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The Role of Digital Health Technologies in the Healthcare Marketing Process *

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Abstract

Digital health technologies have the potential to significantly transform the way health data is structured and visualized effectively. The research was conducted between April and July 2024. It was conducted with 15 managers from healthcare institutions who are knowledgeable about the role of digital health technologies in the healthcare marketing process. Maximum diversity sampling, one of the purposeful sampling methods, was used to determine the study group. The research was conducted in a qualitative, phenomenological design. Data were collected through in-depth interview method. The data obtained were analyzed using the NVivo 15 program. According to the findings of the research, the four main themes are 'Digital Applications that Distinguish Institution', 'Healthcare Services Marketing', 'Advantages of Digitalization in Healthcare Services', 'The Disadvantages of Digitalization in Healthcare'. In the healthcare marketing process, digital technologies increase the competitiveness of hospitals, visibility and patient satisfaction, while also playing a critical role in creating effective marketing strategies with digital media and strategic planning. In this context, investments should be made to strengthen the technological infrastructure of health institutions and increase the reliability of digital systems. Regular monitoring of the effectiveness of digital tools and performance evaluations will ensure the rational use of technology. This study contributes to the field by analyzing the effect of digital health technologies on the marketing process.

Keywords: Digital Health Technologies, Healthcare Marketing, Healthcare Marketing Strategies.

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1. INTRODUCTION

The privatization of the healthcare sector in many countries has led to an increase in marketing activities (Proctor, 2010). The spread of new information and communication technologies necessitates marketing practices in the health sector, which opens the sector to different stakeholders and, most importantly, to patients and customers. Healthcare marketing refers to the application of marketing principles to the broad, heterogeneous, and complex field of healthcare (Crie & Chebat, 2013). The importance of marketing in health institutions can be observed with many examples. One of them is that when a health manager thinks about adding a new service to the institution, they first conduct market research to measure the size of the need in the society. Through this research, they will discover the services offered by existing competitors. It will also enable a detailed evaluation of the organization, delivery, pricing, and profitability of the new service (Kotler et al., 2008). The health sector has entered a transformation process with its dimensions such as active personnel structure, places where health services are provided, and more intensive use of technology (Uysal, 2019). The inclusion of technological innovations in health services aims to increase patient awareness and make patients feel they need these services (Purcarea, 2016). Digital technologies are creating significant changes in healthcare delivery and patient outcomes. The integration of electronic medical records and mobile health applications strengthens patient participation by increasing accessibility and efficiency in health services (Adler-Milstein & Jha, 2017).

The effect of digital systems on preventive and therapeutic health services is accelerating daily and can reduce inefficient aspects of health services (World Health Organization [WHO], 2021). By increasing access equality, healthcare professionals can easily access the information necessary to provide quality care. This provides an opportunity to improve health outcomes for all citizens (Braithwaite et al., 2020). According to the results of the household information technology usage survey of the Turkish Statistical Institute (TURKSTAT), the rate of households with access to the internet from home increased by 1.4 points to 95.5% in 2023 (Turkish Statistical Institute, 2023). Likewise, the widespread use of mobile phones worldwide is expected to increase their role in digital health technologies (Howitt et al., 2012). Recently, it has been seen that the use of digital healthcare marketing applications in the delivery of healthcare has become widespread.

In this context, determining the effects of digital health technologies on the health services marketing process is becoming increasingly important. In this research, the positive and negative aspects of digital health services will be examined, and opportunities of health institutions towards improving health services marketing strategies and competitiveness will be discussed. The aim of this study is to determine the role of digital health technologies in the marketing of health services. Accordingly, first, the literature information and the opinions of health managers with experience in the field of health service marketing will be included.

2. CONCEPTUAL FRAMEWORK

2.1. Digital Health Technologies

Digital health is a concept that covers all the benefits obtained by adapting the developing technologies in the healthcare field (Fahy & Williams, 2021). However, the lack of an agreed definition of digital health arises from an approach based on academic, institutional, industrial, and individual perspectives (Fatehi et al., 2020). According to the World Health Organization, digital health technologies can be defined as "the field of knowledge and application related to the development and use of digital technologies to improve health." Digital health expands the concept of e-health to encompass a wider range of smart and connected devices and digital consumers. The internet of Things (IoT) also includes the use of other digital technologies such as advanced computing, big data analytics, machine learning, and artificial intelligence (WHO, 2021).

Mobile Apps: More than 90% of people under the age of 65 and 65% of people over the age of 65 have smartphones. These devices offer important opportunities for health services as personal communication tools that can actively or passively collect health data (Butcher & Hussain, 2022). Sensors on the phones enable early detection of the disease and remote patient-centered intervention. There are more than 100,000 applications in Apple and Google app stores, and they cover a wide range of conditions, from Parkinson's disease to cardiovascular care (Butcher & Hussain, 2022).

An Electronic Health Record (EHR) is a digital version of a patient's documents and involves comprehensive information such as medical history, diagnoses, and treatment plans (Bender et al., 2013). Remote monitoring of chronic diseases has been associated with better management and reduced readmissions to the hospital (Ash & Bates, 2005). EHRs transform healthcare delivery by increasing the accuracy and accessibility of patient information (Blumenthal & Tavenner, 2010).

Artificial Intelligence and Data Analytics refer to datasets that can be analyzed using big data, data science, and machine learning (Hulsen et al., 2019). Artificial Intelligence simulates human intelligence processes by analyzing such data to identify patterns and make predictions (O'Leary, 2013). While this technology allows researchers to draw conclusions from large datasets, it also plays an important role in improving medicine (Hulsen et al., 2023).

Tele-Health: Telehealth refers to the offer of health services through telecommunication and digital communication technologies (McBain & Morgan, 2005). After the COVID-19 pandemic, there has been a significant increase in the transition to telehealth solutions. This includes the development of virtual services as well as traditional phone clinics (Honarbakhsh et al., 2021). Applications like remote monitoring provide an opportunity to safely detect clinical problems early (Raatikainen et al., 2008).

Wearable Devices: Wearable technology applications are increasingly in demand by healthcare users. Devices such as watches, gloves, and rings passively collect physiological data, which can be later transferred to smartphone applications (Piwek et al., 2016). These devices are designed to identify

diseases early, make it easier to follow up, and provide clinicians to interact with more data (Butcher & Hussain, 2022). For example, it was found that 0.52% of more than 400,000 participants in the Apple Heart Study have an irregular heartbeat (Perez et al., 2019).

It is seen that digital health technologies have lead to significant differences for individuals to follow and manage their health as well as the delivery of healthcare. Digital health technologies have changed the delivery and management of healthcare services radically and led to important developments in patient care. It positively affects patient participation in the delivery of health services by strengthening physician-patient communication. It can also be put forward as an advantage for health institutions to have digital health technology in promoting themselves.

2.2. Healthcare Marketing

In 1969, Kotler and Levy showed that the marketing concept is not limited to for-profit organizations. Therefore, institutions thought to serve primarily for social purposes have also begun to adopt marketing processes in their activities. The studies reveal that before the 1970s, hospitals did not have a marketing department or employed marketing-oriented staff. During this period, hospitals thought that only those in need would come to their institutions, considering their primary aim was to provide preventive and therapeutic care. Similarly, studying healthcare marketing has also taken a long time; the first journal to publish articles on healthcare marketing appeared in 1980 (Balogun & Ogunnaike, 2017).

Nowadays, the healthcare sector, technological developments, the rise in health institutions, and the differentiation of consumers' health-seeking behaviors have led healthcare providers to think and plan professionally (Tengilimoğlu, 2016). The use of the 7p model (product, price, place, promotion, people, physical evidence, process), which is a combination of improving healthcare services, increasing health literacy, and healthcare marketing, provides the improvement of financial resources by creating important strategies (Zade et al., 2024).

The primary purpose of marketing in healthcare is to increase patient satisfaction, provide high-quality medical care, and improve living standards. However, there are limitations in the available data about the effects of different service providers and care services on health (Raji, 2019). It is stated that the use of a marketing mix by healthcare institutions may increase the number of patients (customers). In healthcare services where competition is at the highest level, almost all hospitals provide fully equipped technological and comfortable services (Gümüş, 2018).

2.3. Positive and Negative Aspects of Digital Health Technologies

Interoperability difficulties, such as data security and privacy issues, are among the most important obstacles to the widespread adoption of healthcare technologies (Adler-Milstein & Jha., 2017). Institutional challenges such as resistance to change and inadequate education make the integration of these technologies into existing workflow more complicated (Jiang et al., 2017).

Healthcare providers must operate in a complex regulatory environment to secure patient privacy and ensure data security; thus, regulatory and legal challenges make the process more complicated (Koonin et al., 2020).

To fully exploit the benefits of digital healthcare technologies, interoperability among different systems must be improved. Developing standardized protocols and encouraging the use of open-source solutions can ease data exchange and enhance care coordination (Adler-Milstein & Jha, 2017). In addition, ensuring data security and privacy in digital health services is extremely important. Cybersecurity measures, such as encryption and multi-factor authentication can be effective in protecting patient's data. In terms of encouraging the adaption of digital tools, educating the patients about data security and obtaining informed consent for data sharing are important (Koonin et al., 2020).

Efforts to improve the interoperability of EHRs, telemedicine platforms, and m-health applications are critical for maximizing the benefits of digital healthcare technologies. Interoperability provides a comprehensive view of the patient's health history by ensuring a smooth exchange of information between different systems. This continuous flow of information is necessary for effective care coordination, especially for patients with complex health needs (Campanella et al., 2016).

2.4. Future Trends in Digital Health Technologies

The future of digital healthcare services is promising, and continuous technological developments have the potential to further transform healthcare delivery and patient outcomes. Developing technologies such as artificial intelligence (AI), machine learning, and blockchain offer important opportunities for improving diagnosis, treatment, and data security (Kvedar et al., 2014).

Artificial intelligence (AI) and machine learning (ML) technologies have the potential to reorganize healthcare by providing predictive analytics, personalized medicine, and auto diagnosis. AI-driven tools can identify patterns by analyzing large datasets and improve clinical decision-making processes by providing actionable insights, thereby improving patient outcomes (Matiang'i, et al., 2022). As for blockchain technology, it offers a secure and transparent way to manage health data. By providing a decentralized and tamper-proof register, data security can be improved, administrative processes can be eased, and interoperability among different systems can be enhanced. Blockchain adoption in healthcare has the potential to address many challenges related to data privacy and security (Smedlund et al., 2018). Developments in telecommunication technologies and changes in patient preferences enable the widespread use of telehealth services. The integration of telehealth with other digital tools such as remote monitoring devices and m-Health applications offers the opportunity to create a comprehensive digital health ecosystem that improves patient outcomes by increasing accessibility (Taylor-Phillips et al., 2014).

3. METHOD

The study was conducted using a qualitative, phenomenological design. Phenomenological design focuses on phenomena that we are aware of but do not have a deep and detailed understanding (Yıldırım & Şimşek, 2021). In phenomenological research, data sources refer to individuals or groups that experience the phenomenon the study focuses on or can express or reflect this phenomenon.

3.1. Study Group

The study population consists of healthcare managers responsible for implementing digital health technologies in healthcare marketing processes. The maximum variation sampling method, which is one of the purposeful sampling methods, was used to determine the study group. To determine the study group, the managers who provide digital healthcare technologies in their institutions were first investigated, reached, and given information about the purpose and process of the study. The reason for selecting the maximum variation sampling was to identify the types of association or similarities (and differences to the same extent) that exist among the varied situations. Considering the role of digital health technologies in the marketing of health services, private and public hospitals are discussed as dimensions that will form the basis for ensuring this diversity. The data were collected using an in-depth interview method. It has been stated in the literature that the number of items to create the sample may vary between 5 and 25 items (Rubin & Babbie, 2016). As a result of the study pursued by the researcher, data acquisition is completed as soon as data saturation is reached. The study was conducted with 15 health managers.

3.2. Data Collection Tools

The data were collected through personal information forms and in-depth interviews related to sociodemographic characteristics. Personal Information Form: The questionnaire created by examining the relevant literature consists of questions on gender, age, marital status, educational status, professional experience year, duty, and sector information of health managers. In-depth Interview: The data were collected by recording audio in in-depth, individual, semi-structured, face-to-face interviews of 25-30 minutes. The interview questions consist of 9 open-ended questions. In-depth interviewing is a data collection technique based on verbal communication between the research and the subject regarding the topic examined (Uslu & Demir, 2023).

3.3. Procedure

For the in-depth interviews, each health manager was contacted beforehand, and face-to-face interviews were conducted when available. Before starting the interview, the purpose of the research was explained, and later, written consent from the health managers was obtained. After consent, the sociodemographic information of the health managers was obtained. Health managers were informed that voice recordings would be recorded during the interview, and research questions were asked. Based on the semi-structured interview method, the participants were encouraged to express their thoughts on

the research questions, and their opinions were appreciated. In this process, the researcher exhibited an objective attitude. At the end of the interview, audio recordings were obtained. The in-depth interviewer has experience and training in qualitative research methods.

3.4. Pre-Application

Pre-application was made with 3 health managers to evaluate if the questions were clear. According to the feedback from the health managers, the questions were put into final form. Participants in the prestudy could not be included in the study group.

3.5. Data Analysis

The obtained data were analyzed using the NVIVO 15 software. The data were arranged according to common themes using descriptive analysis. Voice recordings obtained from the interviews were transcribed and then coded based on the topics most frequently mentioned by the participants in order to separate them meaningfully. Then, similar codes were grouped together to form themes. The coding process involves dividing the data into sections, analyzing, comparing, conceptualizing, and establishing relationships (Straus & Corbin, 1990). Codes are tags, names or a descriptors; therefore, coding is the process of tagging, naming, or describing the data sets (Punch, 2005).

3.6. Validity and Reliability

In order to maintain the internal validity of the study, personal information forms and questionnaires were evaluated by an academic member who has experience in different courses and studies, and according to feedback, the form was rearranged and put into the final form. To ensure external validity, detailed explanations regarding the steps and results of the research were provided. Both researchers who code the research data have experience and training in qualitative methods. To enhance the reliability of the coding process, after the data were initially coded by the researcher, a part of the interview documents with health managers was independently coded a second time by an academic member who had expertise and studies in qualitative research, and the results were compared.

3.7. Research Ethics

For the research, permission numbered 2024/341 was obtained from the Selçuk University Faculty of Health Sciences Non-Interventional Clinical Research Ethics Committee.

4. FINDINGS

This section presents the research findings. First, descriptive information about the study participants is included.

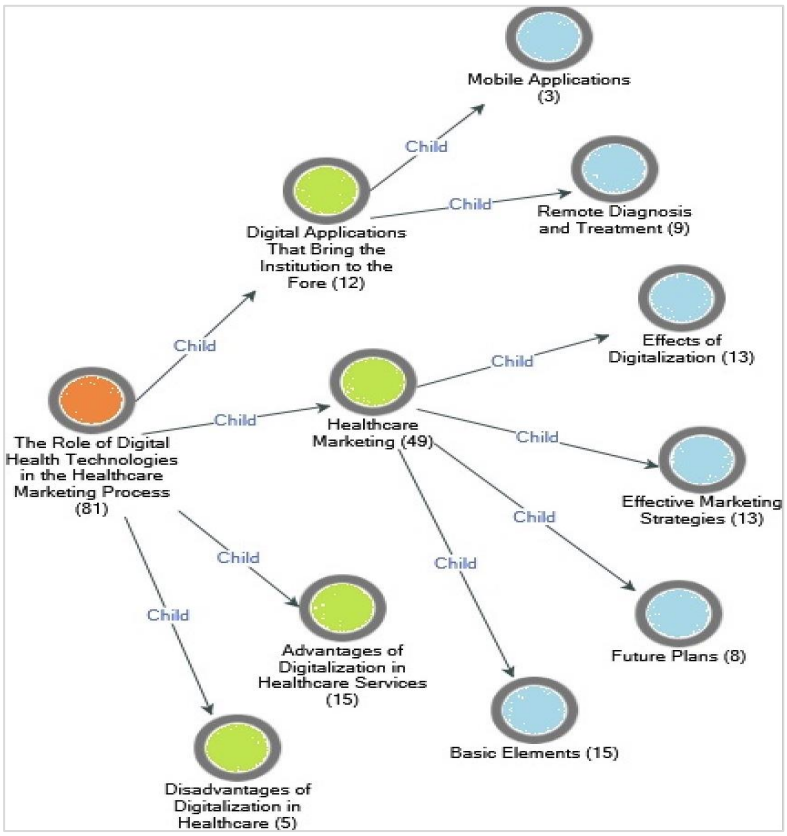
Table 1. Descriptive Information about Participants

Participants	Gender	Age	Marital Status	Educational Level	Professional Experience	Role	Sector
Participant 1	Male	47	Married	Bachelor's degree	20 years	Hospital Manager	State
Participant 2	Male	31	Single	Bachelor's degree	1 year	Assistant Hospital Manager	State
Participant 3	Female	52	Single	Postgraduate degree	32 years	Hospital Manager	State
Participant 4	Male	45	Married	Bachelor's degree	21 years	Quality Manager	State
Participant 5	Male	48	Married	Bachelor's degree	20 years	Assistant Hospital Manager	State
Participant 6	Male	49	Married	Bachelor's degree	29 years	Hospital Manager	State
Participant 7	Female	42	Married	Postgraduate degree	20 years	Quality Unit Representative	State
Participant 8	Female	33	Married	Postgraduate degree	9 years	Psychologist	Private
Participant 9	Male	31	Single	Postgraduate degree	5 years	Civil servant	State
Participant 10	Male	27	Single	Bachelor's degree	2 years	Medical Advisor	State
Participant 11	Female	25	Single	Bachelor's degree	1.5 years	Domestic Sales Opr. Assistant Specialist	Private
Participant 12	Male	29	Single	High school	12 years	Nurse	Private
Participant 13	Female	33	Single	Bachelor's degree	6 years	Responsible for Domestic Patients Coordinator (Doctor)	Private
Participant 14	Female	35	Single	Bachelor's degree	13 years	Business Development Experts	Private
Participant 15	Male	31	Married	Bachelor's degree	3 years	Business Development Experts	Private

When the gender distribution of the participants is examined, it is seen that 9 of the 15 people are male (60%) and 6 were female (40%). The age ranges from 25 to 52 years. Considering their marital status, 7 participants were married (46%), and 8 were single (54%). According to educational status, 10 people had a bachelor's degree (67%), 5 people had a postgraduate degree (33%), and 1 person was a high school graduate (7%). The participants' professional experience varies from 1 to 32 years. While 9 (53%) participants worked in state hospitals, 6 (47%) worked in the private sector. Current positions include hospital manager, assistant hospital manager, quality manager, psychologist, medical advisor, business development expert, and domestic sales operations specialist assistant.

As a result of the analysis of the research data, a total of 81 codings were generated. With the combination of similar codes, 4 main themes and 6 sub-themes were obtained.

Figure 1. Role of Digital Health Technologies in Healthcare Marketing Process (NVIVO Project Map)



The main themes are "Digital applications that distinguish the institution", "Health services marketing", "Advantages of digitalization in health services" and "Disadvantages of digitalization in health services". This theme and the subthemes related to these themes are discussed under the following headings.

4.1. Digital Applications that Distinguish the Institution

The main theme of "digital applications that distinguish the institution" is divided into 2 sub-themes; "Mobile applications" and "Remote diagnosis and treatment".

4.1.1. Mobile Applications

Three participants provided their opinions on the mobile applications sub-theme. Participants stated that making an appointment through mobile applications and accessing laboratory results and electronic medical records distinguish the health institution. Sample participant statements related to this theme are as follows: “Getting an appointment and examination with the mobile health application...” (P3). “Laboratory results and e-appointment in mobile application...” (P15). “Mobile health applications, electronic health records, electronic medical records...” (P10).

4.1.2. Remote Diagnosis and Treatment

Nine participants provided opinions on the sub-theme of remote diagnosis and treatment. According to the participants’ statements, performing examination, diagnosis, and treatment procedures

remotely through digital applications brings health institutions to the forefront compared with other institutions. In addition, robotic surgery is important for health institutions. On the other hand, it is stated that the use of surgical operations through videoconferencing is an application that distinguishes health institutions from other institutions. Participants' statements related to this theme are presented below.

"Currently, we prioritize telemedicine health services and think that we stand out as an institution..." (P5). "I can say that telemedicine applications are features that we have successfully presented. We put this into practice within the framework of the pilot scheme, and we want to further develop this area. Another advantage of our technological infrastructure is that we are at the top in terms of medical equipment" (P6). "Although we are not very active as an institution in this respect, our interviews (psychotherapy and counseling) can also be held online in terms of accessibility. This makes a difference when compared to other institutions. Especially for patients reaching from upstate…" (P8). "Surgical operations through videoconferencing are used very effectively in educational presentations..." (P7). "Examination with a Tytcare remote examination device" (P13).

4.2. Healthcare Services Marketing

The main theme of "health service marketing" is discussed under 4 sub-themes: "effects of digitalization", "effective marketing strategies", "future plans" and "key elements".

4.2.1. Effects of Digitalization

Thirteen participants presented their opinions on the sub-theme of the effects of digitalization. The majority of participants stated that the use of digital applications in healthcare delivery positively affects the institutional preference of patients. Accordingly, it has been stated that digitalization increases patient density in institutions. Participants also stated that digitalization in healthcare institutions is a necessity of the moment. It has been noted that digitalization in healthcare institutions is also important and necessary for health service marketing. Some of the original statements of the participants regarding this sub-theme are as follows:

"Health institutions are trying to adapt to this pace with the development of medical technology. A hospital can stand out in a certain field. For example, a marketing strategy can be implemented using this technology by focusing on neurosurgery. Another hospital may have the capacity to attract patients with its superior imaging techniques. Therefore, a hospital or health facility can serve more patients with more digital marketing opportunities. Accordingly, there is an increase" (P5). "…organizations that use digital technologies are much more successful in terms of preference" (P9). "…It is directly the subject of marketing strategies. The institution must adapt by following developments to stay up-to-date and relevant" (P11). "With the development of digital technologies, there is an increase in the preference for institutions where changing expectations can be met" (P13). "Keeping up with the technological developments in a changing and developing world can be used as a marketing strategy for an institution. This contributes positively to preferability" (P14).

4.2.2. Effective Marketing Strategies

Thirteen participants expressed their opinions on the sub-theme of effective marketing strategies. Most participants stated that word-of-mouth marketing was the most effective strategy. Participants stated that obtaining successful results in the health services offered and prioritizing patient satisfaction were factors affecting word-of-mouth marketing. On the other hand, it has been stated that institutions' patient communication activities, rapid diagnosis and treatment opportunities, and the publication of information about the health institution and its employees on the website are effective in health service marketing. The original statements of some participants regarding this sub-theme are as follows:

"Satisfied patient recommendation…" (P1). "Conscious patients and intermediary institutions to examine the resumes of the physicians whom they will receive services in the relevant field, patient recommendations, their publication on the web..." (P3). "You know that there is no advertising in health institutions, but the type of marketing we use and adopt the most is word-of-mouth marketing. As an institution, we prioritize a high level of friendly service and patient satisfaction. Since we have a high level of technology, doctors, and medical personnel, we adopt word-of-mouth marketing" (P5). "...one of the most important things we care about is that when we discharge the patients with full recovery by satisfying them, that patient leading the others to come to our hospital by recommending us" (P6).

"…This situation provides more client/patient returns since the trust (effectiveness of the treatment) revealed by the experience is related" (K8). "Healthcare technologies provided by the institution are often preferred because of the introduction of advantages in and outside the institution, and awareness in the neighborhood beside the visit of marketing sales team to the institution" (P11). "Often, patient advice and sales team, customer visits, direct patient communication studies (SMS, satisfaction stage), physician staff, rapid diagnosis and treatment" (P14).

4.2.3. Future Plans

Eight participants provided their opinions on the sub-theme of future plans. The majority of participants stated that digitalization was among the future plans of the institution. As understood from the participants' statements, the future plans of the institutions include developing remote examination systems, providing services to patients through mobile applications, switching to a smart hospital system, and increasing digital service delivery and service quality. The original statements of some participants regarding this sub-theme are presented below.

"Our primary goal is to become an accredited hospital in 2025. Digitalization is a must in order to become an accredited hospital, so we have an effort to digitalize throughout the hospital, especially the Hospital information management system..." (P4). "First, we make plans for at least the next 3 years by drawing a perspective according to the estimation methods along with structural equation modeling. There is a commission we have established for this. We have this strategic plan in written form and are

working on it. We have a hospital automation system in terms of digital health services, and we are improving its integration with E-nabız day by day. We have projects to incorporate our hospital into a smart hospital. Our primary goal is to achieve this. In addition, we will soon complete the mobile application called m-Health, which we will develop along with our automation systems, and put into service for our patients" (P5). "There is a medium- and long-term strategy plan in place at our hospital. Within the framework of this plan, we focus on digital health services and aim to increase the diversity of digital marketing and to provide patients with better quality, faster, and more effective services. We want to focus mostly on the mobile application, and we are working on it..." (P6). "If needed, to ensure that our patient's examinations and tests are evaluated online by a physician in a different part of Türkiye, within the legal framework, ..." (P7). "…In the field of digital health, we aim to be one of the leading companies in Türkiye" (P10).

4.2.4. Key Elements

All participants expressed their opinions on the key elements subtheme. The majority of the participants stated that accessibility, technology, price, treatment effectiveness, experienced physicians, and service quality are key elements in health service marketing. The original statements of some participants regarding this sub-theme are as follows:

"…Technology, price, and quality. In the future, technology will dominate more and affect prices and quality" (P2). "Since our hospital is a tertiary healthcare institution, we focus on technology and treatment effectiveness. Tertiary health institutions see more cases than other hospitals and are the most efficient training centers for assistant physicians and medical faculty students. Since our hospital is in the center of Central Anatolia, it is accessible from anywhere, and our biggest goal is to discharge our patients with full recovery using our high-tech devices and experienced physicians" (P5). "We mainly focus on technology in our hospital. Because there is a certain responsibility and obligation to the university hospital. Treatment effectiveness and technology are areas in which we are leading. The reason why I get this main idea is that we are a university hospital, and we can primely deal with more contradictory cases than usual" (P6). "…In general, technology stands out. Because there are many good machines in our institution" (P9). "While providing healthcare, our priority is to apply the necessary intervention and treatment methods with quality and accurate diagnosis as soon as possible. After the patient trusts the institution without any question in their mind, our quality, treatment plan, and technologies are at the highest level..." (P10).

4.3. Advantages of Digitalization in Healthcare Services

All participants expressed their opinions on the main theme. Most participants stated that digitalization in health service delivery is advantageous in terms of facilitating access to the service, accelerating service delivery, providing financial savings, saving time, and personnel, facilitating the

data recording system, and increasing patient safety. The original statements of some participants on the main theme are as follows:

"… saving personnel, speed, avoiding mistakes, financial savings, easier transportation… Tracking has become easier. The registration system has become easier. People did not deal with institutions, and their direct access to the digital system became easier" (P2). "Customer satisfaction. Once again, I will mention e-nabız and imaging systems, but for example, the patient is examined in a private hospital, and imaging procedures such as MRI in private hospitals are expensive. Thus, they get it done and even have blood tests in public hospitals, and they show the results in private hospitals, so it benefits the patient in terms of cost. Digitalization processes for hospitals save costs and energy by increasing data quality and data completeness. For example, samples such as the drug maturity stock tracking system warn about critical stock or expired drugs and keep both employee and patient safety at the maximum level." (P4). "We live in a modern time. Time is indeed the most important phenomenon at present. We implement many alternatives in digital healthcare services. If we mention the advantages for patients, currently, a patient's examination and analysis procedures can be concluded within a day, the patient can get treatment, and they can view the results on e-nabız and show them instantly to the doctor they want. Or, when a radiograph is taken, even a physician from another part of Türkiye can view it. In early diagnosis and treatment, this speed and immediate results can eliminate life-threatening situations and are an advantage for patients and employees. As patients receive services from a health institution using these technologies, they strengthen their bond with the hospital. I can say that there is currently no hospital without PACS, or we can see the direct results because PACS was integrated into the e-nabız system in a short time after analysis. If good technology equipment exists in a health institution and there is no medical personnel supporting it, I think digitalization will benefit to some extent. I think these support each other" (P5). "The functioning of the hospital has been completely carried out digitally. In fact, everything is carried out through our electronics, automation, and software systems. I can say that the use of any type of stationery is out of the question. With rapid analysis and examinations, we aim to minimize the time spent in the hospital by patients. These are advantages for patients. Because patients usually want to see the result immediately after an imaging technique is used or want to consult other physicians, a revised application in e-nabız has been implemented. Since we are an integrated facility with the state, we are completely focused on this with our software and applications, and we act within the framework of the idea of constantly improving ourselves" (P6). "Applications like Telemedicine provide an advantage by individualizing medical science, applying personalized methods, and providing one-to-one health services. Such technologies have brought significant positive changes to health care, especially because they minimize human-induced errors and make life easier, as in most systems. The spread of such technologies also provides evidence for treatments that can turn into judicial cases caused by errors" (P8). "…The digitalization of hospitals has led to significant changes in patient requests and expectations. Thanks to digitalization, patients can now

access health services faster and effectively, access their medical records easily, and follow their treatment processes better" (P10). "Advantageous aspects are that the patient does not waste time due to transportation, both financially and morally. The physician can examine the patient who will be absent remotely as if they are physically with him/her thanks to our technologies. Patients can easily perform their procedures, such as blood drawing and appointment making, thanks to medical home and mobile applications. The fact that it is accessible and planned by considering even the needs in the hospital of the patient they could not think of will make the patient feel more special and show that all the work done in the institution is done with the same care" (P11). "Decrease in inflation indicators and decline in facility usage frequency, low labor force..." (P12). "It saves time for patients and provides services regardless of the location. It provides ease and speed for patients to get healthy" (P13). "It makes a positive contribution to patients in terms of time and distance (transportation cost). The reason why it is preferred for employees/institutions is that it ensures effective use of time. The digitalization of hospitals has also affected patient expectations. The desire to reach the results online and through online interviews with physicians, etc." (P14). "Remote Parkinson's disease follow-up, chronic patient blood sequence, and blood pressure treatment... Rather than the source of access to classical medical data, more accessible data are important for both domestic and foreign patients" (P15).

4.4. The Disadvantages of Digitalization in Healthcare

Five participants expressed their opinions on the main theme. Some participants stated that with the increase in digitalization of health service delivery, the number of patients demanding services increased, which is disadvantageous in terms of an increase in the workload of medical personnel. Some participants considered digital service delivery a disadvantage owing to its low success rate compared to face-to-face service delivery. In addition, one participant emphasized a negative aspect of digitalization in healthcare service delivery because elderly patients struggle to use some digital health applications. Participants' statements related to this theme are presented below.

"When we think of it as a disadvantage, I observe that medical personnel get more workload because, with the development of these technologies, a system that focuses more on treatment is formed. But since all kinds of technologies bring convenience, I can say that the advantages outweight the disadvantages" (P5). "As a disadvantage, medical personnel create a density because they have to serve a more intense patient group..." (P6). "…However, adapting the elderly who need healthcare services more to such technologies and obtaining healthy data is a major problem faced in this field" (P8). "…the disadvantage is that the treatment success rate is relatively lower considering face-to-face interviews" (P10). "As a disadvantage; the patient finds it more reliable to be physically in the hospital and with the physician due to the usual situation" (P11).

5. CONCLUSION

According to the results obtained in this study, digital technologies increase the competitiveness and visibility of hospitals in both private and public hospitals in the healthcare services marketing process. Digital media and strategic planning play critical roles in forming effective marketing strategies. Healthcare managers have stated that digital health technologies bring institutions to the forefront. Mobile applications and remote diagnosis and treatment services are important applications that distinguish institutions.

The effects of digital health technologies in the healthcare service marketing process include positive aspects, such as facilitating communication between patients and health institutions, enabling patients to ask questions, receiving feedback, providing personalized care, remote monitoring, improving service quality, increasing preferability, cost savings, accessibility, and gaining superiority in competition. However, the disadvantages include problems such as increased patient expectations and difficulties in adapting to digital health technologies. It has been observed that word-of-mouth marketing is the most effective marketing strategy for health services. Rapid diagnosis and treatment have a positive effect on patient-healthcare institution communication. In addition, the majority of healthcare managers stated that digitalization will be included in future plans. As can be seen, the field of health is not independent of developing technology all over the world. Digital health technologies have brought health to another dimension than the traditional one. Digital health technologies have benefits in developing both individual and social health. In addition, it has become a tool whereby the institutions can put themselves forward and get a competitive edge. On the other hand, ethical attention must be paid to the privacy and safety of the data obtained by the institution.

In a study conducted by Şantaş and Şantaş (2020), positive technologies were found to manage patient habits and strengthen patients' ability to manage their health. Bostan and Tehci (2020), on the other hand, revealed that service quality and friendliness are among the main stresses in general marketing within healthcare services, but non-operative treatment, technology, and transportation-price factors are also important for some institutions. Kapoor et al. (2020) stated that digital health applications were quite beneficial during the pandemic. Rojas et al. (2019) emphasized that using internet-based applications in depression treatment is effective. Henkenjohann (2021) revealed that using patients' digital records increases the effectiveness of healthcare services. Wilson et al. (2021) found in their study that elderly people need information support for using e-health applications. However, Győrffy et al. (2023) draw attention that even though elderly people nowadays face obstacles using digital health technologies, this issue will decrease in the future with them using it easily. In their study, Poon et al. (2006) indicated that barcode technology used in pharmacies reduced distribution errors by 93-96%. During the COVID-19 pandemic, QR codes were used and benefited by many digital contact tracing applications (Yeung et al., 2023). The research findings support the literature in this regard. However, in a study conducted by Gentili et al. (2022), a systematic review was conducted on

the cost-effectiveness studies of digital health technologies; it was revealed that 2 of the 17 studies on video conferencing systems were deficient in terms of cost-effectiveness, which could be attributed to reasons such as pre-training cost and resource, intensive intervention.

Although the effects of digital health technologies have been generally examined from a patient's perspective in the literature, studies on the advantages and disadvantages of digital health technologies for health institutions are limited. It is clear that digital health technologies positively affect the brand image of healthcare institutions; however, their use may also affect the professional integrity of healthcare professionals because they can rely on technology instead of professional knowledge to make decisions. Therefore, healthcare professionals should receive the necessary training on the use of digital health technologies and be reminded of their responsibilities and obligations when providing healthcare services. It is important that the training is carried out in a practical way so that healthcare professionals will be active. On the other hand, it is thought that following the developments in the field of digital health technologies and carrying them out periodically will increase the efficiency of the training. In addition, the fact that digital health technologies are offered by many incompatible competitor companies requires health institutions to conduct research and develop appropriate applications beacuse the data cannot be easily changed or transferred (Yeung et al., 2023).

Many digital health technologies require significant preliminary investments. Therefore, these technologies cannot be easily defrayed by poor countries or communities and become impractical on a global scale (Kabore et al., 2022). In this context, health institutions must strengthen their technological infrastructure and make investments to increase the reliability of digital systems. However, although the costs of these investments are high, it is thought that the costs will decrease in the long run as the market expands and interest in these technologies increases. Thus, monitoring the effectiveness of the digital tools regularly and evaluating performances would ensure wise use of technology. In addition, it is recommended that elderly patients make improvements to adapt to digital health technologies.

Digital marketing in healthcare services ensures the necessary precautions without patients attending hospitals. Thereby, cost and time have been saved and personalized treatment methods become easier. When creating public health strategies for health policymakers, health data obtained from digital environments allow for a better definition of the current patient profile. It is thought that digital health technologies will play a more important role in the upcoming years in the diagnosis and treatment of patients. For future studies, it is suggested to conduct studies on topics such as the effect of digitalization on the decision process, and financial burden of digital infrastructure.

Ethics committee approval for the study was obtained from the Selçuk University Ethics Committee on March 27, 2024, with decision number 2024/341.

The authors declare that the study was conducted in accordance with research and publication ethics.

The authors confirm that no part of the study was generated, either wholly or in part, using Artificial Intelligence (AI) tools.

The authors declare that there are no financial conflicts of interest involving any institution, organization, or individual associated with this article. Additionally, there are no conflicts of interest among the authors.

The authors declare that they equally contributed to all processes al the research.

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