Blockchain and EHRs: A Secure and Efficient Solution for Healthcare

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Abstract - By upgrading electronic health records (EHRs) with greater security, privacy, and decentralization, blockchain technology has the potential to revolutionise the healthcare sector. Over 300 recent scientific research were examined as part of a thorough literature review to evaluate this potential. The analysis showed that data management, security, and integrity are problems for EHR systems. The analysis suggests building a blockchain-based EHR system with granular access rules and off-chain storage for scalability to address these issues. The healthcare sector would profit from this solution's ability to provide EHRs with a secure, adaptable, and effective solution. The proposed decentralised network and enhanced security of the proposed blockchain-based EHR solution. Off-chain storage will increase the system's scalability and efficiency, while granular access controls will guarantee the privacy and integrity of the data. The solution tackles the problems of EHR systems and offers the advantages of blockchain technology, including as security, immutability, and transparency. By building a safe and effective EHR system that guarantees patient privacy, data integrity, and accessibility, the suggested solution has the potential to transform the healthcare sector. The suggested method can give medical professionals a thorough understanding of a patient's medical background and current therapies, enhancing patient outcomes and lowering healthcare expenditures.

Index Terms-Blockchain technology, electronic health records (EHRs), data security, privacy, decentralization, scalability, security, immutability, transparency, patient privacy, data integrity, accessibility.

I. INTRODUCTION

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All facets of human existence have been touched by the development of new technology, which has altered how we utilise and perceive the world. This effect is also being felt in the healthcare industry, where technological improvements are improving care in terms of security, user experience, and other areas. The healthcare business has benefited greatly from electronic health records (EHRs) and electronic medical record systems, yet there are still issues with data security, privacy, and integrity.

Blockchain technology provides a special answer to these problems by offering a safe and unhackable platform for storing patient records and other healthcare-related data. EHR systems are already widely used throughout the world, with non-federal acute care institutions in the US having a high acceptance rate. Quality of the data, security, patient privacy, and involvement remain issues, nevertheless.

Patients must have complete control over their data, including authorship, data access, sharing, data usage, and approval of the shared data, in order to create a genuinely patient-centric EHR system. Digital health records enable patients to manage their medical information and have already decreased the cost of preserving historical medical data. Patients respect the confidentiality and privacy of their medical records, as seen by the limited user access to EHRs and their reluctance to divulge such information.

II. LITERATURE SURVEY

2.1 K. Wisner ET : This paper presents an integrative review that explores the impact of electronic health records (EHRs) on nurses' cognitive work. The authors examine existing literature to gain insights into how the implementation and use of EHRs affect the cognitive workload of nurses. The study focuses on identifying the challenges and benefits of EHRs from a nursing perspective. By systematically analyzing various research works, the review sheds light on the implications of EHRs on nurses' workflow, decision-making processes, and overall job performance.

2.2 G. Jetley ET: In this paper, the authors explore the quality issues related to the adoption and use of electronic health records in the context of Information Systems (IS) research. The study delves into various dimensions of EHR quality, including data accuracy, completeness, consistency, and security. Additionally, the authors discuss the essential thresholds that need to be met for successful EHR implementation and provide remedial actions to address the identified quality issues. This research is significant for understanding the challenges and strategies to enhance the quality and usability of EHR systems.

2.3 M. Hochman ET: This paper examines the concept of electronic health records (EHRs) as a "Quadruple win" (benefiting patients, providers, payers, and policy-makers) or a "Quadruple failure" (failing to achieve the intended benefits). The author presents a critical commentary on the challenges and potential failures associated with EHR adoption. By analyzing the limitations and barriers, this paper highlights the importance of addressing EHR system design, usability, and policy-related issues to ensure successful implementation and realize the anticipated benefits.

2.4 T. Vehko ET: This research investigates the relationship between experienced time pressure, stress, and the usability of electronic health records (EHRs). The study also explores the role of information technology (IT) competence in mediating these relationships. By collecting data from healthcare professionals, the authors assess how the usability of EHR systems and the level of IT competence impact the user experience and the perceived stress and time pressure related to using EHRs. The findings contribute valuable insights into the human factors influencing EHR adoption and usage.

III. CONCLUSIONS

In medical services, a conveyed record will be viewed as a common unchanging and straightforward history of the multitude of activities performed by eHealth clients; these activities typify characterizing access to the executive's strategies and sharing, getting to, and changing the information. This work presents the arranging of the structure for the genuine information-sharing case for radiation medication and furthermore the execution of a picture that guarantees protection, security, comfort, and granular access to the executives over touchy patient information. The philosophy is general and could be basically reached out to help with various kinds of patient considerations..

IV. REFERENCES

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