DIGITALIZATION AND ITS IMPACT ON HEALTH SERVICE MARKETING MANAGEMENT: A LITERATURE REVIEW

Alfiery Leda Kio*, Ni Luh Ayu Citra Mutiarahati

Program Studi Administrasi Kesehatan, STIKes Kesdam IX/Udayana, Jl. Taman Kanak-Kanak

Denpasar, Bali, 80113, Indonesia

*alfierykio@yahoo.co.id

ABSTRACT

Digitalization has brought significant changes to various sectors, including the healthcare industry. This research is important because digitalization is changing the marketing strategies of healthcare services. Understanding its impact helps healthcare institutions improve services, efficiency, and patient reach effectively in the digital era. This research is a literature study using a systematic literature review (SLR) approach. The articles in this research were obtained from Google Scholar, ScienceDirect, PubMed, and Emerald Insight through keyword searches related to the digitalization of healthcare service marketing during the period 2020–2025. From the search results, 6 relevant and high-quality articles were selected for analysis. The review was conducted systematically by thoroughly reading the articles to identify the main themes and the impact of digitalization on the management of healthcare service marketing. Based on the analysis of existing literature, the results of the study indicate that the application of big data, artificial intelligence (AI), telemedicine, and digital platforms have changed the way healthcare providers design and execute marketing strategies. Big data enables more personalized and data-driven marketing, while AI increases efficiency through predictive analytics that personalize the patient experience. Telemedicine has expanded the reach of healthcare services to remote areas, while digital platforms improve two-way interactions with patients. However, challenges that still exist include data security issues, patient privacy, and access to technology in some areas. This study concludes that despite the challenges, the application of digitalization in healthcare marketing provides great opportunities to improve service quality, efficiency, and patient engagement, as well as strengthen the competitiveness of healthcare providers.

Keywords: digitalization; data-based marketing; health technology; health services; marketing innovation

INTRODUCTION

The development of digital technology in recent years has experienced tremendous acceleration, especially since 2020. Digitalization that includes the use of mobile applications, telemedicine, big data, artificial intelligence, and social media platforms has changed various aspects of life, including the healthcare sector (Kumar & Rahman, 2020; Wang et al., 2021). This digital transformation has not only affected the way healthcare services are delivered but has also fundamentally overhauled marketing management strategies in healthcare organizations.The healthcare sector, which has long been known for its face-to-face services and manual administrative processes, is now starting to adopt digital technologies to improve access, efficiency, and quality of services. Telemedicine, for example, has enabled patients from remote areas to access medical services without having to come directly to a healthcare facility (Zhang & Lu, 2023). In addition, the use of mobile applications and big data technology enables the personalization of healthcare services that are increasingly tailored to individual needs, thereby strengthening patient loyalty and satisfaction (Chatterjee et al., 2020; Lal et al., 2020).

This change has major consequences for healthcare marketing management. Digital marketing, social media, and AI technology are now key tools in reaching and engaging

with patients more effectively and efficiently (Kietzmann et al., 2020; Smith et al., 2023). Marketing that was previously one-way is shifting to interactive two-way communication, allowing for real-time feedback and building long-term relationships with patients.However, digitalization also presents significant challenges, such as the protection of patient personal data, technological readiness from both service providers and patients, and regulations that are still developing and complex (Cresswell & Sheikh, 2013; Mesko et al., 2020). Therefore, healthcare organizations must develop digital marketing strategies that are not only innovative but also safe and in accordance with applicable regulations.Given these rapid and significant changes, a comprehensive literature review is needed to understand how digitalization affects healthcare marketing management, especially in the context of the latest developments in 2020-2025. This study is expected to provide a strategic basis for healthcare organizations to optimize the potential of digitalization in improving their competitiveness and service quality.

METHOD
This study uses a literature review method with a systematic approach to examine the impact of digitalization on marketing management in the health services sector. This method was chosen because it aims to collect, evaluate, and analyze the results of previous studies in order to obtain a comprehensive picture of the topic being discussed. Primary data in this study are in the form of scientific articles, journals, books, and academic reports that are relevant to the theme of digitalization and health services marketing. Data sources were collected from various leading databases such as Google Scholar, Scopus, PubMed, and ScienceDirect. The selection of literature was carried out based on the following inclusion criteria: Publications in English or Indonesian, Published between 2020 and 2025 to ensure relevance to the latest developments, Contains discussions on digitalization, digital marketing, and health services, Has a clear and valid research method (empirical studies, systematic reviews, secondary data analysis).

The initial search was conducted using relevant keywords such as "digitalization in healthcare marketing," "digital marketing healthcare," "telemedicine and marketing," "health services marketing," and "digital health management." The search focus was limited to publications published between 2020 and 2025 to obtain the most up-to-date literature relevant to current digital technology developments. From the initial search, a number of potentially relevant articles were found. However, after the initial screening process based on titles and abstracts, and the removal of articles that did not align with the research focus, only 6 articles met the eligibility criteria for in-depth analysis. This selection considers the aspects of content relevance, journal or publication source quality, and theme suitability with the topic of digitalization in healthcare service marketing management.

The number of selected articles is indeed relatively small, but this reflects meticulousness in maintaining the quality and relevance of the sources used. With a focus on the latest and valid articles, this research aims to provide an accurate and in-depth overview of the impact of digitalization on healthcare service marketing. The entire selection and article selection process was conducted systematically following the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines, to ensure transparency and reliability in the methodology of this literature review. This approach also supports the validity and reliability of the compiled review results.

RESULT

Table 1.
Articl Analysis

Researcher	Article Title	Type of Research	Sampel	Data Collection	Data Analysis	Research result
Zhang & Zaman (2020)	Adoption mechanism of telemedicine in underdeveloped countries	Quantitatif	Healthcare professionals, patients, and policymakers	Questionnaire	Path Analysis	Telemedicine expands market reach and accelerates communication between providers and patients, increasing accessibility of healthcare services.
Ghose et al. (2021)	Empowering Patients Using Smart Mobile Health Platforms	Randomized field experiment	1,070 diabetes patients	Data was collected through an mHealth platform that provides features for tracking health activities and measuring blood glucose levels. In addition, additional surveys and telephone interviews were conducted before and after the experimental period to assess the economic impact, such as hospital visits and medical costs.	difference-in-differences (DiD) and structural equation modeling (SEM)	The use of mobile health (mHealth) applications improves patient health behavior, reduces hospital visits and medical costs.
Aydin & Silahtaroglu (2021)	Insights into mobile health application market via a content analysis of marketplace data with machine learning	Quantitative content analysis	1,000 digital health applications	Content analysis and machine learning	- Artificial Neural Networks (ANN) - Random Forest - Naïve Bayes	Apps with clear privacy policies, descriptive videos, and social features get higher user scores and more downloads.
Hashavit et al. (2023)	Not Just Skipping: Understanding the Effect of Sponsored Content on Users' Decision-Making in Online Health Search	Laboratory experiment	participants recruited online, totaling 240 participants	User study with search simulation	ANOVA and regression	Sponsored ads influence user decisions, especially when there is a contrast with organic search results.
Phan et al. (2024)	Live Influence: Credibility and Attractiveness in Healthcare Livestreaming	Quantitative approach with survey and experimental design	Participants consist of viewers of live broadcasts on various digital health platforms.	Experiments on live health broadcasts	Structural Equation Modeling (SEM)	The credibility and attractiveness of the broadcaster greatly influences the effectiveness of marketing through live streaming in the healthcare sector.
Fan et al (2024)	A Comprehensive Picture of Factors Affecting User Willingness to Use Mobile Health Applications	Quantitative study with a factorial survey design using vignettes	1,669 participants from eight countries across four continents	Online survey	Structural Equation Modeling (SEM)	Digital literacy and personal information sharing habits influence mobile health app usage intentions.

DISCUSSION
Big Data and Predictive Analytics in Healthcare Marketing
Research conducted by Gupta & Sharma (2021) discusses the importance of big data analytics in optimizing marketing strategies in the healthcare sector. This study shows that by utilizing big data, healthcare providers can gain deep insights into patient behavior, service preferences, and their health patterns. Thus, marketing is no longer general, but can be highly personalized to meet the individual needs of patients (Gupta & Sharma, 2021).Big data enables providers to create predictive models that can forecast patient needs, allowing organizations to be more proactive in targeting patients with relevant services. In addition, big data analytics also plays a role in market segmentation, allowing for more targeted marketing, which in turn increases patient retention and loyalty to the service provider.Another study conducted by Chatterjee et al. (2020) shows the major role of big data and predictive analytics in healthcare marketing. Digitalization enables the collection and analysis of large amounts of data, including patient health patterns, service consumption habits, and other demographic data. By using predictive analytics, healthcare providers can predict upcoming health trends, as well as understand future patient behavior (Chatterjee et al., 2020).

Big data gives providers the ability to better understand their market segments and develop more personalized marketing strategies. This helps providers to target marketing campaigns more precisely, for example, by sending relevant health information to patients who are predisposed to certain health issues. With a data-driven approach, efficiency in marketing costs can be achieved, as the information provided is more specific and measurable. In addition, with more accurate predictions, healthcare organizations can better manage their resources, ensuring that they have the capacity to handle increased demand for services or specific patients who are predicted to need care. However, the application of big data in healthcare marketing also faces challenges, such as data security and privacy issues. Patients are increasingly aware of the importance of protecting their personal data, and healthcare providers need to ensure that patient data is managed securely and in accordance with applicable regulations.

Use of Social Media in Health Marketing
In the study by Kietzmann et al. (2020), social media was found to have a significant impact on building closer relationships between healthcare providers and patients. One of the main advantages of social media in healthcare marketing is its ability to facilitate two-way communication between providers and patients. In the digital era, patients are more likely to seek health information through platforms such as Facebook, Instagram, or Twitter, rather than relying solely on traditional sources of information such as print or television advertisements (Kietzmann et al., 2020).One important aspect of this study is the use of interactive content and story-based campaigns. By using social media, healthcare providers can share engaging and value-added educational information, such as articles, video tutorials, or patient stories that provide insight into their real experiences. This type of content increases brand engagement and leads to increased patient loyalty as they feel more connected to the organization they choose to care for their health. However, Kietzmann et al. (2020) also remind that social media requires a careful approach. The content posted must always be timely, reliable, and comply with applicable medical regulations. Therefore, being present on social media brings challenges in the form of managing negative comments and feedback from dissatisfied patients.

The Role of AI in Improving Patient Experience and Healthcare Marketing
Sharma & Mehta (2020) show how artificial intelligence (AI) can change the healthcare marketing landscape. AI, in the form of chatbots, recommendation systems, and big data analytics, helps in personalizing services and marketing. AI can process large amounts of patient data and provide more precise recommendations regarding the care they need. This

creates a more personalized patient experience and increases patient loyalty to healthcare providers (Sharma & Mehta, 2020).One concrete example of AI implementation is in AI-based customer relationship management (CRM) systems. These systems can predict when patients are likely to need certain services, such as routine check-ups or chronic disease control, so that providers can contact them at the right time with relevant information. This AI-based marketing not only increases patient satisfaction but also reduces marketing costs by targeting only patients who are highly likely to use the service.

Use of Digital Platforms to Improve Health Marketing
Lee & Zhao (2022) examined how digital platforms, such as health apps and online portals, are changing the way providers interact with patients. Digital platforms allow patients to access health information, make appointments, or even have medical consultations online, especially through telemedicine. This study identified that the use of digital-based health apps has helped increase patient engagement, giving them more control over their own health.Digital platforms also open up opportunities for more integrated and responsive marketing. Healthcare providers can leverage these platforms to provide relevant information to patients, such as promotions for new services, educational articles, and health reminders. Furthermore, digital platforms enable location-based marketing, allowing providers to target markets based on the geographic location of patients. However, while digital platforms offer significant benefits in terms of ease of access and patient engagement, the biggest challenge is the limited access to technology in some areas. Patients in remote areas or those who are not familiar with technology may struggle to utilize these digital platforms.

Telemedicine and Healthcare Marketing
Zhang & Lu's (2022) research highlights telemedicine as one of the biggest innovations in health marketing in the digital era. Telemedicine allows patients to consult with doctors or other medical personnel without having to physically visit a health facility. This opens up wider access for patients, especially those in remote areas or with limited mobility.Telemedicine also makes it easier for service providers to offer real-time marketing, such as direct consultation via video call, which makes it easier for patients to get immediate care without waiting in long queues. Thus, telemedicine not only increases accessibility but also allows for more efficient marketing by utilizing real-time technology. However, although telemedicine provides many advantages, there are still challenges related to regulations and legal regulations. Some countries or regions still do not have a clear legal framework related to telemedicine practices, including aspects of data security and doctor licensing.

Factors Influencing Users' Desire to Use Mobile Health Applications
Fan et al. (2024) identified that digital literacy and trust in data security are two key factors influencing users' intention to adopt mobile health apps. In their study, involving over 1,600 participants across eight countries, they found that users were more likely to download and use a health app if they had a good understanding of how the app worked, as well as assurance that their health data would be safe and not misused (Fan et al., 2024). These findings suggest that digital education is an important aspect of health app marketing. App providers need to provide training or education to improve digital literacy, especially for the elderly population or those who may not be familiar with technology. Additionally, to increase app adoption, providers should prioritize data security, by providing clear information about how patient health data will be used and protected. Users who are comfortable with their privacy and have a clear understanding of the health benefits of using the app are more likely to continue using the app.

Privacy Policy and Downloading of Health Apps
Aydin and Silahtaroglu (2021) in their study found that health apps that have clear privacy policies and attractive visual descriptions (such as videos explaining the app's features) have

higher download rates. This study shows the importance of transparency in marketing health apps. Patients and users are more likely to download apps that they feel can protect their personal data, especially when it comes to sensitive data such as medical history (Aydin & Silahtaroglu, 2021). This finding emphasizes that in marketing health apps, openness and clear communication are essential. App providers must explain in detail how user data will be used, as well as how the app complies with applicable security standards. In addition, attractive visual elements such as video tutorials that describe the benefits of the app can also increase download conversions.

The Influence of Paid Content on Online Health Searches

Research by Hashavit et al. (2022) shows that sponsored content in online health searches can influence user decisions. Users often choose recommended or paid content, even though they are more likely to search for and select organic information that is more relevant to their needs (Hashavit et al., 2022). This study shows that although sponsored content can increase the visibility of health services, trust in the source of information remains a determining factor in users' decisions to choose health services. Digital marketing must maintain a balance between paid advertising and unbiased information, as users are increasingly aware of the potential for bias in sponsored content. To ensure credibility, health care providers need to ensure that sponsored content remains ethical and provides high informational value to patients.

Credibility and Appeal in Health Livestreaming Marketing

Phan et al. (2024) identified that in health livestreaming marketing, broadcaster credibility and attractiveness greatly influence the success of a marketing campaign. Livestreaming allows broadcasters to interact directly with audiences, providing an opportunity for healthcare providers to build personal relationships with patients or potential patients (Phan et al., 2024). However, broadcaster credibility is a very important factor. Broadcasters who have expertise in the health field or medical experience are more appreciated by the audience, which in turn increases marketing effectiveness. This study also shows that the attractiveness of broadcasters in terms of appearance, speaking style, and interaction with the audience affects the level of attention and trust given by the audience. Broadcasters who can combine credibility with personal appeal are better able to convince the audience to follow the advice or use the services being promoted.

CONCLUSION

Digitalization has brought about a major transformation in healthcare marketing. The use of big data, AI, telemedicine, and digital platforms have increased the accessibility, personalization, and efficiency of marketing in the healthcare sector. However, challenges related to data privacy, technology access, and regulation remain issues that need to be addressed. Therefore, healthcare providers must use these technologies with caution and prioritize transparency, security, and credibility in every aspect of their marketing.

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