

25
TAHAP
1999-2024
UTM SEBUAH UNIVERSITI



Issue #4 | Oct. 2024

RISE

Catalysing Global Research Excellence

magazine

Changing Lives
and **Empowering
Humanities**

eISSN 2805-5683



JPI UTM

#bevisible

Pemangkin Idea



REVOLUTIONISING HEALTHCARE OPERATIONS:

The Potentials of Blockchain Technology



Norfarizza Khairil Anuar
Dental Officer UG48
Greentown Public Dental Clinic

Prof. Ts Dr Veera Pandiyan Kaliani Sundram
RIG- Sustainable Supply Chain Logistics Management
Faculty of Business and Management
Universiti Teknologi MARA

Ts Dr Ahmad Rais Mohamad Mokhtar
RIG- Sustainable Supply Chain Logistics Management
Faculty of Business and Management
Universiti Teknologi MARA

Satoshi Nakamoto pioneered the blockchain technology in 2008 and introduced the Bitcoin cryptocurrency technology. Since then, it has been used in wide-ranging sectors, including business, finance, and healthcare. The healthcare industry is one of the fields where blockchain has tremendous potentials, as services in the healthcare industry are evolving to support patient-centered strategy. Blockchain's sophisticated data structure comprises of a growing collection of records known as “blocks”. Immutability, decentralization, transparency, and traceability grants the blockchain technology with an enormous potential to safeguard patient information in the healthcare system.

The use of blockchain in the healthcare industry would emphasise data management, which has the potential to connect disparate systems and improve the accuracy of Electronic Health Records (EHRs). In healthcare sector, storing patients' confidential medical info is critical. These data are susceptible, making them an ideal target for cyber-attacks. It is necessary to safeguard all sensitive information. Blockchain technology could enable safe health data storage and sharing. Encryption is also supported by blockchain. Healthcare providers will need the matching public key to access patient information. This technology allows secure data recording and transmission from devices to healthcare practitioners. It can prevent unauthorized tampering with data, restrict access to specific devices, and close down compromised nodes. Blockchain technology is highly resilient against attacks and failures; with multiple mechanisms to regulate user access. As a result, blockchain is an excellent basis for managing medical records. The present situation is one where various providers' health records may contain essentially identical information under different IDs that needs to be connected. This has been identified as problematic. As a potential solution, the adoption of a blockchain health record unique difficulties because it would involve replacing an already established system rather than starting from scratch.



Another use of blockchain in healthcare is data control and protection, which ideally ought to be handled by the patient. Blockchain-based healthcare systems could improve the security and reliability of their data because individuals would have control over their healthcare records. These systems could also aid in consolidating patient data, allowing for exchanging medical records between various healthcare institutions. As a result, sharing and controlling patients' healthcare data is another use case that can profit from advanced modern technologies. Patients have complete control over their records with these systems; they are informed when their data is updated and they can share entire or partial documents with doctors, researchers, and other parties. Patients can even specify the extent of accessibility of their records to a third party. This method allows insurers to validate confirmations with patients directly, without intermediaries. Implementing a Blockchain-based method for distributing and sharing accurate and up-to-date healthcare data among all interested parties can reduce medical mistakes caused by out-of-date data and help preventing health problems. Significant merit expense reductions may result from this. Plus, it enables the involved medical specialists to keep tabs on the patient's prior encounters with all doctors. As a result, all aspects of a patient's care are described openly, fostering a new degree of communication and trust among all parties involved in medical care.

In addition, blockchain is used to improve the transparency of the healthcare supply network. The application of blockchain in healthcare also enables customers to track products during manufacturing, wholesale, and shipping, to ensure the authenticity of products. This is critical for both pharmaceuticals and medical equipment. When a drug ledger is produced, it records the place of origin, such as a laboratory. Every use of this drug since then has been documented. Blockchain can store a wealth of data, including labour expenses and waste generated during manufacturing and transportation. It also expedites the process of obtaining medical credentials. Blockchain enables healthcare organisations to record and monitor their employees' credentials. This arrangement simplifies hiring and increases transparency and confidence among subcontractors, hospitals, and patients. Furthermore, blockchain records enable incremental updates when professionals need to add these information.

Current blockchain trends in healthcare indicate that it is mainly used for data sharing, health records, and access control. It is rarely used for other situations, such as supply chain or drug prescription management. As a result, much of blockchain's potentials still needs to be explored. Blockchains are still a relatively new tool in healthcare, and new applications are yet to be discovered and researched. Legal concerns must be resolved before the healthcare system can be redesigned to use blockchain technology, such as use of blockchain transactions by data owners to grant, amend, or remove permissions to access data. Data owners may then treat different types of data differently and assign different levels of access security to them. For example, access to critical medical data could be restricted to specific entities or be kept private. The use of blockchain technology in healthcare is still in its infancy, but it has enormous potentials. Although the technology has yet to be widely accepted in the healthcare industry, its scope of use is expected to grow.



RISE

Catalysing Global Research Excellence

Published by

Unit of Research Communication & Visibility

Department of Research & Innovation,
Level 5, Bangunan Canseleri Tuanku Syed Sirajuddin,
Universiti Teknologi MARA, 40450 Shah Alam, Selangor



اوسها تقوى موليا



JPI UITM

| #bevisible

| Pemangkin Idea