

# DIGITAL PHARMACY REVOLUTION: MARKETING TRENDS RESHAPING THE E-COMMERCE LANDSCAPE IN HEALTHCARE

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## ABSTRACT

*Wearable and information technology, virtual reality, the Internet of Things, and other technological innovations have become commonplace in our everyday lives; these innovations have helped revolutionize healthcare operations and business. A new age of patient-centered healthcare is upon us, and with it, a wider variety of options for thoughtful treatment that patients may choose from. Healthcare systems and individuals are being shaped by digital change. The use of digital marketing is on the rise. The internet has given strategists more alternatives than ever, allowing them to go beyond conventional marketing tactics. Its rapidity and extensive coverage make it an ideal medium for targeting a specific demographic. Pharmaceutical firms encounter fresh obstacles and possibilities in this era of digitalization. When companies advertise their wares online, they are engaging in digital marketing. Getting people to engage with a business online is the main objective of digital marketing.*

**Keywords:** *Pharmaceutical Marketing, Digital Marketing, Traditional Marketing, Pharmaceutical Promotion*

## I. INTRODUCTION

As a result of the digital revolution, new types of businesses have emerged, providing customers with services more tailored to their needs at a lower cost. People like us are used to many different ways of connecting with businesses and stores. Online banking, shopping, life organization, and content consumption are commonplace. Retailers, for instance, are already faced with the challenge of reevaluating the purpose, location, and merchandise offered in their physical shops due to the growing importance of multi-channel interactions in our contacts with companies and government agencies.

Because it allows people to be more involved in their healthcare, digital health has the potential to contribute to health innovation [1]. Once the patient's health deteriorates to an unacceptable level, he might begin to recover. Decisions about the patient's health treatment are here made with the patient's input. To make an informed choice about their health, the patient must search for information online or use digital health apps (e.g., on their mobile phone).

In the following years, patients are anticipated to play a more central role in health transformation, assuming the "health service consumer" position as they strive to take charge of their own health management. This new "consumer of health services" will have different expectations and demands from the healthcare business than previous generations. They want improved experiences characterized by personalization,

comfort, speed, and immediate gratification. According to Gjellebaek C. et al. [2], patients and healthcare infrastructure will reap substantial advantages from the impending digitalization of healthcare. Increased staff productivity, better health unit operation in terms of efficiency and effectiveness, and lower operating expenses are some of the advantages mentioned by Gjellebaek C.

However, the US stands out as an example when looking at health infrastructure. Rebekah E. et al. [3] report that 75% of hospitals in the US utilize EHRs. However, due to their potential for abuse, doctors often report adverse effects while using digital technology [3]. Beyond that, some medical experts are against using these systems and come up with answers that put patients at risk. The outcomes of government incentives for the "effective use" of e-health technology are unclear in some nations, including the US [3].

While other nations are still in the early phases of transition, Rebekah E. et al. [4] concentrate on hospitals in the United States. Australian hospitals, for instance, have just lately taken part in investments in the digitization of their services. At the same time, the United Kingdom has lately undertaken e-health programs that have been troublesome [4]. By the European Strategic Plan 2019–2024 (European Commission), digital health is an essential top strategic objective within the European Union.

As of late, digital transformation in healthcare has been swiftly expanding and solidifying [5]. This study aims to review the existing literature on digital health transformation and point out any weak spots preventing its adoption. The end aim is to discover how digital technologies improve patients' ability to take an active role in their own healthcare.

Data from earlier research may no longer be applicable due to the fast evolution of digitalization and e-health. Statistical analysis and numerical data have been the backbone of most digitalization evaluations. While quantitative assessments are necessary, it is possible to leave out some of their consequences.

Low levels of digital innovation in healthcare, as opposed to sectors like media, banking, insurance, and retail, limit worker productivity improvements, say Gopal G. et al. [6]. By publishing this piece, we want to change that perception and help digitalization become a driving force in health innovation while improving both patient outcomes and healthcare costs. However, healthcare funding, worker education, and infrastructure must undergo systemic changes for this innovation to be realized.

## II. LITERATURE REVIEW

Individuals are starting to realize how important it is to take care of their bodies, which has led to a fast expansion in the healthcare business. The rising prevalence of non-communicable illnesses, longer life expectancy, an older population, and other demographic changes have brought this issue to light [7]. By Mosby's Medical Dictionary, 8th Edition, (2009), Elsevier, the healthcare industry can be seen as an intricate web of services offered to patients by various entities such as hospitals, doctors, nurses, administrative and managerial staff, government agencies responsible for regulation, NGOs, non-institutional care facilities, providers of medical equipment and pharmaceuticals. Domestic demand for healthcare goods and services has been a significant force in the sector's recent history of rapid transformation. Domestic demand for healthcare goods and services has been a significant force in the sector's recent history of rapid transformation. The rising demand for healthcare services and the average lifespan in Malaysia have contributed to the expansion of this sector, which in turn has fueled the country's economic development.

On top of that, Malaysia has grown its sector to become a major destination for medical tourists, which gives patients peace of mind. The government and business sectors in Malaysia have invested much in healthcare, which has led to a dramatic increase in the population's life expectancy. The Department of

Statistics reports that the projected population of Malaysia for the second quarter of 2019 was 35.8 million, up 0.6% from the 32.38 million recorded in the same period in 2018.

A new way of doing business is emerging due to the widespread availability of the Internet. Customers' demands are affected by the ever-evolving nature of technology and fashion, which affects all types of businesses. In order to carry out their business and marketing plans, the majority of enterprises rely on ICT. Online shopping serves a wide variety of purposes in the healthcare sector. While many healthcare organizations have invested in technology to enhance their services, not all of these initiatives have successfully integrated ICT [8]. Electronic medical records and patient data transmission between healthcare facilities is an everyday use case for e-commerce platforms. In addition to helping patients, physicians, and pharmacists, the connection can enhance communication between healthcare facilities, pharmaceutical companies, and their patients. By doing so, we may simultaneously strengthen our reliance on one another. In addition, it serves as a platform for physicians to connect, exchange information, and solve issues in an affordable manner [9]. This research aims to determine the effects of online shopping on Malaysia's healthcare sector using the TOE model. From an organizational, technical, and environmental standpoint, it outlined the steps companies take while implementing technological innovations, and it also identified the elements that affect and are likely to affect technology utilization [10].

The subsequent shift prior to e-commerce adoption is the level of organizational preparedness to use IT in companies. One definition of readiness is how an employee is prepared to introduce new ideas to their company [11]. Considerations such as company size, process orientation, and culture are all part of this. To that end, I agree with the point made in [12] that healthcare companies may use IT as a weapon to boost efficiency without lowering quality. Similarly, The government of Malaysia recognized the significance of information and communication technology (ICT) as a factor that drives economic performance, which led to the country's economic development [13]; in this regard, many companies strive to make the most of every chance to improve their operations. Bringing healthcare into the digital era is a priority for Malaysia, and this aligns with their eighth strategy to do just that.

Direct, personal contact between customer and seller was the norm for doing business in the past. Technological adoption drastically alters the traditional business process as time passes, making commercial transactions much more thorough, convenient, and internationally linked. Competent staff members proficient with computers and technology are critical to improving the organization's e-commerce utilization. The competence will determine the direction of the organization's use of e-commerce. Knowledge of electronic commerce has a favorable and substantial influence on its adoption by businesses, as stated in [14]. In addition, according to Chang and Wong [15], businesses that employ skilled professionals in the field often outperform those that do not regard information technology.

### III. IMPACT OF COVID-19 ON DIGITAL HEALTH AND CARE

Numerous sectors of society, the economy, and global health have been and will be profoundly affected by the COVID-19 pandemic. The direct impact of the virus and the indirect effects of public health measures used to battle it have caused enormous disruptions in healthcare, in particular. These changes during and after the epidemic will most certainly negatively impact health outcomes [16]. Health and care services were slowly adopting digital solutions before the pandemic. For instance, we saw a rise in the use of NHS Inform and similar online resources, which provide trustworthy and readily available information on medical issues, self-care guidelines, and when to contact doctors.

Similarly, healthcare practitioners' use of encrypted messaging tools increased. At the same time, the clinical literature of the period followed the general trend of infrequent use of alternative technologies for remote monitoring and virtual treatment [17]. Many global responses to the epidemic had commonalities. Among these, healthcare providers have had to rethink their patient care strategies to cut down on in-person clinical appointments, devise remote triage cases requiring urgent consultations, delay non-urgent appointments, such as elective procedures, and implement new infection control protocols. The desire for digital alternatives to everyday health and care soared, propelling the digital health and care industry into the world arena. The techniques utilized to allow these measures and work around their negative implications were groundbreaking. Unpredictable rates of fast technology adoption and digital transformations resulted from this and the progress made in digitally transforming health and care services in the years before the pandemic [18].

#### **IV. HEALTHCARE DIGITALISATION JOURNEY – ENABLERS AND DRIVERS**

An essential component of healthcare digitalization, cloud computing has been steadily expanding its use in patient and management systems since 2005. This has allowed storing and sharing of healthcare records across an expansive network of internet-connected devices. Electronic health records (EHRs) were the primary early adopters of cloud computing, with its introduction to NHS boards occurring in 2005 [19]. This paper details the process of interconnected technical development that began with the introduction of EHRs (enablers) and continued with the rising acceptance and investment in digital health solutions (drivers). The expansion of healthcare IT infrastructures coincided with the rise of mobile technologies, particularly smartphones, which began to "personalize" the lives of people all over the globe [20]. This influx of patient data, later called "big data," allowed for the development of predictive analytics to enhance and customize care. The advent and incorporation of 5G technology in 2018 [21] with 'big data,' which increased Internet speed and device load, paved the way for fast technological growth from 2016 to 2020, including telemedicine and machine learning. When the 2020 COVID-19 pandemic necessitated the rapid supply of remote care services, the government's efforts to enhance treatment while reducing healthcare expenditures swiftly took shape. The anticipated switch-off of all analog services in the UK in 2025 indicates the considerable digitalization of the healthcare system, which has attracted critical investors from both private and public sector initiatives, leading to a rise in IT employment [22]. In Figure 1 below, we can see the timetable for digitalizing health and care.

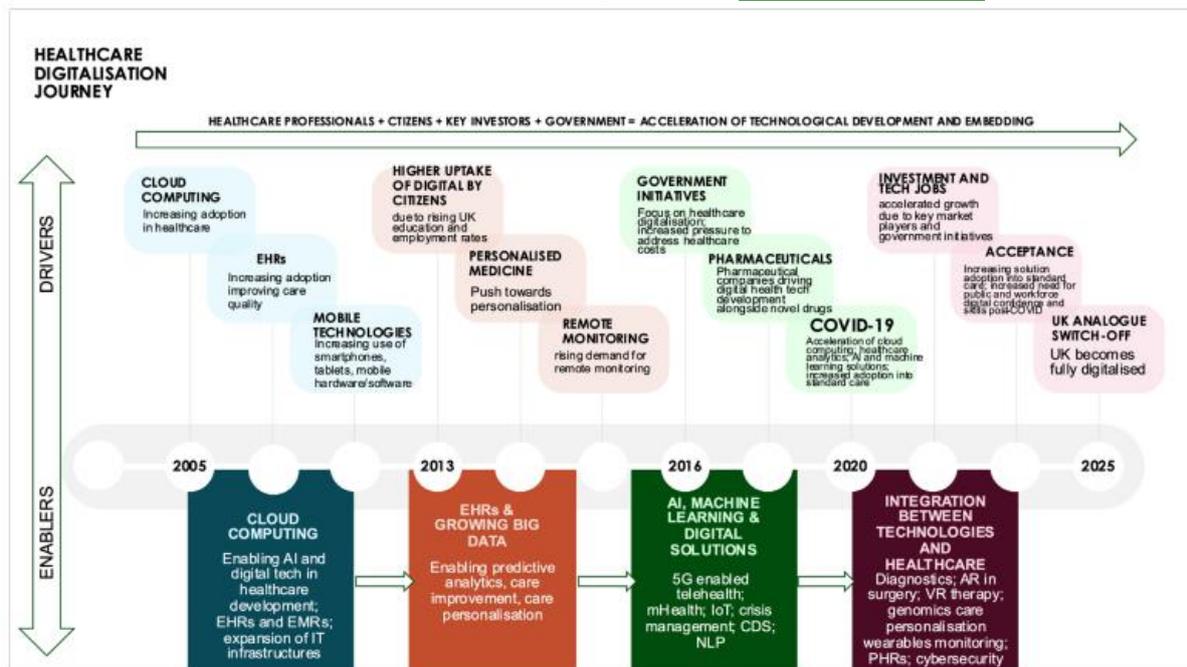


Figure 1. Info graphic depicting the timeline for the digitalization of health and care

## V. INFORMATION TECHNOLOGY IN HEALTH

In order to maximize the efficacy and success of implementing new technologies for the benefit of patients, researchers have investigated several aspects. When hospitals are developing or revising new service practices, they may use information technology to their advantage. In order to improve their service innovation processes, health units may analyze and identify patients' requirements and preferences using information and communication technology applications. According to previous research, patient care and service process innovation are both favorably impacted by technology competence [23]. As managers strive to promote patient-centered care as the foundation of medical practice, these findings have significant implications for increasing the efficiency of technological resources [24].

In order to generate ideas and carry out development, informatics enables the sharing of relevant information. Health organizations may improve the development and distribution of their Internet services [25]. Additionally, IT helps boost patient happiness, save expenses, and enhance service quality. Healthcare units may enhance consumer value, personalize services, and adapt to patients' demands by using new possibilities technology presents for enterprises producing high-tech services [26]. Therefore, the "smart hospitals" need to stand as the cutting edge of healthcare investment. The public sector requires expertise in its design, development, and operation due to the high level of technology involved [27].

A new example of transforming global healthcare services in their early stages highlights the shift from intermittent acute care to continuous and complete healthcare. "Anytime and everywhere access to safe eHealth services" adds a layer of sophistication to this method. E-health, digital transformation, mobile communication, medical technology, and remote data exchange are the recent advancements that are propelling this paradigm shift. Providing health care at any time and place has four additional features: prompt intervention and follow-up, complete treatment, self-care, and social support [28]. Due to the increased cooperation needed among various users, institutions, and systems and the increased monitoring, collecting, storing, exchanging, and retrieval of patient information, this new example is expected to worsen the already fragile security and privacy conditions in the healthcare sector.

Mobile telephony is changing healthcare benefits all around the globe by helping people achieve their health objectives. The same holds for pharmacies and other small to medium-sized healthcare businesses. The motivation for establishing new partnerships is a potent mix of elements, including organizations and consumers. Mobile technology applications present new possibilities for mobile health integration into current services, which should help quality service management continue to expand. Opportunities in mobile health and e-pharmacy have arisen due to changes in distribution patterns and the nature of the interaction between healthcare sector resellers and customers brought about by service-based, service-focused initiatives. The issue has gained significant attention in recent years because of its impact on and transformation of conventional methods of communication between healthcare providers and their patients [29]. Salamah et al.'s "Thymun" is an example of a mobile healthcare platform that aims to promote the health and well-being of autoimmune individuals in Indonesia by creating intelligent health communities [30].

## VI. ACCEPTANCE OF E-HEALTH

Using data collected from a population survey and an ongoing project spanning 1999–2002, Hsu et al. assessed electronic health record use [31]. The authors conclude that e-health services are becoming more accessible and popular. People with more extensive medical demands place a higher value on these services. In medical research, scientific methods may be a lifesaver when uncovering patterns that might otherwise go unnoticed when using more conventional approaches to evaluating the literature [32]. Digital medical technology includes teleradiology, tediagnosis, EHRs, CAD, or computer-aided diagnosis. The research of Manard S. et al. [33] indicates that France is one of the nations that invests in and takes the lead in electronic health records. On the other hand, technological progress makes new technical services and equipment available in several healthcare areas.

However, according to Mariusz Duplaga (2013), there is a rising need for chronic care models that are adaptable, integrated, and cost-effective, which is driving the rise of e-health solutions [34]. Patients with chronic conditions may benefit from a wide range of applications. Various electronic diaries and systems are available to patients with chronic conditions for long-term disease monitoring and educational opportunities. The tools used to evaluate the patient's health differ in accordance with the ailment and its manifestations. It is still necessary to describe symptoms and measurements, however. Duplaga asserts that patients must actively participate in monitoring and controlling their condition for therapies to be effective. The trend toward patient and public engagement in healthcare decision-making is consistent with this focus on the patient's involvement. The capacity to recognize and control health problems is enhanced when individuals actively monitor their symptoms. According to Duplaga, several aspects are necessary for the broad adoption of e-health systems. These include a knowledge of diseases and their treatments and the willingness and capability to use information technology tools.

In 2017, Sumedha Chauhan and Mahadeo Jaiswal reached a similar conclusion. To back up e-health practices, they state that e-health apps provide resources, including tools, procedures, and communication systems [35]. The health of patients and the efficiency of doctors are both boosted by these apps, which facilitate the transfer and administration of health-related data. According to the writers, the human factor is crucial regarding e-health. Also, as more and more people utilize services like home care and research online, researchers have looked at how people embrace e-health apps. Essential information is derived from their meta-analysis, which integrates and evaluates the quantitative results of several empirical investigations. However, the study by Holden and Karsh (2010) [36] provided the impetus for their investigation.

Holden and Karsh analyzed sixteen research grounded on healthcare technology acceptance models to provide a thorough perspective on the literature adoption of e-health applications [36]. The results demonstrate that individuals working in the medical industry may benefit from embracing technology solutions, but these solutions also lead to advances.

## VII. TELEMEDICINE

However, when looking at health care from a technical, social, and cultural perspective, telemedicine stands out as a groundbreaking breakthrough. Both organizational efficiency and the availability of healthcare services are boosted by this [37]. Its job is to deal with the problems caused by the socioeconomic changes that have occurred in the 21st century, such as an older population, more mobile citizens, more data to manage, more global competition, and better health care provision, all while keeping costs and budgets down. However, complete consolidation, growth, and standardization face substantial challenges [38].

Telemedicine clinics now act as go-betweens for patients and medical facilities. This communication is difficult due to many variables, but [38]. These difficulties include equipment price, connection issues, patients' faith in the telemedicine system or center, and reluctance to try new, current diagnostics, which is particularly common in remote and island places. Therefore, rather than having a specialist in each country's outlying region, telemedicine would simplify providing healthcare services in rural locations [38]. After giving the idea some more thought, it is easy to see how the benefits exceed the drawbacks. Thus, telemedicine must be used to overcome all the challenges we are now encountering. Telemedicine centers and services will soon be available, including teleradiology, teledermatology, teleneurology, and telemonitoring. In other words, patients can take advantage of better healthcare in a few years without ever setting foot in a leading hospital. Time is money, and this will help preserve current and future infrastructure development while also making efficient use of existing resources and reducing patient expenditures.

"The delivery of health care services, where distance is a critical factor, by all health care professionals using information and communication technologies for the exchange of valid information for the diagnosis, treatment and prevention of disease and injuries, research and evaluation, and for the continuing education of health care providers, all in the interests of advancing the health of individuals and their communities," [24] as adopted by the World Health Organization in 2007.

The Canadian Telehealth Forum notes that telemedicine is synonymous with telehealth and e-health, two other umbrella names for distant medical treatment. It should be made clear that clinical services are what telemedicine is referring to. On the other hand, telehealth encompasses both clinical and non-clinical services, such as medical education, administration, and research. The American Telemedicine Association, however, states that the word eHealth, which is most often used in Europe and the Americas, encompasses telehealth and other aspects of online healthcare [39].

Thirdly, according to the American Telemedicine Association, storage-promotion, remote monitoring, and interactive services make up telemedicine. In the first group, we find medical records that, with the help of modern technology, are sent to the expert so that they may evaluate the patient's health and prescribe the correct prescription. These records may contain images taken by the patient themselves or by a cardiogram. The patient may be seen remotely using remote monitoring. Heart disease, asthma, diabetes, and other chronic conditions are the primary targets of this approach. Through its interactive features, patients and doctors can have two-way conversations [40].

People in rural or otherwise inaccessible places may benefit significantly from telemedicine. The convenience it offers people in accessing healthcare is its principal value. Furthermore, it can be used as a teaching tool for medical students and professionals [41].

Incorporating new technology advances and responding to and adapting to the essential health changes inside communities, telemedicine is an open and ever-evolving discipline.

Many people are hesitant to utilize telemedicine because of the costly cost of technology, the need to teach personnel technically, and the expected time it takes for a doctor's appointment, which may be longer than with a traditional doctor, says J.J. Moffatt [42]. In contrast, telemedicine has great promise for enhancing clinical management and the delivery of health care services globally, as well as decreasing diagnostic variability, according to the World Health Organization. The World Health Organization asserts that telemedicine enhances accessibility, quality, efficiency, and cost-effectiveness, as reported by Heinzlmann PJ and Craig et al. [43]. When it comes to underserved populations, telemedicine has the potential to break down barriers caused by physical distance between patients and doctors [44]. Benefits to patients, families, healthcare providers, and the health system as a whole, including enhanced communication between providers and patients and educational opportunities, are also highlighted by Jennett PA et al. [45].

Wootton R. counters that several telemedicine apps have been successful to varying degrees. The healthcare systems of developed and developing nations have yet to fully embrace telemedicine, and only a few pilot initiatives have sustained themselves beyond their original financing periods [46].

However, there are many problems that people always bring up, which make telemedicine adoption take longer than it should. Human and cultural complexity is one such obstacle. Regarding healthcare, some people are reluctant to change from more conventional methods or even from what they do at home. Conversely, some people can only benefit from telemedicine methods if they have a degree in information and communication technologies [46]. Another obstacle is the need for more research demonstrating telemedicine applications' financial advantages and cost-effectiveness. There is a need for more infrastructure and program financing due to the solid commercial acumen required to convince lawmakers to embrace and invest in telemedicine [44]. There are a lot of legal hurdles that prevent telemedicine from being widely used. One is the need for a universal system of laws that permits medical practitioners to practice in various nations and under different laws. In addition, there are currently no regulations to protect patients' privacy, ensure the integrity of their data, or protect healthcare providers from legal action when they provide telemedicine services [44]. Whatever the situation, the technical obstacles stem from matters of law. Not to mention the complexity of the systems employed, which increases the risk of malfunction and potential software or hardware failure. The outcome is a rise in healthcare providers' liability and an increase in patient morbidity or death.

In order to address these concerns, Stanberry B. argues that telemedicine regulations should be thorough and final, preferably applicable on a global scale [47]. Simultaneously, laws regulating patient privacy, access to medical records, and providers' liability must be passed.

## VIII. SECURITY OF EHEALTH

A significant perk of storing medical records on the cloud is that patients may access them from any location using their mobile devices. While the benefits of cloud computing are undeniably significant, it is crucial to have a security system in place to protect the privacy of this environment. To ensure data security in these settings, five measures are implemented: (1) users are required to encrypt data before storing it; (2) data must be transmitted through secure channels; (3) user IDs must be validated before data can be accessed; (4)

data is divided into smaller portions for storage and handling, and can be recovered when needed; and (5) digital signatures are added to files to confirm that the person granted access to them is the right person. Users will use self-encryption in these situations to safeguard data and limit their dependence on providers [48].

Simultaneously, Maliha S. et al. [49] suggested using the blockchain to secure private medical records. Data integrity is guaranteed by this technology, which keeps a record of control for every transaction. Concurrently, zero trusts ensure that only authorized people and devices may access the network and that all medical data is secured. Many data security concerns are therefore addressed by this architecture [49]. In contrast, the KONFIDO initiative seeks to ensure the secure transfer of health records across international borders. By providing a comprehensive example at the system level, a European H2020 initiative intends to tackle security challenges. Blockchain, homomorphic encryption, trusted execution, photonic physical unbiased functions, and other state-of-the-art technologies are all part of the project's arsenal. Lastly, an e-healthcare site was established under the Italian National eHealth Net Program, and Coppolino L. et al. [50] suggested adopting an SIEM architecture for it. In order to detect any dangers and irregularities that may lead to significant security problems, this framework permits real-time monitoring of portal access.

## IX. EDUCATION IMPACT OF E-HEALTH

However, this could only work if patients and users were adequately educated. The need for evidence synthesis is expected to grow in proportion to the ever-increasing quantity and caliber of evidence used in medical education [51]. However, according to Brokers C. et al., digitalization alters employment and significantly influences healthcare. The level of expertise and specialization in telemedicine determines the reliability of the medical data offered for assistance. Because doctors have the knowledge and skills to confidently and competently assist their patients with the ever-growing complexity of healthcare IT, primary and secondary education must adapt. Ultimately, the educational community wants students to have the most hands-on experience with telemedicine and e-health, build trust, and accept and pass on important information.

Also heading this way was Noor, who wanted to discover where Saudi education was lacking in digital health transformation [52]. Information technology (IT) health planning is an area that needs specialized, standardized training due to the increasing complexity of healthcare systems throughout the globe and the increasing dependence of doctors and other medical professionals on IT for accurate procedures and treatments. Core information technology (IT) accreditation is making strides globally. With the latest e-health efforts in Saudi Arabia in mind, Noor A. looked into the current IT health programs in the KSA to find out (1) how well they meet international standards and (2) what further development is needed. Few of the 109 schools that participated in his study have Health Information Technology degree programs. The Saudi government has recognized the critical need for digital transformation as part of its Vision 2030 agenda. Medical and technology educators must work together more closely and form strategic alliances with businesses, healthcare facilities, and government organizations if this initiative is to succeed in implementing globally recognized IT skills into healthcare practices and educational programs.

Diviani N. et al.'s research expands our understanding of e-health education by showing how online access to health information influences overall behavior and improves patients' capacity to comprehend, manage, and anticipate various health issues. Additional investigation into the digital gap and the dynamics between patients and healthcare providers is necessary in light of the growing digitization of communication and healthcare. To analyze health information found online and facilitate shared healthcare decision-making,

healthcare providers must first be aware of the resources they seek out online and then actively include patients in this process [53].

## X. CONCLUSION

Digital marketing has revolutionized how we think about marketing and selling, shifting the focus from the tangible to the intangible. Digital activities are quickly becoming integral to all sales and marketing strategies. From the traditional paradigm to the digital approach, pharmaceutical firm operations are dramatically shifting. There are more products and more markets, but there are also more challenges that players must overcome in order to remain competitive. Almost every pharmaceutical company is considering or has already begun a digital transformation initiative. Social media is integral to most marketing strategies, and every company has a website. While social media should be part of every digital strategy, more is needed to respond comprehensively to digital transformation. Technology has accelerated global change, and progress is progressing differently. Now that smartphones are more than just gadgets—they have the potential to bring about a revolution—pharma companies need to think about how digital innovations will affect their stakeholders. Successful businesspeople see technology as an opportunity, not a threat, and are working to seize it. Companies should carefully assess their strengths, weaknesses, opportunities, and threats before launching a digital marketing campaign since not all digital initiatives will provide the desired results. A more thorough project has a higher probability of success. In our opinion, whoever responds most thoroughly and swiftly will have the upper hand.

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