

SECTION 6. INNOVATIVE ECONOMY

DOI: 10.46299/ISG.2023.MONO.ECON.4.6.1

6.1 Analysis of digital healthcare market

Digital healthcare is an evolving direction of healthcare development driven by the use of modern information technologies to achieve positive results in improving people's lives. Due to digitalization the healthcare system is progressing and significantly improving diagnostic and treatment methods, which in turn affects the socio-economic indicators of countries. Moreover, advanced technologies allowed improving the industry and adapting it to the existing and new challenges.

The use of information and communication technology is expected to enhance patient care in the healthcare industry. Wearable technology, telemedicine platforms, mobile health applications, wearable health records, and data analytics used for personalized healthcare are a few examples of it. These technologies can encourage patient engagement and self-management of health, as well as improve efficiency, increase access to services, and improve health outcomes. Furthermore, a lot of the solutions in the healthcare sector may have further implementation and development due to the introduction of digital technologies. For instance, they can assist in addressing the lack of access to healthcare services in rural and underserved areas, managing the rising incidence of chronic diseases, and reducing healthcare costs.

Digital healthcare indicates the development of health systems by implementation of digital tools in healthcare organizations and processes. Related terms and categories are eHealth, med tech, telemedicine, telehealth and other synonyms. R.Duggal et al. [115] determined such advanced technologies to this market as decision-support systems, mining clinical datasets, mobile healthcare technologies, health monitoring trackers, online consultations, and other information technologies. Deloitte focused on the digital healthcare in the information age as the sphere where medical information is processed through information technology use in the segments of telehealth, mHealth, medical analytics, and digital health systems [116]. J. Chan

identifies digital health as a composition of two concepts eHealth and mHealth, making reference to the World Health Organization (WHO) definitions: eHealth is “the use of information and communication technologies for health” by using electronic health records, while mHealth is “medical and public health practice supported by mobile and other wireless devices” [117].

The WHO admitted the infinite presence and use of digital technologies in making health decisions better and innovative; accelerating global achievements of the healthcare, well-being, and wellness [118]. In its Global Strategy on Digital Health 2020-2025, the WHO determines digital health as “field of knowledge and practice associated with the development and use of digital technologies to improve health” [118]. This definition encompasses the two-way relationship between digital healthcare providers and digital users, the concept of a digital hospital, health data, smart devices, eHealth infrastructure, artificial intelligence and other information and communication technologies to support and improve health and well-being. Thus, the concept of digital health is based not only on the widespread introduction of IT in the healthcare sector, but also on the consideration of medical phenomena, data, and processes as objects of informatization.

There are specific peculiarities and landmarks of digital healthcare including all aforementioned terms:

- Healthcare practice utilizing information technologies (IT) aims to reduce time and costs which is the reference to economic efficiency of such digital resources;
- Use of IT are called to bring precise results and minimize human-related errors;
- Digital healthcare lay down positive health outcomes (eg.recovery, pain relief, remission, etc.) in basis of healthcare industry;
- Digital healthcare reduces geographical barriers to get the patients’ data or/and deliver healthcare services rapidly;
- Healthcare digitalization reflects the specifics of practical medical branches, even in healthcare management;

- Digital healthcare metrics may encompass medical, economic, and technical indicators of efficiency;
- Information and communication technologies in healthcare are due to IT sector growth;
- Current and further growth of digital healthcare technologies rely on patient personalization (personal use of IT and consideration of the diversity of individual patient indicators), etc.

General digital healthcare market. According to the aggregated statistical data, Statista portal [119] divides digital healthcare market into three main markets: digital fitness&well-being, digital treatment&care and online consultations with doctors. Each of these markets use different IT to deliver or/and improve healthcare services. Digital fitness & well-being market consists of the segments for fitness trackers, wellness coaching, i.e. technologies tracking and providing information to improve well-being and health of individuals. Online consultation market represents the digital tools to approach doctors online and have consultations on health issues. Digital treatment & care market encompasses biometric digital tools, digital therapeutics and digital healthcare management systems applied for diagnostics, patient treatment, and management of healthcare processes. The common structure is depicted in Figure 1.

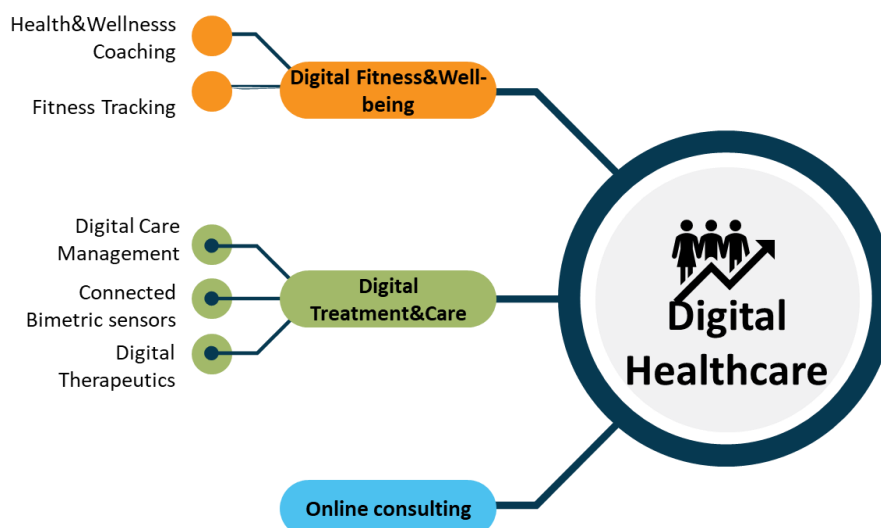


Figure 1. Composition of digital healthcare market (based on [119])

Total revenue of digital healthcare market has grown since 2017. The market revenue has a steadily growing dynamics due to constant demand and new challenges,

including such major ones as COVID-19, which require the implementation of fast, large-scale IT solutions. Forecasts also keep pace with actual growth, and the entire market revenue is expected to grow 5 times to US\$275 billion by 2028 (table 1) [119].

Table 1.

Global digital healthcare revenue in 2017-2028, US\$ billion

Sub-markets	2017	2019	2021	2023	2025 forecast	2028 forecast
Digital fitness & well-being	20.6	39.2	64.0	83.2	102.9	126.5
Digital treatment & care	20.6	29.7	54.3	63.3	85.9	112.6
Online consultation	4.5	10.5	20.0	23.7	28.7	35.8
Total	45.7	79.5	138.3	170.2	217.5	275.0

Fitness&well-being make up the largest part of the world's digital healthcare market revenue. During 2017-2023, it has grown from US\$20.6 billion up to US\$83.2 billion in 2023. Growing demand on healthcare IT lifted digital treatment&care market revenue from US\$20.6 billion in 2017 to US\$63.3 billion in 2023, and it will have a growing trend in the coming years to US\$112.6 billion in 2028. Convenience in quick barrier-free access to doctors, a long quarantine period, and the estimated and appreciated speed of providing patient data also led to a 5-fold increase in online consultation [119]. This has become a kind of solution for the countries with a developed IT sector but unsatisfied demand for healthcare services. Since the medical sector is personalized and based on an individualized treatment path, this segment is relatively smaller than other tech markets, but its expected growth to US\$35.8 billion in 2028 shows considerable promise.

The revenue growth was not supported by demand on digital healthcare technologies and systems only, but also boosted by growing investments. Thus, special digital healthcare funding has grown from US\$1.1 billion in 2010 up to US\$23.3 billion

in 2022 [120]. The highest peak of this trend was in 2021 when investors' amount of funding had reached US\$44.8 billion. The leap was caused by investment of digital healthcare business during the midst of the pandemic of COVID-19 in 2021 [121]. It also showed the highest amount of mega deals in the digital healthcare sector in the U.S. (88 deals) with its 56% of total funding [120]. After that, the number of mega deals has dropped by 30.3% to 35 deals in 2022 [120]. Despite this, in the first quarters of 2023, global funding was significantly reduced, and digital healthcare venture deals fall to their lowest level to US\$3.4 billion [122]. Tech companies providing care delivery and navigation remained among the leaders by deals and funding amount (152 deals and US\$1.5 billion in Q2'2023) [122]. The median amounts of deals has decreased for all investor groups in 2023 with significant drops among investment and asset managers (by 42%) and corporate venture companies (by 35%). The median size of all early-, mid- and late-stage deals has decreased in 2023 as well [121].

Digital fitness and well-being. The sector of digital fitness and well-being trackers (smartwatches, activity trackers, wellness coaching, etc.) is represented by growing tempo of use of diet and nutrition apps to monitor eating, psychological, and physical behavior patterns with the purpose to improve health and well-being. This digital healthcare market is one of the largest segments (almost 49%) of the total digital health market worldwide [123] (Fig.2).

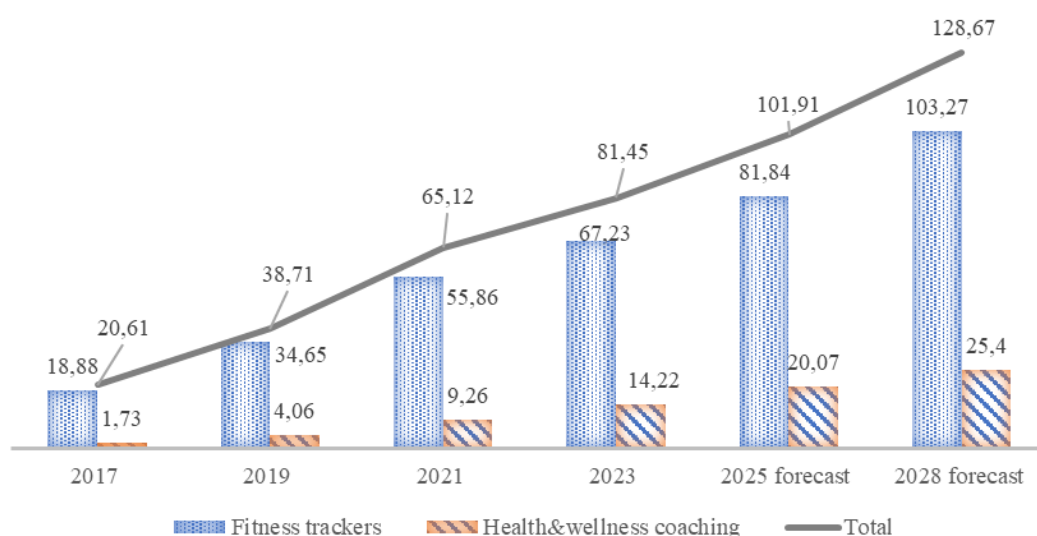


Figure 2. Revenue of fitness trackers and health&wellness coaching, 2023, in billion US\$ (based on [123])

Total revenue of this submarket in 2023 exceeds its 2017 level in more than 3.9 times, while its forecasted growth will exceed 2017 in more than 6 times.

Digital treatment&care market. The sector of digital treatment & care provides people with apps and devices to monitor lifestyle and health metrics. It includes management of digital care, biometric sensors, online pharmacy, and digital therapeutics [124]. Individual monitoring, smart character, regularity of usage, and purposeful performance made this sector earning in 3 times more in 2023 comparing with 2017 [124]. Structural changes reflect dominant demand on digital care management (Fig. 3).

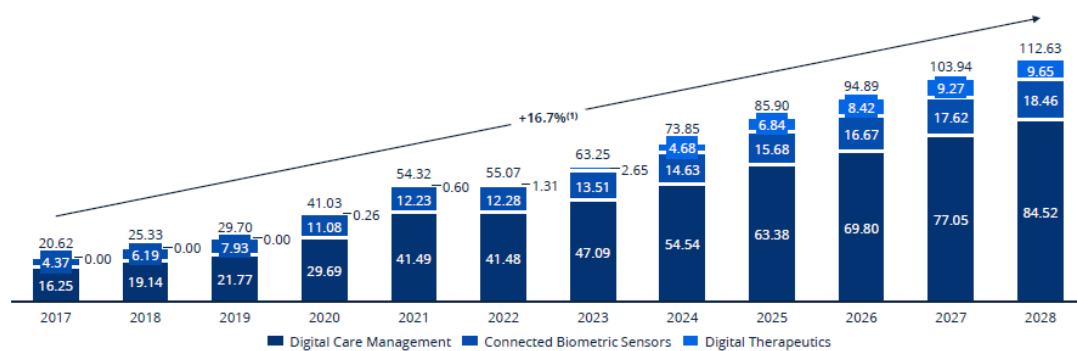


Figure 3. Revenue of digital treatment & care market 2017-2028 forecast [124]

In this market, connected biometric sensors gained more popularity making a gap between growth rates of other submarket categories (digital therapeutics and digital care management). In the following years, it will be even more distinct and essential. Switzerland, the US, Singapore, the UK, and Australia are the top 5 countries with the greatest penetration rate in 2023 [124]. Despite the global and structural downturns in the digital health market, Europe had high levels of business activity in the digital therapeutics segment. In 2021, there was a peak in the growth of deals (137) and the value of financing (USD 3.5 billion). Advanced technologies of this market include the processing of electronic health records, remote clinical trials, wearables capturing and monitoring patient data, telemedicine technologies, digital biomarkers, etc. [125]. This submarket is promising as well as other cutting-edged digital healthcare segments.

Online consulting/Telemedicine. Given the importance of rapid patient data processing, the need to get a quick consultation but available time and geolocation

barriers, the emergence and development of telemedicine providing virtual check-ups became the important and digital-related solution. Its breakthrough was conditioned by the COVID-19 restrictions.

The segment of online doctor consultations is among the fast-growing in digital health market. It accounted for almost 14 % of its total market in 2023 [119]. Online consultations are as much in demand as digital career management and tracking. The projected CAGR for 2017-2028 is almost 21%. The growth rate is gradual but stable (Fig. 4).

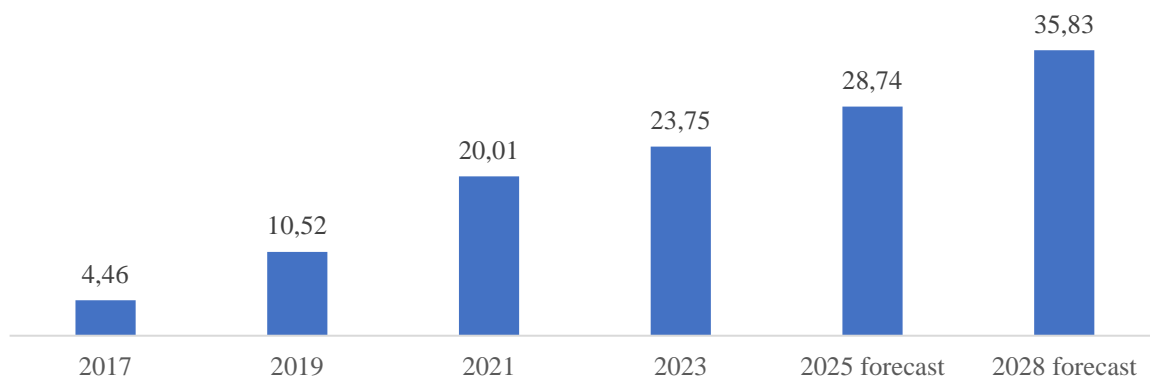


Figure 4. Global online doctor consultation revenue, 2017-2028 (based on [119])

Telehealth is the promising and all-accessible market that nevertheless depends on digital literacy and quality internet connectivity. Dynamics of this digital healthcare market is also growing. According to the forecasts, the telehealth market value will go up to over US\$ 459 billion (Fig. 5).

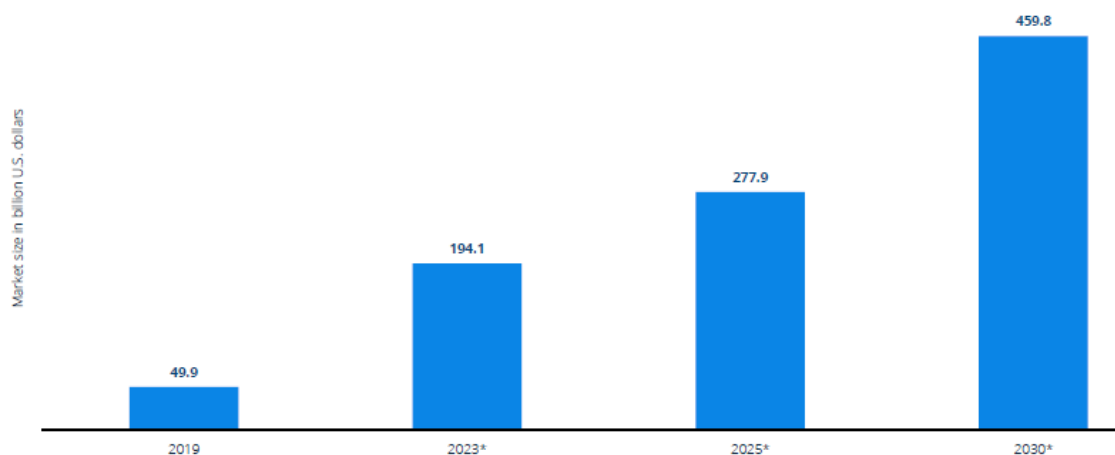


Figure 5. Retrospective and forecasted telehealth market, 2019-2030, billion U.S. dollars [126]

Among 2 000 respondents in 2020-2021, over 85 % found the easy and quick access to healthcare service beneficial, while over 62% admitted their virtual visit of doctors were less stressful and almost 52% pointed out on more frequent opportunity to see their doctors [126]. Moreover, telemedicine freed up a significant amount of time. For example, in Australia, virtual meetings saved 82 minutes in conservative estimate, and 362 minutes in optimistic estimate [127]. In the United States and Japan, these figures are the same – 20 minutes by the conservative scenario and 92 minutes in the optimistic one [127].

Despite the perspectiveness of this market, the majority of the U.S. and the UK clinicians showed different perceptions and issues on telehealth future. Thus, 76 % agreed (n=400) that telehealth occupied the majority of patient care in the near future and 22% disagreed with this statement; however, 68% admitted they frequently faced the issues in telehealth delivery compared to 24% who did not have frequent problems [117]. The worldwide examination of telehealth and virtual visit trends by both patients and doctors does not indicate extensive usage. Rather, it highlights the dominant preferences within the telehealth field of digital technology.

To sum up, the global digital healthcare market is characterized by constant growth. Among its structural elements, fitness tracking and digital care management are developing most actively. However, all segments of this sphere grow due to the high level of personal use of smart health apps and devices, the appreciated ability to monitor health and well-being indicators, time savings, high accessibility of remote medical services, and other expected benefits.