by the healthcare organisation to evaluate their influence on patient participation and communication. This study also analyses the benefits and challenges associated with implementing digital marketing in the healthcare sector. Overall, this study shows the importance of patient-centered digital communication and also explores how healthcare organizations or the healthcare sector can use digital marketing effectively to improve patient satisfaction, accessibility, and healthcare outcomes.

Keywords: Digital Marketing, Patient Engagement, Healthcare Sector, Digital Health Communication, Social Media Marketing, Mobile Health Applications, Telemedicine, Patient Satisfaction, Digital Healthcare Services.

INTRODUCTION

The healthcare settings have already transformed in recent years due to the rapid growth of the digital technologies and also the advancement in the internet. Healthcare organizations shifted from the traditional communication system to the digital system which helps to improve the patient interaction and service delivery. Digital marketing now became an

Copyright © 2026 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY-NC 4.0) which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

CITATION: Chakraborty, I., Ray Chaudhuri, P. S., & Mukherjee, S. (2026). Digital Marketing Strategies and Patient Engagement in Healthcare: An Assessment from Patients' Perspectives. *South Asian Res J Bus Manag*, 8(4), 221-232. <https://doi.org/10.36346/sarjbm.2026.v08i04.008>

essential component in healthcare because it enables to provide the health related information and services through the online channels. The use of website, social media platform, mobile applications, telemedicine services already made the healthcare communication more accessible to the patient and also it provides the timely care to the patient. Patient engagement refers to the active involvement of the patients in their health-related decision and also planning their treatments and communicating with the healthcare provider. It plays a vital role in improving the health outcome, which helps to enhance the patient satisfaction and ensure the better healthcare service utilization. Engaged patients are more likely to adhere to the medication schedule and also follow the preventive care measures. Digital marketing strategies provide an effective way which helps to improve the patient engagement by offering the personalized communication, health education, promotion, appointment reminders, and also the digital interactive platforms. Blasiak *et al.*, (2022) explained that digital health interventions and omnichannel communication platforms enhance patient engagement, healthcare accessibility, and communication between healthcare providers and patients. Social media marketing allows the healthcare organization to share health awareness campaigns and also interact with the patients directly.

E mail marketing also helps in sending the health tips, follow-up reminders, etc. Mobile health application helps to provide the personalized medical records, receiving notifications, and also enable the patient to book the appointments. Website provides the important source of information about the healthcare services, experienced doctors, and treatment opinions and about the healthcare facilities in different hospitals. These digital tools help the healthcare providers to maintain a continuous communication with the patients and it helps to enhance the patient experience and satisfaction. Digital technologies and online healthcare communication platforms have significantly improved patient participation, healthcare accessibility, and provider–patient interaction in modern healthcare systems. The growing use of smartphones and internet services has also increased the patient expectation for the convenience and accessible healthcare services in the hospitals. From the hospitals, patients now prefer online appointment booking, teleconsultation, digital prescription, and also the real-time communication with the healthcare providers like doctors. Digital marketing strategies support these needs by creating the user-friendly environment where the patients can easily access their healthcare services. So the digital marketing not only improves patient engagement, but it also helps to increase the operational efficiency and quality of service. Chirumamilla and Gulati (2021) explained that social media platforms play an important role in patient education, healthcare communication, and patient engagement by improving access to health-related information and digital interaction. So this study aims to assess the digital marketing strategies which are used in healthcare sector and also evaluate their effectiveness in improving the patient engagement. This research focuses on identifying the different digital marketing tools and analyzing their effectiveness on patient communication and understanding their role in improving the healthcare outcomes. The finding of this study will help the healthcare organizations to adopt the appropriate digital marketing strategies or approaches which will help them to improve the patient engagement and also help them to deliver better healthcare services.

Need and Significance of the Study

1. The rapid growth of digital tools and technologies has already transformed the healthcare communication system and also the service delivery process, which helps to make digital marketing strategies important for patient engagement.
2. Healthcare organisations are widely using digital platforms and tools such as websites, social media, mobile applications, telemedicine services, etc. for communicating with patients and providing healthcare information. It is very important to assess whether the digital marketing strategy effectively helps the patient to access healthcare information and services or not.
3. Patient engagement is a crucial factor in improving healthcare outcomes. Digital marketing tools can also enhance communication between patients and healthcare providers, which helps to encourage patient satisfaction.
4. This study helps to understand the patient perception regarding the use of digital marketing strategies in healthcare settings.
5. This study also helps to understand the role of digital transformation in improving patient-centred healthcare delivery.
6. This research provides insights into how digital communications improve accessibility and also the awareness of healthcare services.
7. This study will help to identify the issues and challenges that are faced by the patient while using the digital healthcare platforms and tools.

Scope of the Study

1. This study focuses on assessing the digital marketing strategies and approaches which are used in healthcare settings.
2. This study examines the function and also the role of digital marketing tools and platforms in enhancing the patient engagement.
3. The research includes the digital platforms such as websites, social media platforms, mobile health applications, email marketing, and telemedicine services.

4. The study evaluates the patients' perception regarding the effectiveness of the digital marketing tools and technologies.
5. The research analyzes the patient's communication, accessibility, and their experience satisfaction with the digital healthcare services.
6. The study focuses on the patients who are using the digital healthcare platforms for accessing the healthcare services.
7. This study examines the advantages and the disadvantages of digital marketing strategies in healthcare.
8. The geographical scope of the study is limited to the patients in the Berhampore Murshidabad area and the study findings are based on the responses collected from the patients using the digital healthcare services and also using the digital tools.

LITERATURE REVIEW

Digital marketing has emerged as an important tool for improving the patient engagement and healthcare communication in modern healthcare systems. The initiative of Digital India has strengthened the digital infrastructure and improved access to online healthcare services across India (Ministry of Electronics and Information Technology, 2020). The aims of the National Digital Health Mission to enhance healthcare accessibility and digital healthcare communication through the integrated digital health systems (Ministry of Health and Family Welfare, 2021). Musso *et al.*, (2020) stated that social media platforms are the effective healthcare communication tools which increases the patient awareness, engagement, and healthcare service promotion. Koumpouros *et al.*, (2015) stated that digital technologies and online healthcare communication platforms significantly improve the patient participation, healthcare accessibility. Hapsari *et al.*, (2020) stated that patient-centered digital communication strategies helps to improve patient satisfaction and strengthen the long-term relationships. National Health Mission (2021) stated that digital tools have strengthened healthcare outreach and improves the patient engagement, especially in the rural area and underserved populations. Kumar *et al.*, (2013) stated that mobile health applications and telemedicine services improve healthcare accessibility, and healthcare communication. These digital healthcare services help patients to access healthcare information, communicate with healthcare providers, and receive healthcare services more effectively. The challenges remain in the effective implementation of digital marketing strategies in healthcare sector. Ventola (2014) highlighted the risks which associated with digital healthcare communication, including ethical concerns and information reliability.

Research Gap

1. The previous studies have focused on the use of digital marketing strategies in healthcare communication and also in the promotion of health, but there is limited research which assess their effectiveness in enhancing the patient engagement from the patient's perspective.
2. There are many existing studies which emphasizes the social media or single digital platform, whereas there is a lack of research analyzing the multiple digital marketing tools such as website, mobile application, telemedicine, etc. in a together.
3. The earlier research mainly focuses on the organizational benefits of digital marketing, while limited studies evaluate about the patient's awareness, their accessibility and their satisfaction with the digital healthcare services.
4. Most of the studies emphasize on the digital healthcare communication in developed the healthcare setting, but there is limited research conducted in local and regional healthcare setting.
5. There is a lack of studies identifies the challenges faced by patients while using the digital healthcare platforms and tools for getting the healthcare services.
6. Therefore, this study helps to fill this gap by assessing the digital marketing strategies and their impact and effectiveness in enhancing the patient engagement and improving their satisfaction based on the patient responses.

Thematic Representation of Research Gap and Variables

The following table presents the thematic representation of the literature review, identified research gaps, supporting literature, derived variables, type of variables, and their relevance to the present study based on recent literature related to digital marketing strategies and patient engagement in healthcare.

SL No.	Theme	Research Gap Identified	Supporting Literature	Variables Derived	Type of Variable	Relevance to Present Study
1	Social Media Marketing in Healthcare	Limited studies on the effectiveness of social media marketing in improving long-term patient engagement in healthcare institutions.	Musso <i>et al.</i> , (2020)	Social Media Marketing	Independent Variable	Helps examine the influence of social media platforms on patient engagement.

2	Digital Healthcare Communication	Insufficient research on how digital communication platforms improve patient-provider interaction and healthcare accessibility.	Koumpouros <i>et al.</i> , (2015)	Digital Healthcare Communication	Independent Variable	Assists in evaluating digital communication strategies in healthcare services.
3	Patient-Centered Digital Communication	Need for more research examining the impact of personalized digital communication on patient satisfaction and engagement.	Hapsari <i>et al.</i> , (2020)	Patient Satisfaction and Engagement	Dependent Variable	Supports understanding of patient-centered digital engagement approaches.
4	Telemedicine and Mobile Health Applications	Limited evidence regarding the effectiveness of telemedicine and mobile health applications in enhancing healthcare accessibility and convenience.	Kumar <i>et al.</i> , (2013)	Telemedicine Services and Mobile Health Applications	Independent Variable	Evaluates the role of digital healthcare technologies in patient engagement.
5	Digital Healthcare Outreach	Lack of adequate studies on digital healthcare outreach programs in rural and underserved populations.	National Health Mission (2021)	Healthcare Outreach and Accessibility	Dependent Variable	Helps analyze the effectiveness of digital healthcare initiatives in broader healthcare accessibility.
6	Ethical Concerns and Data Privacy	Need for greater attention to ethical concerns, misinformation, and data privacy in digital healthcare communication.	Ventola (2014)	Data Privacy and Patient Trust	Moderating Variable	Examines challenges affecting patient trust and digital healthcare communication.
7	Digital India Initiative	Limited studies assessing the contribution of national digital initiatives toward healthcare communication improvement.	Ministry of Electronics and Information Technology (2020)	Digital Infrastructure	Independent Variable	Supports analysis of digital infrastructure in healthcare communication.
8	National Digital Health Mission	Need for empirical research evaluating integrated digital healthcare systems and patient engagement.	Ministry of Health and Family Welfare (2021)	Integrated Digital Healthcare Systems	Independent Variable	Helps understand the role of integrated healthcare systems in improving patient engagement.

Objectives

1. The study aims to assess the effectiveness of the digital marketing approaches or strategies in enhancing the patient engagement in healthcare settings.

2. This study mainly focuses on identifying the different digital marketing tools and platforms which are used by the healthcare providers like website, social media platforms, mobile health applications, email marketing, telemedicine service, online communication channel, etc. to understand how healthcare organizations will adopt the digital technologies to communicate with the patient.
3. Third, this study aims to analyze that how the digital marketing strategies helps to encourage the patient to actively engage in their healthcare decision making, planning their treatment, and communicating with the healthcare providers.
4. This study also aims to evaluate that how the digital marketing strategies help in strengthening the patient-provider relationship.
5. This study also aims to examine that the digital marketing tools help in enhancing patient experience, accessibility and overall satisfaction with healthcare services.
6. This study also focuses on understanding the advantages of digital marketing, such as improved accessibility, better communication, enhanced patient engagement, increased awareness and improved healthcare outcomes.
7. This study also aims to identify the barriers, such as the lack of digital literacy, data privacy and security concerns, and technological limitations, and also the resistance to adoption by the healthcare sector and patient.

Research Hypotheses

The following research hypotheses are formulated to examine the relationship between digital marketing strategies and patient engagement in healthcare.

Null Hypotheses (H_0)

- H01: Social media communication has no significant impact on patient engagement in healthcare.
- H02: Hospital website information has no significant impact on patient engagement in healthcare.
- H03: Mobile health applications have no significant impact on patient engagement in healthcare.
- H04: Email and SMS communication have no significant impact on patient engagement in healthcare.
- H05: Telemedicine services have no significant impact on patient engagement in healthcare.
- H06: Online appointment systems have no significant impact on patient engagement in healthcare.
- H07: Digital accessibility has no significant impact on patient engagement in healthcare.
- H08: Digital marketing strategies have no significant impact on patient engagement in healthcare.

Alternative Hypotheses (H_1)

- H11: Social media communication has a significant impact on patient engagement in healthcare.
- H12: Hospital website information has a significant impact on patient engagement in healthcare.
- H13: Mobile health applications have a significant impact on patient engagement in healthcare.
- H14: Email and SMS communication have a significant impact on patient engagement in healthcare.
- H15: Telemedicine services have a significant impact on patient engagement in healthcare.
- H16: Online appointment systems have a significant impact on patient engagement in healthcare.
- H17: Digital accessibility has a significant impact on patient engagement in healthcare.
- H18: Digital marketing strategies have a significant impact on patient engagement in healthcare.

Variables of the Study

The present study examines the effectiveness of the digital marketing strategies in enhancing the patient engagement in the healthcare sector. For this purpose, the research study identifies the independent variables which represents the digital marketing tools and the dependable variables, dependent variables which represents the patient engagement. These variables are used for analyzing the relationship between the digital marketing strategies and the patient engagement.

Dependent Variable

Patient Engagement

Patient engagement is considered as the dependent variable in this study. Patient engagement refers to the level of patient involved in healthcare services through the digital platform.

Independent Variables: The independent variables in this research study are the social media communication.

This variable refers to the use of social media platforms by the healthcare organization to share the health information, the updates and also communicating with the patients.

Hospital Website Information**Mobile Health Applications****Telemedicine Service****Online Appointment System and Digital Accessibility**

In this study, digital marketing strategies are the independent variables, and the patient engagement is the dependent variable. The relationship between these variables is used to assess the effectiveness of the digital marketing strategies in healthcare settings.

Table: Thematic Representation of Variables Based on Objectives and Questionnaire

Sl. No.	Objective	Theme	Variable	Type of Variable	Questionnaire Items	Measurement Focus
1	Assess impact of digital marketing on engagement	Patient Engagement	Patient Engagement	Dependent Variable	Q30–Q34	Participation, interaction, overall engagement
2	Identify role of social media in communication	Social Media Communication	Social Media Communication	Independent Variable	Q5–Q8	Awareness, updates, communication
3	Evaluate effectiveness of hospital websites	Website Information	Hospital Website Information	Independent Variable	Q9–Q12	Information access, navigation, understanding
4	Assess role of mobile health apps	Mobile Health Applications	Mobile Health Applications	Independent Variable	Q13–Q16	Convenience, notifications, accessibility
5	Examine communication via email/SMS	Email & SMS Communication	Email/SMS Communication	Independent Variable	Q17–Q19	Reminders, usefulness, interaction
6	Analyze telemedicine services	Telemedicine Services	Telemedicine Services	Independent Variable	Q20–Q22	Remote consultation, accessibility
7	Evaluate appointment systems	Online Appointment Systems	Online Appointment System	Independent Variable	Q23–Q26	Ease, time-saving, preference
8	Assess digital accessibility	Digital Accessibility	Digital Accessibility	Independent Variable	Q27–Q29	Ease of use, availability, access

RESEARCH METHODOLOGY**Research Design**

The study adopts a descriptive and analytical research design, which helps to examine the effectiveness of digital marketing strategies in enhance the patient engagement in healthcare sector.

The descriptive approach is used to present and summarize the responses which was collected from the patients regarding their use of digital media and platforms such as social media, hospital website, mobile health applications, telemedicine services, etc. This helps in understanding the general perception and awareness and the using patterns of digital health services.

The analytical approach is used to examine the relationship between the digital marketing strategies, which are the independent variables and the patient engagement, dependent variable, which enables to identify how different digital tools influence the patient engagement in healthcare services. The study follows a quantitative research approach where the primary data is collected through a structured questionnaire using five-point Likert scale ranging from strongly agree to strongly disagree.

Nature of the Study

This study is quantitative in nature and also focuses on collecting the data from the patient regarding their experiences with the digital marketing tools which are used by the healthcare organizations. This research also includes the analysis of different digital platforms such as websites, social media, mobile health applications, and telemedicine services, etc.

Data Collection Method

This study is based on the primary data which is collected through the structured questionnaires. The questionnaire includes the questions related to the use of digital marketing platforms, patient engagement, communication effectiveness, accessibility, and their satisfaction with the healthcare services. In addition, secondary data is also collected from the published journals, research articles, PubMed, Google Scholar, and also the websites and other relevant sources which will support the study.

Sampling Method

This study uses convenience sampling method for selecting the respondents. Patients who have experiences the digital healthcare platforms such as online appointment booking, teleconsultation, websites of the hospitals, social media communication, telemedicine services, etc. selected for the study.

Sample Size

The sample size for the study is consists of 70 respondents. These respondents include the patients who have used the digital marketing platforms in healthcare settings.

Study Area

The study is conducted among the patients who visiting the hospitals and also using the digital healthcare services and also the digital tools in the Berhampore, Goaljan, Murshidabad (regional) area.

Research Instrument

Structured questionnaires is used as a research instrument. These questionnaires includes the multiple choice questions and Likert scale statements which helps to measure the patient engagement, communication effectiveness, and their satisfaction with the digital marketing tools and their strategies.

For data analysis, the following statistical methods are used:

1. Descriptive Statistics

Such as Mean and standard deviation were used to describe the central tendency and dispersion of the respondents' responses for each study variable.

2. Regression Analysis

It is used to assess the impact of independent variable on the dependent variable and to identify the most influential factors.

3. Corelation Study

Pearson correlation analysis was conducted to examine the strength, direction, and significance of the relationship between the independent variables (Social Media Communication, Hospital Website Information, Mobile Health Applications, Email/SMS Communication, Telemedicine Services, Online Appointment Systems, and Digital Accessibility) and the dependent variable (Patient Engagement).

Data Screening

A total of 80 questionnaires were collected from the respondents during the data collection process. At the first, to the statistical analysis, all questionnaires were screened to ensure data quality and reliability. During the screening process, 10 questionnaires were excluded because they contained incomplete responses, missing values for one or more questionnaire items, and inconsistent response patterns that could affect the validity of the analysis. Consequently, 70 valid questionnaires were retained and used for descriptive statistics, correlational analysis, multiple regression analysis, and hypothesis testing.

Data Analysis and Interpretation: The analyses presented in this section are based on 70 valid responses obtained after the data screening process.

Data Coding: For statistical analysis, the responses were converted into numerical values.

Table 1: Likert Scale Coding

Response	Code
Strongly Agree	5
Agree	4
Neutral	3
Disagree	2
Strongly Disagree	1

The coded data were entered into Microsoft Excel for regression analysis.

1 Demographic Profile of Respondents

Table 1.1: Age-wise Distribution of Respondents (N = 70)

Age Group	Frequency (n)	Percentage (%)
21–30 years	35	50.0
31–40 years	22	31.4
41–50 years	12	17.1
Above 50 years	1	1.4
Total	70	100.0

Interpretation

This table shows the age distribution of the respondents who participated in this study. Out of the total sample of 70 respondents, 35 respondents belong to the 21 to 30 years age group, which makes it the largest age category in the study. Then 22 respondents in the 31 to 40 years age, and 12 respondents were aged between 40 to 50 years, while only one respondent was above 50 years of age. This finding shows that the study mainly represents the young and middle-aged adults who are commonly more familiar with the digital technologies and the healthcare applications.

Table 1.2: Gender-wise Distribution of Respondents (N = 70)

Gender	Frequency (n)	Percentage (%)
Male	39	55.7
Female	31	44.3
Total	70	100.0

Interpretation

This table shows the gender distribution of the respondents. Among the 70 participants, 39 respondents (55.7%) were male, while 31 respondents (44.3%) were female.

Table 1.3 Educational Qualification of Respondents (N = 70)

Educational Qualification	Frequency (n)	Percentage (%)
Undergraduate	38	54.3
Postgraduate	32	45.7
Total	70	100.0

Interpretation

This table represents the educational qualifications of the respondents. The results show that 38 respondents (54.3%) had an undergraduate qualification, whereas 32 respondents (45.7%) had completed postgraduate education. The findings show that all respondents had higher educational backgrounds, which are suitable for this study.

Table 1.4: Occupational Status of Respondents (N = 70)

Occupation	Frequency (n)	Percentage (%)
Employed	39	55.7
Student	17	24.3
Unemployed	8	11.4
Self-employed	6	8.6
Total	70	100.0

Interpretation

This table presents the occupational profile of the respondents. The majority of the respondents, 39 (55.7%), were employed. Students constituted 17 respondents (24.3%), 8 respondents (11.4%) were unemployed, and 6 respondents (8.6%) were self-employed.

Discussion on Demographic Characteristics

The demographic analysis shows that the respondents represent a diverse population (age, gender, educational qualification, and occupational status). The largest proportion belonged to the 21–30 years age group, followed by the 31–40 years. Male respondents slightly outnumbered female respondents. All participants are strengthening the representativeness of the sample for examining the impact of digital marketing strategies on patient engagement in the healthcare sector.

Table 2: Descriptive Statistics of the Independent Variables

Variable	Mean	Standard Deviation	N
Social Media Communication (X1)	3.40	0.69	70
Hospital Website Information (X2)	3.50	0.59	70
Mobile Health Applications (X3)	3.42	0.67	70
Email/SMS Communication (X4)	3.44	0.59	70
Telemedicine Services (X5)	3.49	0.57	70
Online Appointment Systems (X6)	3.40	0.75	70

Interpretation

The descriptive statistics shows that the mean scores of the independent variables ranged from 3.40 to 3.50, which suggests that the respondents generally agreed with the statements regarding the digital marketing strategies in healthcare sector. Hospital Website Information (M=3.50, SD=0.59) had the highest mean which followed by Telemedicine Services (M=3.49, SD=0.57). The standard deviations shows relatively consistent responses across the 70 respondents.

Correlation Analysis

Pearson's correlation analysis was performed to examine the relationships between the independent variables which includes Social Media Communication (X1), Hospital Website Information (X2), Mobile Health Applications (X3), Email/SMS Communication (X4), Telemedicine Services (X5), and Online Appointment Systems (X6)—and the dependent variable, Patient Engagement (Y).

The findings showed that all six independent variables are positively correlated with patient engagement. X6 showed the strongest positive relationship ($r=0.733$), followed by X1 (0.710), X3 (0.643), X5 (0.610), X2 (0.599), and X4 (0.553). Intercorrelations ranged from 0.408 to 0.634, indicating no serious multicollinearity. So all predictors were retained for multiple regression analysis.

The correlation analysis provides the preliminary evidence that all six digital marketing strategies are positively associated with patient engagement, but regression analysis is required to determine the unique contribution of each predictor.

Table 3

Variable	Pearson's r	Interpretation
X1→Y	0.710	Strong positive
X2→Y	0.599	Moderate positive
X3→Y	0.643	Strong positive
X4→Y	0.553	Moderate positive
X5→Y	0.610	Strong positive
X6→Y	0.733	Strong positive

Multiple Regression Analysis

Multiple regression analysis was performed to examine the influence of the six independent variables on patient engagement. The regression model produced the multiple correlation coefficient (R) of 0.864 which shows a strong relationship between the predictors and the dependent variable. The coefficient of determination ($R^2=0.747$) indicates that 74.7% of the variance in patient engagement is explained by the model, but the remaining 25.3% is attributable to other factors. The adjusted R^2 was 0.723. The overall model was statistically significant ($F=31.058$, $p<0.001$) and also confirm that the model provides a good fit.

Table 4

Statistic		Value			
Multiple R		0.864			
R Square		0.747			
Adjusted R Square		0.723			
F-value		31.058			
Significance		<0.001			
Sample Size		70			
Hyp.	Relationship	Beta	t	p	Decision
H1	X1→Y	0.321	3.117	0.003	Supported
H2	X2→Y	0.202	2.057	0.044	Supported
H3	X3→Y	0.247	2.722	0.008	Supported

H4	X4→Y	-0.206	-1.751	0.085	Not Supported
H5	X5→Y	0.199	1.821	0.073	Not Supported
H6	X6→Y	0.398	4.468	<0.001	Supported

Interpretation of Regression Coefficients

The regression coefficients indicates that X1, X2, X3 and X6 have statistically significant positive effects on patient engagement, so H1, H2, H3 and H6 are supported. X6 emerged as the strongest predictor ($\beta=0.398$), followed by X1, X3 and X2. In contrast, X4 ($\beta=-0.206$, $p=0.085$) and X5 ($\beta=0.199$, $p=0.073$) were not statistically significant; therefore H4 and H5 are not supported. Although X4 and X5 were positively correlated with patient engagement, they did not contribute significantly after controlling for the remaining predictors.

DISCUSSION

The findings indicates that social media communication, hospital website information, mobile health application, online appointment system significantly improves the patient engagement in the healthcare sector. But email, SMS communication and telemedicine service did not significantly predict patient engagement after controlling for the other variables. A possible explanation of these is that the patients prefers the interactive digital platforms over one-way communication channels. Email and SMS are mainly used for reminders rather than the continuous engagement and telemedicine may be limited due to the digital literacy, internet connectivity and technological barriers and preference for face-to-face consultation. These findings differ from Blasiak *et al.*, (2022), Ventola (2014) and Kumar *et al.*, (2013), because of contextual differences, healthcare infrastructure and sample characteristics and level of technology adaptation.

Table 5: Summary of Hypothesis Testing

Hypothesis	Relationship	Result
H1	X1 positively influences Y	Supported
H2	X2 positively influences Y	Supported
H3	X3 positively influences Y	Supported
H4	X4 positively influences Y	Not Supported
H5	X5 positively influences Y	Not Supported
H6	X6 positively influences Y	Supported

Overall, the regression model is statistically significant and explains 74.7% of the variance in patient engagement. Four hypotheses (H1, H2, H3 and H6) were supported, whereas H4 and H5 were not supported.

FINAL RESULTS

The present study assesses the effectiveness of digital marketing strategies in enhancing the patient engagement in the healthcare sector. It used the 70 patient respondents.

The findings reveals that social media communication, hospital website information, mobile health application and online appointment system has a statistically significant positive influence on patient engagement. Among these variables, online appointment system emerged as the strongest predictor of patient engagement followed by social media communication, mobile health application and hospital website information. But the email or SMS communication and telemedicine services did not have a statistically significant on patient engagement. Therefore, the hypothesis related to these two variables were not supported. This may be because patient perceive email, SMS mainly as reminder tools rather than interactive communication channels. While the effectiveness of telemedicine may be constrained by digital literacy, internet connectivity and also many technological barriers and the preferences for face to face consultation. Overall, the study concludes that digital marketing strategies plays a significant role in improving the patient engagement in healthcare. However, healthcare organization should prioritize interactive digital platforms particularly among online appointment system, hospital website, mobile health application and social media communication while improving the effectiveness and accessibility of telemedicine and email or SMS communication to achieve greater patient engagement.

Questionnaire on Assessment of Digital Marketing Strategies for Patient Engagement in Healthcare

Demographic Details

1. Age

☐ Below 20 ☐ 21–30 ☐ 31–40 ☐ 41–50 ☐ Above 50

2. Gender

☐ Male ☐ Female ☐ Other

3. Education Level

☐ School Level ☐ Undergraduate ☐ Postgraduate ☐ Others

4. Occupation

☐ Student ☐ Employed ☐ Self-employed ☐ Unemployed

Indicate your level of agreement (Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree) with each of the following statements.

S. No	Coding	Item	SA 5	A 4	N 3	D 2	SD 1
5	SM 1	Healthcare social media pages (e.g., Facebook pages, WhatsApp groups, Instagram) provide useful and reliable health information based on my experience.					
6	SM 2	Social media platforms (e.g., Facebook, WhatsApp, Instagram, YouTube) help me stay updated about healthcare services and hospital announcements.					
7	SM 3	I use social media platforms (e.g., WhatsApp, Facebook Messenger) to communicate with healthcare providers and receive responses.					
8	SM 4	Healthcare social media pages effectively improve my awareness about available treatments and services.					
9	HW 1	Hospital websites or portals (e.g., Apollo, AIIMS websites) provide clear and detailed information about healthcare services.					
10	HW 2	Hospital websites help me understand treatment options, doctor availability, and service details.					
11	HW 3	I use hospital websites or portals to search for doctors and book appointments.					
12	HW 4	Hospital websites are easy to access, navigate, and use for healthcare purposes.					
13	MHA 1	Mobile health applications (e.g., Practo, Aarogya Setu) help me book appointments and access services easily.					
14	MHA 2	Mobile health apps provide useful notifications such as appointment reminders and health updates.					
15	MHA 3	Mobile health apps improve my access to medical records and healthcare information.					
16	MHA 4	I find mobile health apps convenient and effective for managing healthcare services.					
17	ES 1	Healthcare providers use email or SMS services to send me updates, reminders, and health-related information.					
18	ES 2	Email/SMS communication provides useful and timely healthcare information.					
19	ES 3	Email/SMS communication improves my interaction with healthcare providers.					
20	TM 1	Telemedicine platforms (e.g., eSanjeevani, Practo) allow me to consult doctors remotely and receive proper guidance.					
21	TM 2	Telemedicine services are effective in solving my health issues without visiting the hospital.					
22	TM 3	Telemedicine platforms improve my communication with doctors and healthcare professionals.					
23	OA 1	Online appointment platforms (e.g., hospital apps, websites, Practo) make booking consultations easier.					
24	OA 2	I prefer using digital platforms (e.g., apps/websites) instead of traditional methods for booking appointments.					
25	OA 3	Digital appointment platforms help me save time and effort.					
26	DP 1	Digital platforms improve my access to healthcare services anytime and anywhere.					
27	DP 2	Overall digital healthcare platforms (apps, websites, telemedicine) are easy to use.					
28	DP 3	I can access healthcare services anytime using digital platforms such as apps and websites.					
29	DP 4	Digital platforms improve accessibility to healthcare services.					
30	PE 1	Digital platforms encourage my participation in healthcare decisions (e.g., choosing doctors, treatment options).					

31	PE 2	Through digital platforms (e.g., apps, websites, telemedicine), I can communicate effectively with healthcare providers.					
32	PE 3	Digital marketing platforms (e.g., hospital websites, social media pages, apps) increase my involvement in healthcare by allowing me to give feedback, reviews, ratings, or participate in online consultations.					
33	PE 4	I actively use digital platforms (e.g., social media, mobile apps, hospital websites, telemedicine) to search for healthcare information and services.					
34	PE 5	Overall, digital platforms (social media, apps, telemedicine, websites) improve my engagement and experience in healthcare services.					

REFERENCES

- Kumar, S., Nilsen, W. J., Abernethy, A., et al. (2013). Mobile health technology evaluation: The mHealth evidence workshop. *American Journal of Preventive Medicine*, 45(2), 228–236. <https://doi.org/10.1016/j.amepre.2013.03.017>.
- Koumpouros, Y., Toulas, T. L., & Koumpouros, N. (2015). The importance of patient engagement and the use of social media marketing in healthcare. *Technology and Health Care*, 23(4), 495–507. <https://doi.org/10.3233/THC-150918>.
- Hapsari, R. D. V., Stoffers, J., & Gunawan, A. (2020). The influence of relationship marketing on customer engagement in healthcare services. *Journal of Asian Finance, Economics and Business*, 7(12), 1027–1038. <https://doi.org/10.13106/jafeb.2020.vol7.no12.1027>.
- Ministry of Electronics and Information Technology, Government of India. (2020). *Digital India programme*. Government of India. <https://www.digitalindia.gov.in/>.
- Musso, M., Pinna, R., Carrus, P., & Melis, G. (2020). Social media patient engagement in healthcare: An Italian case study. In *ICT for an inclusive world* (pp. 209–227). Springer. https://doi.org/10.1007/978-3-030-34269-2_16.
- Chirumamilla, S., & Gulati, M. (2021). Patient education and engagement through social media. *Current Cardiology Reviews*, 17(2), 137–143. <https://doi.org/10.2174/1573403X15666191120115107>.
- Ministry of Health and Family Welfare, Government of India. (2021). *National Digital Health Mission*. Government of India. <https://nhm.gov.in/>.
- National Health Mission. (2021). *National Health Mission annual report 2020–21*. Government of India. <https://nhm.gov.in/>.
- Blasiak, A., Sapanel, Y., Leitman, D., Ng, W. Y., De Nicola, R., Lee, V. V., Todorov, A., & Ho, D. (2022). Omnichannel communication to boost patient engagement and behavioral change with digital health interventions. *Journal of Medical Internet Research*, 24(11), e41463. <https://doi.org/10.2196/41463>.