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Blockchain-Powered Decentralized Identity: Revolutionizing the Payment Ecosystem

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Abstract: *This article explores how blockchain technology fundamentally transforms identity management in payment ecosystems through decentralized identity frameworks. The paper examines how distributed ledger technology addresses traditional challenges including security vulnerabilities, inefficient KYC processes, and privacy concerns. Self-Sovereign Identity principles empower users with control over their personal data through digital wallets and verifiable credentials that enable selective disclosure. The implementation architecture integrates identity registration, digital wallet infrastructure, verification protocols, smart contract governance, and secure transaction finalization. This approach creates significant benefits across the payment ecosystem – financial institutions experience reduced fraud and streamlined compliance, merchants benefit from higher conversion rates and reduced liability, while consumers gain enhanced privacy and security. Despite these advantages, the paper acknowledges challenges including standardization requirements, regulatory alignment, credential recovery mechanisms, and scalability considerations that must be addressed for widespread adoption of decentralized identity in payment systems.*

Keywords: Decentralized Identity, Blockchain Security, Self-Sovereign Identity, Payment Processing, Verifiable Credentials

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