

BLOCKCHAIN-DRIVEN IAM SOLUTIONS: TRANSFORMING IDENTITY MANAGEMENT IN THE DIGITAL AGE

Sudhakar Tiwari¹ & Er. Raghav Agarwal²

¹Indira Gandhi National Open University (IGNOU), New Delhi, India

²TCS, Greater Noida, UP, India

ABSTRACT

In the age of digital transformation, identity and access management (IAM) systems have emerged as critical components to secure digital assets and comply with regulations. Conventional IAM solutions, based on centralized databases and authority models, have been beset by numerous issues, ranging from data breaches and identity theft to susceptibility to cyberattacks. The decentralized, transparent, and immutable nature of blockchain technology presents an opportunity to overcome these issues and revolutionize the field of IAM. This study discusses the integration of blockchain technology within IAM solutions to increase security, privacy, and scalability in today's digital world. With increasing interest in the application of blockchain to IAM, there exists a wide research gap in the creation of fully decentralized IAM frameworks that maintain both security and efficiency in managing real-time, dynamic access control demands. Moreover, existing literature is largely based on theoretical implementations, with few real-world case studies and practical applications of blockchain-based IAM solutions. This paper will bridge this gap by proposing a framework that integrates the benefits of blockchain with sophisticated cryptographic methods to deliver a secure and scalable IAM solution. It also addresses possible challenges, including interoperability with traditional systems, performance overhead, and regulatory issues. The work presented in this research will help enhance the understanding of how blockchain can revolutionize IAM systems and serve as a foundation for further research in secure digital identity management in the evolving cybersecurity world.

KEYWORDS: Blockchain, Identity and Access Management (IAM), Decentralized Systems, Digital Identity, Cybersecurity, Cryptographic Techniques, Access Control, Privacy, Scalability, Security, Blockchain Integration, Digital Transformation, IAM Framework, Real-Time Access, Regulatory Compliance.

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