

Chapter 5

The Effect of Digitalization in Healthcare on Service Sustainability

Ash Köse

 <https://orcid.org/0000-0002-8044-6592>

Faculty of Health Sciences, Gümüşhane University, Turkey

ABSTRACT

This research evaluates how digitalization affects the sustainability of healthcare services. To achieve this, research articles published in the PUBMED and WEB OF SCIENCE databases up to June 30, 2024, were compiled. The PRISMA guidelines were followed when presenting the research findings. In the study evaluating the impact of digitalization on healthcare sustainability, a systematic review method was employed. The systematic review addresses the question of how digitalization affects the sustainability of healthcare services. The research identified two main themes. The first theme focuses on evaluating the effects of digitalization on sustainability within hospitals, healthcare workers, and patient populations. The second theme examines the impact of digitalization on sustainability concerning societal health, health worker well-being, and the overall health system.

INTRODUCTION

Health 4.0 is a new concept derived from Industry 4.0, which marks the fourth industrial revolution. Smart devices are at the heart of the idea that they can access vast amounts of data and make judgments without human intervention. Health-

DOI: 10.4018/979-8-3693-7442-9.ch005

care 4.0 improves the quality, efficiency, and reliability of healthcare delivery by enhancing the patient experience (Shah et al., 2024). Health 4.0 has necessitated digital transformation in the healthcare sector. One of the tools of digital transformation in the healthcare sector is artificial intelligence. In recent years, topics such as big data analysis, medical imaging, medical record, the pharmaceutical industry, robot applications, early diagnosis, and treatment, ensuring error-free application, and preventing unnecessary treatments come to the fore in artificial intelligence applications in health (Köse, 2023). According to a study, it has been determined that due to high costs, inadequate infrastructure, resistance to change, and security concerns, it is difficult to adapt artificial intelligence applications in the healthcare sector (Mouloudj et al., 2024). According to Fan et al. (2020), “applying the artificial intelligence technology to the problem of medical diagnosis is expected, to assist physicians in their routine work to improve the diagnostic level and alleviate their work pressure significantly.” Hence, the proper adoption of artificial intelligence technology in the healthcare sector provides a useful remedy for some of the challenges that health systems in various countries suffer from (Pettersson et al., 2022).

In today’s healthcare systems, growing demand and a limited workforce have led to longer waiting times, making it difficult for patients to access services and prompting delays in addressing their health needs (Liddy et al., 2015). Moreover, the rising workload, driven by healthcare professionals' dissatisfaction and increasing turnover rates, has negatively affected their health and well-being. Studies have shown that the integration of technological advancements into healthcare services can enhance the well-being and job satisfaction of healthcare workers (Zildzic et al., 2014). Over the past decade, digital transformation has played a crucial role in ensuring the sustainability and resilience of health systems. This transformation has brought numerous benefits both for patients (improved patient satisfaction) and for healthcare professionals (time savings) (Zammit et al., 2023).

In the field of healthcare, the COVID-19 pandemic has led to the intensive use of technology in health service delivery processes (Köse, 2022). The COVID-19 pandemic has accelerated the digital transformation of healthcare organizations and significantly altered their organizational culture (Ylitalo et al., 2023). During this period, technologies such as artificial intelligence, robotics, and telemedicine have been increasingly utilized in the management of healthcare services. Disease and contact tracing were implemented using digital systems to help reduce the spread of the COVID-19 pandemic. To minimize person-to-person contact, robots were prioritized for tasks such as cleaning and food preparation in infected areas (Webster, 2020). Artificial intelligence also played a supportive role during the pandemic, enhancing the diagnosis processes of diseases and improving treatments (Bullock et al., 2020).

26 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: www.igi-global.com/chapter/the-effect-of-digitalization-in-healthcare-on-service-sustainability/365092

Related Content

Healthcare Innovations in Israel

(2026). *Strengthening Global Innovation Policies Through Innovative Virtual Open Incubators Cluster* (pp. 39-46).

www.irma-international.org/chapter/healthcare-innovations-in-israel/410520

Digital Platforms and Open Innovation: How Online Travel Agencies Shape the Future of Hospitality

Suraj Jaywant Yadav (2025). *Open Innovation and Technology in Tourism and Hospitality* (pp. 75-92).

www.irma-international.org/chapter/digital-platforms-and-open-innovation/376843

The Tertiary Institutions and Entrepreneurship Development: Case Studies of Practical Outcomes in Yaba College of Technology Lagos Nigeria

Lukman Raimiand Isaac O. Ajiboshin (2018). *International Journal of Sustainable Entrepreneurship and Corporate Social Responsibility* (pp. 17-34).

www.irma-international.org/article/the-tertiary-institutions-and-entrepreneurship-development/211163

How to Succeed as an Entrepreneur in Africa: A Practical Guide and Cases

Gabriel Kabanda (2022). *Journal of Media Management and Entrepreneurship* (pp. 1-13).

www.irma-international.org/article/how-to-succeed-as-an-entrepreneur-in-africa/310935

Online Security Cues and E-Payment Continuance Intention

Echo Huangand Fa-Chang Cheng (2012). *International Journal of E-Entrepreneurship and Innovation* (pp. 42-58).

www.irma-international.org/article/online-security-cues-payment-continuance/63016