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THE GOVERNANCE OF HEALTHCARE INTERNET: UNDERSTANDING THE IMPACT ON THE WORKFORCE

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Abstract

This article investigates the impact of the governance of healthcare internet denoted as internet of Things (IoT) on healthcare services and the workforce. With the increasing use of IoT devices in healthcare service delivery, the way in which healthcare services are provided has significantly changed. The article addresses the goals, methods, and new results presented in this context. The goal is to understand to what extent IoT has transformed healthcare services and its impact on the workforce. The methods used include a systematic review of the current literature and the analysis of case studies. The results demonstrate that IoT has a positive impact on healthcare services by improving patient outcomes and reducing healthcare costs. However, it has also caused a significant change in the required skill set of healthcare professionals and increased the demand for employees with a technology background. The article also emphasizes the need for healthcare organizations to invest in the education and development of their employees to ensure they have the necessary skills to effectively work in the changing healthcare environment. Overall, this article provides a new perspective on the impact of IoT on healthcare services and the workforce, serving as a foundation for future research in this area

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Keywords: Internet of Things in Healthcare, Strategic Management, Smart Hospitals, Workforce

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1. Introduction

Today, the governance of healthcare internet denoted as Internet of Things (IoT) technology is rapidly expanding in many industries. The use of this technology in the healthcare sector has become a significant area of interest in recent years. IoT is used in many areas of the healthcare sector, such as medical devices, personal health devices, health tracking and management, healthcare management, and medical research (Albalawi & Joshi, 2018; Preum et al., 2021).

The use of this technology in the healthcare sector allows healthcare services to become more effective, accessible, and efficient while also significantly impacting the workforce. This impact can be addressed in terms of creating new job opportunities, changing existing jobs, education, development needs and workforce management (Laplante & Laplante, 2016; Singh et al., 2022).

The adoption of IoT technology in healthcare has the potential to enhance the effectiveness, accessibility, and efficiency of healthcare services while also significantly impacting the workforce . However, the current state of knowledge regarding the specific implications of IoT on the healthcare workforce remains limited. Therefore, this study aims to address this gap by thoroughly examining the impact of IoT technology on the healthcare workforce. By conducting a comprehensive literature review, this study aims to identify the specific challenges, opportunities, and potential risks associated with the integration of IoT in healthcare workforce management. The findings of this study will contribute to a deeper understanding of the implications of IoT technology on healthcare personnel and can provide valuable insights for policymakers and practitioners in the healthcare sector.

In the final section, based on the information obtained from the literature review followed by research framework, methodology, an assessment of the impact of IoT technology on the healthcare workforce will be made, and recommendations will be provided regarding potential opportunities, challenges, and risks.

2. Research Framework

The main objective of this study is to comprehensively examine the impact of governance of Internet of Things (IoT) technology on the healthcare workforce.

3. Research Questions

i. What extent is IoT technology adopted and used in healthcare institutions?
ii. What are the impacts and benefits of this technology in healthcare services?"
iii. What is the effect governance of IoT on the healthcare workforce?
iv. What are the potential benefits of governance of IoT in healthcare workforce management?
v. How does IoT influence the roles, competencies, and processes of healthcare professionals?
vi. How can the impact of IoT on healthcare workforce planning and training needs be evaluated?

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3.1. Methodological Approach

The study will commence with a comprehensive literature review that focuses on the definition, features, application areas, and use of the governance of IoT technology in the healthcare sector. Relevant scholarly articles, research papers, and other published materials will be systematically searched and analyzed. Key themes and trends related to the impact of IoT on the healthcare workforce, including new job opportunities, job changes, education and development needs, and workforce management, will be identified. Based on the findings from the literature review, data collection will be conducted. The collected data and analysis results will be evaluated to assess the impact of governance of IoT technology on the healthcare workforce. This evaluation will involve a systematic assessment of the findings, considering the strengths, weaknesses, opportunities, and threats associated with the integration of IoT technology. The assessment will also explore potential challenges and risks that may arise in terms of workforce dynamics, skill requirements, and organizational changes.

3.2. .Expected Outcomes

The expected outcomes of this study will shed light on the detailed effects of governance of IoT technology on the healthcare workforce. These findings will guide the identification of new job opportunities, the development of workforce management strategies, and the determination of training needs for healthcare professionals.

4. Literature Review

4.1. What is the Internet of Things (IoT)?

Governance of IoT technology is a rapidly growing concept in recent years. IoT is a technology that enables the collection, analysis, and sharing of data by connecting physical objects to the internet and allowing them to communicate with each other (Albalawi & Joshi, 2018; Dimitrov, 2016; Hancke et al., 2012). This technology is used in many sectors and is becoming more widespread day by day.

With IoT technology, physical objects can communicate with each other and with humans through their connection to the internet, enabling them to perform data collection, analysis, and sharing operations (Thilakarathne et al., 2020). This allows for interaction between objects, information sharing, and automated processes to be performed.

One of the most important features of IoT technology is the ability to perform real-time data collection and analysis by connecting physical objects to the internet (Čolaković & Hadžialić, 2018). This feature enables faster and more effective management of business processes. Another feature is the ability of IoT devices to communicate with each other and share data, enabling integration between devices to create a smarter and more efficient system (Albalawi & Joshi, 2018; Čolaković & Hadžialić, 2018).

IoT technologies use different protocols and technologies to connect objects to the internet. These technologies include wireless networks, sensors, actuators, microcontrollers, RFID, Bluetooth, ZigBee, Wi-Fi etc. (Haghi et al., 2017; Rathore et al., 2016; Yin et al., 2016). These technologies enable objects to be connected to the internet and communicate with each other.

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IoT technology is used in many sectors, including healthcare, industrial automation, agriculture, energy, transportation, logistics, retail, and home automation (Bıçakçı, 2019; Fischer et al., 2020). The use of IoT technology in the healthcare sector increases the connectivity of medical and personal health devices, allowing for more detailed and accurate information to be collected about patients' health status. This enables the management of patients' treatment and care to be more effectively managed. Additionally, real-time data about patients' health status can be collected through IoT technology and monitored remotely by healthcare professionals. This allows for quick and accurate decisions to be made about patients' conditions. IoT technology also enables healthcare business processes to be managed more efficiently and effectively, reducing the workload of healthcare organizations and improving the quality of healthcare services.

4.2. Internet of Things in Healthcare

The use of IoT technology is widespread across various areas of the healthcare sector, including medical devices, personal health devices, health tracking and management, healthcare management, and medical research. In this section, a comprehensive literature review will be conducted to provide detailed information on the use of IoT technology in these areas within the healthcare sector.

4.2.1. Medical Devices

IoT technology increases the connectivity of medical devices, allowing for more detailed and accurate information to be collected about patients' health conditions. This enables more effective management of patients' treatment and care (McMahon et al., 2017). Additionally, IoT technology allows medical devices to be monitored remotely, ensuring timely intervention for maintenance and repair.

4.2.2. Personal Health Devices

IoT technology assists in the monitoring and management of patients' health status through personal health devices (Rghioui & Oumnad, 2018). These devices allow patients to collect real-time data about their health status from their homes or workplaces. This data can be monitored remotely by healthcare professionals, allowing for quick and accurate decision-making regarding patients' conditions.

4.2.3. Monitoring Of Health Signs and Management

IoT technology enables more effective management of health tracking and management services (Čolaković & Hadžialić, 2018). This allows for more data to be collected about patients' health conditions, which can be utilized more effectively for their treatment and care. Additionally, IoT technology allows for real-time data collection about patients' health conditions, which can be monitored remotely by healthcare professionals. This enables quick and accurate decision-making regarding patients' conditions

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4.2.4. Health Services Management

IoT technology allows for more efficient management of health services (Rathore et al., 2016). This reduces the workload on healthcare institutions and improves the quality of healthcare services. IoT technology enables healthcare institutions to manage their medical records more effectively, which allows for the accurate collection and use of data necessary for patients' treatments. Additionally, IoT technology allows healthcare managers to collect the necessary data more quickly and accurately to manage healthcare services more effectively.

4.2.5. Medical Research

IoT technology provides new opportunities for conducting medical research (Yin et al., 2016). Through IoT technology, the data required for medical research can be collected more quickly and accurately. This makes medical research more effective, and new and more effective methods can be developed for the treatment of patients.

4.3. The impact of the internet of things on the workforce in healthcare

IoT technology is widely used in the healthcare industry, enabling the connectivity of medical devices and personal health devices for easier health monitoring and management of patients. This allows for better tracking of patients' health conditions and faster intervention when necessary. With this IoT technology, new job opportunities may arise in the healthcare industry. The use of this technology can create new job opportunities in software development, data analysis, sensor technologies, system integration, and security fields. Furthermore, the use of IoT technology can also enable the development of new products and services.

IoT technology can also change the structure of existing jobs in the healthcare industry (Rathore et al., 2016). For example, in a hospital where IoT technology is used, medical devices can be interconnected, making patient treatment faster and more efficient. However, the use of IoT technology can also lead to changes in workforce planning as some healthcare workers' jobs become automated.

With the increasing use of IoT technology, there is also a growing need for education and development of healthcare workers (Yin et al., 2016). Therefore, healthcare institutions need to identify the education and development needs of their employees and create training programs to meet these needs.

4.3.1. New Job Opportunities

The use of IoT technology in the healthcare sector can lead to the creation of new job opportunities. For example, by using IoT technology, patients' health status can be monitored, allowing doctors to better track their patients' health status. In addition, the use of IoT technology can create new job opportunities in areas such as the development of medical devices and software, data analysis, and system integration (Atzori et al., 2010). With the use of IoT technology, patients are able to monitor their own health conditions from their homes. This enables better tracking of patients' health status and allows

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doctors to intervene more quickly if necessary. The development of these new applications may lead to the emergence of businesses specialized in IoT technology.

The use of IoT technology can also create new job opportunities in areas such as data analysis and artificial intelligence in the healthcare sector. With the use of these technologies, patients' health data can be analyzed more effectively and more accurate diagnoses can be made. Additionally, the use of these technologies can lead to the formation of businesses specialized in data analysis and artificial intelligence in the healthcare sector (Aghdam et al., 2021).

4.3.2. Change of Existing Jobs

As the use of IoT technology increases in the healthcare sector, it is believed that some existing jobs may change. For example, medical devices and equipment can become interconnected, making patients' treatment faster and more efficient (Xing, 2020). Therefore, healthcare institutions need to reconsider their workforce planning taking into account these changes.

With the use of IoT technology, some jobs in the healthcare sector may become automated. For example, through the interconnection of medical devices, some procedures can be automatically performed. However, this automation may lead to changes in some healthcare workers' roles (Kong et al., 2022). Therefore, healthcare institutions need to prepare appropriately for these changes.

IoT technology usage can also enable healthcare processes to become more efficient. For instance, by connecting medical devices with each other, patients' health data can be monitored more quickly and accurately (Wang et al., 2020). However, it should also be noted that these changes mean healthcare institutions need to reorganize their processes.

4.3.3. Training and Development Needs

The use of IoT technology may change the education needs of healthcare professionals. Healthcare institutions may need to organize training and seminars related to the use of IoT technology, so that healthcare professionals can adapt to new technologies quickly (Chiuchisan et al., 2014) In addition, the education of healthcare professionals on IoT technology can contribute to the creation of new job opportunities.

The use of IoT technology may bring changes to the work processes in the healthcare sector. Therefore, healthcare institutions should organize trainings related to IoT technology and continuously develop their employees (Kumari et al., 2018). This way, healthcare professionals can adapt to new technologies quickly and work more efficiently.

The use of IoT technology may lead to the emergence of new professions in the healthcare sector. For example, healthcare professionals who have received education on IoT technology can work on projects related to the use of IoT technology in healthcare institutions (Habibzadeh et al., 2020). Therefore, healthcare institutions can develop education programs on IoT technology, taking into account the education and development needs of their employees.

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4.3.4. Workforce Management

The use of IoT technology is expected to bring changes in workforce management in healthcare services. For example, with IoT technology, healthcare institutions can make their processes more efficient. Therefore, they need to review their workforce planning and identify workforce needs related to IoT technology (Kelly et al., 2020).

The use of IoT technology can automate certain tasks in healthcare services, resulting in a potential decrease in the need for human workforce in healthcare institutions. Consequently, healthcare institutions may need to adjust their workforce planning accordingly. However, it should be noted that such changes may also impact the nature of work performed by healthcare professionals (Aghdam et al., 2021).

With the use of IoT technology, workforce management in the healthcare sector can become more efficient. IoT technology can reduce the workload of healthcare workers and enable faster processing of tasks in healthcare institutions (Maksimović et al., 2015). However, the effects of these changes on workforce management in healthcare institutions should be carefully considered. It is important to analyze the impact of IoT technology on job roles, responsibilities, and workforce planning.

5. Conclusion

The use of governance of healthcare internet denoted as IoT technology in the healthcare industry offers many opportunities for both patients and healthcare workers. The increased use of this technology in the healthcare industry brings many benefits, such as better patient monitoring, more effective treatments, reduced workload for healthcare workers, and early diagnosis of diseases. However, as the use of IoT technology in the healthcare industry increases, some challenges and risks also arise.

Among these, there are concerns about the privacy of personal health data. The security of IoT devices is also an important issue, as attacks made through these devices can have serious consequences. It is also important to ensure that the devices used in healthcare services with IoT technology receive adequate education and maintenance. In addition, as healthcare services become more digitalized with IoT technology, it is necessary for healthcare workers to adapt to new technologies and receive appropriate training.

Therefore, some recommendations can be made for the increased use of IoT technology in the healthcare sector. Firstly, stricter measures should be taken regarding the security and privacy of IoT devices. Additionally, healthcare workers should receive adequate training, and the use of data analysis and artificial intelligence technologies should be increased in healthcare management. This could enable earlier diagnosis of diseases and more effective management of healthcare services.

With the integration of IoT technology, many innovations are expected in the healthcare sector, such as smarter hospitals, personalized healthcare services, remote monitoring systems, and more connectivity options in medical devices. With these advancements, further digitalization of healthcare services is expected.

In conclusion, while IoT technology offers many opportunities in the healthcare industry, it also involves some challenges and risks. Therefore, security, privacy, and education should be prioritized to

enable the wider adoption of IoT technology in the healthcare industry. By providing adequate education to healthcare workers, IoT technology can be used more effectively to manage healthcare and improve patient tracking. In addition, as the use of IoT technology increases in the healthcare industry, new job opportunities may arise.

In the future, IoT technology is expected to become even more widespread in the healthcare industry, leading to further digitalization of healthcare services. With the development of this technology, new innovations such as smarter hospitals, personalized healthcare services, remote monitoring systems, and more connectivity options in medical devices may emerge in the healthcare industry. These developments offer an important opportunity to improve patient tracking and to manage treatments more effectively while reducing the workload of healthcare workers.

In conclusion, while IoT technology offers many opportunities in the healthcare sector, it also presents some challenges and risks. Therefore, priority should be given to security, privacy, education, and workforce management for increasing the use of IoT technology in the healthcare sector.
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