


Chapter 14

Challenges of Blockchain Implementation for Patient Services

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ABSTRACT

Today, technology dominates businesses across all scales and sectors, including healthcare. Blockchain (BC) is a pivotal technology in this transformation. It securely stores medical data, updates clinics seamlessly, enhances workflows, and thwarts hacking threats. However, research on BC's implementation challenges for patient services remains limited. This chapter investigates these challenges, categorizing BC into public, private, hybrid, and consortium forms. Major obstacles encompass interconnectivity, security, standardization absence, storage limits, hospital hesitancy, patient mistrust, cost, limited medical proficiency, and data governance. Overcoming these hurdles is crucial for widespread healthcare BC adoption, despite the abundant opportunities. In comparison to other technologies, BC's unique issues require deeper exploration. Researchers can scrutinize BC comprehensively for its business potential. This chapter stands as a prominent effort in pinpointing and analyzing BC's integration in healthcare.

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INTRODUCTION

When it comes to the delivery of treatment, health informatics (HI) is an offshoot of medical informatics that puts an emphasis on the clinical setting and the use of technology. Medical facilities and their staffs are using a variety of methods and technologies to share their patients' medical records (Esmailzadeh & Mirzaei, 2019). For a variety of reasons, people frequently change their residence, necessitating the use of a variety of new doctors and hospitals. Disjointed and out-of-date health data can weaken the bond between healthcare practitioners and their patients, making it difficult for them to share vital information. If properly implemented, BC has the potential to revolutionize healthcare data management. Health care informatics is developing as a result of developments in both medical technology and medical practice. Using today's cutting-edge tools, HI equips medical practitioners and healthcare institutions with comprehensive bodies of knowledge that improve the standard of care delivered to patients (Norris, 2016). A blockchain (BC) is a distributed digital ledger of transactions that can't be easily hacked or altered. This technology facilitates safe transactions between people without the need for a central authority, financial institution, or other middleman. By utilizing a decentralized ledger spread over multiple sites as opposed to one centralized one, BC can support electronic business transactions (i.e. information sharing) in a decentralized context. Patients can have control over their data by deciding what information is shared and with whom (Esmailzadeh & Mirzaei, 2019).

Decentralized systems, distributed ledgers, and immutable and cryptographically secure BC technologies are all examples of the emerging Internet of Things applications that are part of Industry 4.0. In this system, many entities store and use identical copies of a set of transaction lists. Due to a more patient-centric approach to the health care system and BC's capacity to integrate disparate systems and boost the accuracy of electronic health data, healthcare is one industry where BC technology has significant potential. Because of its disruptive nature, blockchain technology (BC) has the potential to radically alter the way healthcare providers interact with their customers. Using their own credentials and encryption key, users can grant others access to their health data in a transparent, auditable manner with the help of BC. This includes authorizing health professionals, service providers, and relevant actors (such as researchers and social care providers) to access their medical records and other information for the purposes of direct health care delivery or to permit research, statistical, or other secondary uses of their data (Organization for Economic Co-operation and Development, 2020). Although Bitcoin and Ethereum are examples of digital currencies, BC is often thought as its underlying technology. Healthcare, supply chain management, digital rights management, energy, and government are just few of the many industries that might benefit from BC (Hughes et al., 2019). In

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