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THE FUTURE OF IDENTITY AND ACCESS MANAGEMENT IN BLOCKCHAIN-BASED DIGITAL ECOSYSTEMS

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ABSTRACT

As blockchain digital systems evolve, identity and access governance within these systems has become a central research focus. Traditional identity and access management (IAM) systems are inadequate in decentralized environments since they rely on centralized authorities. This research aims to fill the gap in existing IAM systems by examining the potential of blockchain technology in providing secure, decentralized, and self-sovereign identity management. While blockchain offers advantages like transparency, immutability, and distributed consensus, the challenge of incorporating effective access control mechanisms remains. This research examines the design and implementation of blockchain-based IAM systems that guarantee user privacy, block unauthorized access, and scalability. The research also examines the use of smart contracts in facilitating access control policy automation and enforcing secure authentication protocols. The research ultimately addresses the regulatory and compliance challenges of blockchain identity solutions, especially in the context of the evolving global data protection regulations. The output of this research will aim to present an in-depth framework for the implementation of blockchain-powered IAM systems that ensure seamless user experience while safeguarding digital identities in an extremely complex environment. The study fills the gap in existing literature through innovative solutions to the challenge of implementing effective IAM protocols in blockchain systems, with a special focus on both technical and regulatory aspects. The research will help further evolve more secure, privacy-preserving, and scalable identity management solutions for blockchain digital systems.

KEYWORDS: *Blockchain, Identity Management, Access Control, Decentralized Systems, Self-Sovereign Identity, Smart Contracts, Authentication, Privacy, Security, Scalability, Regulatory Compliance, Digital Ecosystems, and Distributed Ledger Technology.*