The Role of Technological Advances in Hospital Economic Transformation: A Literature Review

Alamsyah Alamsyah[1], Purwadhi Purwadi[2], Rian Andriani[3]
[1,2,3] Adhirajasa Reswara Sanjaya University
ppdspatklin@gmail.com

Abstract

Introduction: Digital progress has surged during the last decade. Computers and other modern ICT equipment are a key technological aspect of this new era of globalization, and hospitals are among those who use them. The economy is currently expanding fast, with new modes of consumption emerging. This is the result of the convergence of technological, economic, and socio-cultural forces that are altering traditional modes of commerce. This essay demonstrates how technological improvements influence the change of hospital finance.

Method: This piece is a literature review that was compiled by gathering information through the process of looking for journals that are linked to the title topic.

Result: The utilization of digital medical technology enhances accessibility and flexibility of healthcare services for the population. This encompasses the accessibility of transparent information regarding health, treatments, difficulties, and recent advancements in biomedical research. Technology significantly transforms the hospital economy by enhancing care quality, decreasing costs, and expanding access to health services.

Keyword: Economy, Digital, Communication, Technology

INTRODUCTION

In the past ten years, there has been a rapid acceleration in the flow of digital development. The next step is the creation of devices and the internet, which enable people to connect with one another in an increasingly straightforward manner. The digital era, which is characterized by the proliferation of internet technology and mobile communications, as well as advancements in information and communication technology (ICT), has given rise to a new form of globalization. Computers and other modern information and communication technologies (ICTs) are significant technological aspects of this new era of globalization. They unite the world into an integrated communication system and build a coherent financial and information landscape. These devices find applications in a wide variety of fields, particularly the public sector, which is inextricably linked to those of hospital services.

Technology integration, human resource strategies, and patient care advancements are all critical components of innovation. The significance of strategic financial planning and change management is underscored by obstacles such as financial constraints and resistance to change (Omaghomi et al., 2024). Today's economy is thriving, with new forms of consumption growing. This is the result of the convergence of technological, economic, and socio-cultural forces that are altering traditional modes of commerce.

Digital transformation in healthcare refers to the use of digital technologies to improve healthcare delivery and address medical concerns in communities. This transition includes the internet, digital technology, and their role in creating innovative solutions and best practices for effective healthcare management (Limna, 2023). This article shows how technological advances are impacting the financial transformation of hospitals.

LITERATURE REVIEW

The Internet has significantly facilitated the provision of health services and enhanced communication between healthcare providers and patients. The utilization of the Internet has enhanced the efficiency and administration of public utilities and

governmental entities, resulting in improved service delivery. Information and communication technologies have significantly contributed to enhancing health literacy by facilitating access to extensive health- related information, allowing individuals to acquire and share information without time or spatial limitations. These activities are conducted at minimal expense (De Bem Machado et al., 2022).

The advantages of ICT in healthcare are indisputable, and its further incorporation into healthcare systems will be essential for enhancing the quality and accessibility of healthcare for individuals globally. Digital technology is crucial in many accounting and public sector writings. Research frequently employs the phrases 'digital transformation', 'digitalization', and 'digitalisation' synonymously (Knudsen, 2020). Digital transformation in public sector organizations aims to radically change the structure and practices of an organization. Digital transformation is a complex process filled with regulatory, financial, infrastructure and cultural hurdles (Begkos et al., 2024).

Studies on digital transformation in accounting emphasize the necessary conditions for the effective adoption of new accounting technologies and their capacity for integration within management control systems. Research on accounting innovation and organizational change emphasizes the complexity of technologies influencing change, which can be characterized as either slow, incremental, and evolutionary, or rapid, episodic, and radical. Accounting studies highlight the role of digital technologies, including big data, blockchain, social media, cloud computing, and artificial intelligence, in facilitating decision-making, performance measurement, and the control of financial activities (Sapci & Sapci, 2020). The study suggests that increased digitalization can lead to improvements in accounting functions in the form of aspirational ideas about transparency, accuracy, value creation, and forecasting (Begkos et al., 2024).

The digital economy is an essential element of the present and forthcoming public health framework. The capacity of the digital economy to transform the healthcare sector establishes a strong connection between the digital transformation of healthcare and other economic sectors. Digital economy initiatives aim to enhance individuals' lives by delivering superior goods and services through cutting-edge digital technologies, with a particular emphasis on the healthcare sector. It is essential for healthcare facility management to prioritize the creation and implementation of strategies that advance the digitization of

healthcare and other vital sectors to address the changing health demands and expectations of patients (Jiang et al., 2022).

The digital economy fosters innovation and growth opportunities within the healthcare sector, necessitating the adoption of digital technologies by healthcare providers and administrators to maintain competitiveness in delivering high-quality care. The digital transformation of healthcare within the digital economy involves the application of digital technologies to enhance the quality, accessibility, and efficiency of healthcare services (Jiang et al., 2022). The utilization of telemedicine, electronic medical records, mobile health apps, and other digital tools that enable healthcare providers to give care remotely and in real time are examples of what can fall under this category. As a result, the provision of medical treatment is simplified and made more cost-effective (Awad et al., 2021). The expansion of digital devices is anticipated to rise as telemedicine, wearables, biometric sensors, clinical efficiency, and interoperability attract consumer interest.

The economy of hospitals may be affected by the integration of digital technology. This integration has the potential to result in a digital economy that combines traditional economic structures with innovative digital features, including 5G mobile networks, cloud computing, artificial intelligence, big data analysis, and robotics (Ciarli et al., 2021). This convergence can lead to complex, digitally networked systems in which traditional and digital models interact, resulting in the emergence of new ecosystems undergoing organizational, institutional, and regulatory transformation. Researchers have presented various examples of this phenomenon, including the integration of patient data systems and the deployment of cybersecurity safeguards for networked medical devices. The falling cost of producing minuscule sensors, along with the availability of cloud computing, has enabled Internet of Things (IoT) technologies to transform healthcare (Senbekov et al., 2020).

New opportunities are continuously emerging as a result of technological advancements. For instance, virtual reality is poised to provide novel methods for treating mental health conditions, while digital twins are being utilized more frequently in clinical trials, hospital operations, and disease modeling. Organizations are also investigating the potential of generative artificial intelligence technologies, such as ChatGPT, to facilitate therapeutic ideation, medical data analysis, and pattern identification. Additionally, smarter

clinical development is imminent (Chintala, 2022). Additionally, there is a rising emphasis on minimizing consumer healthcare spending through technology-based solutions. As digital tools become more generally available, they will play an important role in enhancing health

equity by closing care gaps, boosting access, allowing for tailored care, and removing geographic barriers. This development will assist mental health services by increasing the number of options available to individuals seeking treatment (Kraus et al., 2021).

The healthcare industry must navigate the economic uncertainty that currently surrounds many sectors, although the industry continues to demonstrate resilience in the face of these challenges (Kraus et al., 2021). Hospital hardware has also benefited from technological advancements. For instance, technical advancements have produced new, user-friendly computerized infusion devices for an increasing variety of home health care applications, as well as smaller, lighter, and less expensive hospital units that are more suited for office use. The creation of cost-effective technologies has been made a clear development objective, and device manufacturers are facing mounting pressure to show that their discoveries are cost- effective (Chui et al., 2023).

METHOD

This article is a literature review that compiles data from journal searches pertinent to the title, as well as information from accessible sources, including written materials such as photographs and images, and electronic documents that facilitate the study writing process. Text serves as a prevalent foundation for qualitative content analysis. The objective is to condense many texts into a coherent and succinct presentation of essential results. A typical initial step for this research involves systematically converting vast textual material into a succinct and structured summary of principal results. This essay will demonstrate the influence of technical advancements on the evolution of hospital finance.

RESULTS AND DISCUSSION

Operating costs in healthcare continue to rise, posing significant challenges to healthcare organizations globally. Rapid advances in digital technology have supported the growth of the digital economy. The transformation towards digitalization in the public healthcare sector is a leading indicator of this economic shift. Increasingly advanced technology has played a significant role in the transformation of the hospital economy. This technology can improve the quality of care, reduce hospital costs, and increase access to healthcare services. Technological advances have also been associated with the efficiency of healthcare services (Zhao et al., 2024).

The community can benefit from improved accessibility and flexibility of health services through the implementation of digital medical technology. This encompasses the accessibility of public information regarding health, treatments, complications, and the most recent developments in biomedical research. Devices utilized in hospitals are also considered technological advancements. For instance, patients with end-stage renal failure were previously required to endure costly hemodialysis; however, patients are now able to utilize CAPD, which can reduce the costs associated with hemodialysis. The frequency of venous catheter malfunctions can be decreased by employing infrared devices for catheter insertion.

Technological advancements in diagnostic tools will assist hospitals in avoiding unneeded treatments. Radiology is one of the most important applications of artificial intelligence in healthcare. It has the potential to dramatically boost the efficiency of medical procedures by training machines to read pictures (MRI, CT, and ultrasound) and analyze them quickly in order to produce accurate diagnoses and treatment plans. Radiologists will benefit from artificial intelligence when it comes to image capture and reconstruction. For example, GE Healthcare and Canon Medical Systems have launched an ML-based image reconstruction tool for CT scans. The initiative tries to lower radiation doses while maintaining image quality. Another example is Subtle Medical's product, which optimizes PET and MR imaging operations. In addition to radiography, artificial intelligence can be quite valuable in health consultations (Tanenbaum, 2020).

Artificial intelligence involves utilizing AI platforms to enhance diagnoses, practice

administration, clinical decision-making, and the education of primary care providers. Pritesh Mistry (Royal College of General Practitioners, UK) categorizes the application of AI into two distinct classifications: (1) clinical decision-making and care management, encompassing symptom assessment, automation of clinical coding, image recognition for dermatological conditions, triage, and self-management; and (2) proactive detection, which involves analyzing patient records to identify individuals with undiagnosed conditions. Artificial intelligence can facilitate predictive modeling for assessing hospital mortality, unexpected readmissions, extended and unwarranted hospitalizations, and the cost-effectiveness of treatments (Mistry, 2019).

"Big Data" is a high-volume, high-velocity, and/or diverse information asset that requires innovative and cost-effective forms of information processing that enable better insights, decision-making, and process automation. Big data refers to large and diverse collections of information that are growing at an ever-increasing rate. Big data encompasses the volume of information, the speed at which it is created and collected, and the variety or scope of data points covered (Shafqat et al., 2020). Big data is increasingly being used to improve and optimize management, analysis, and forecasting in healthcare. For example, the transition to electronic medical records can help store, sort, and speed up the processing of patient data. In addition, the application of big data systems in medical practice management has the potential to improve quality, efficiency of services, reduce costs of care, and the number of errors. Electronic medical records are driving the explosive growth of big data in healthcare (Dash et al., 2019).

Healthcare systems are complex, with multiple cost components such as labor, supplies, and facilities contributing to overall operating costs. Reducing these costs is critical to ensuring financial sustainability and delivering quality patient care. A study is developing a powerful tool that promises to help healthcare organizations gain insights from their data, identify inefficiencies, and optimize processes. The tool enables healthcare providers to make informed decisions that can lead to cost savings and operational improvements. Data integration also plays a key role in streamlining workflows and consolidating disparate data sources, allowing for more comprehensive analysis of healthcare operations. The tool integrates data from electronic medical records, financial systems, and other sources. This allows healthcare leaders to gain a holistic view of their

operations and identify opportunities for cost reduction (Nwosu, 2024).

CONCLUSION

There are many reasons why new technologies are being used in health care, such as the need for cheaper and smaller medical equipment. Technology also makes it possible for big data to be collected, which can help cut down on mistakes and make medical records more cost- effective. In addition, it's easy to find cases of return. AI can also be used to make diagnoses more accurate so that patients don't get instructions for things that shouldn't be done.

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