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(57) Abstract :
Abstract The present invention relates to a method for secure and efficient digital payment processing using blockchain technology. The invention addresses the inherent limitations of conventional centralized payment systems, which depend on third-party intermediaries for transaction authorization, settlement, and record management. Such systems are often associated with high processing costs, delayed transaction settlements, limited transparency, and increased vulnerability to fraud and cyber threats. The disclosed invention provides a decentralized alternative that enhances security, reliability, and efficiency in digital financial transactions. In accordance with the invention, digital payment transactions are processed through a distributed blockchain network in which transaction data is cryptographically secured and validated using a consensus mechanism. Each validated transaction is recorded on an immutable distributed ledger, ensuring data integrity and preventing unauthorized modification. The decentralized architecture eliminates single points of failure and reduces reliance on intermediaries, thereby improving system resilience and lowering operational costs. The invention is designed to support scalable transaction processing while maintaining fast confirmation times and low transaction fees. Optimized validation and block management techniques enable efficient handling of high transaction volumes, making the method suitable for both domestic and cross-border payment applications. The system further enhances transparency by allowing authorized participants to verify transactions, while preserving user privacy through encryption and controlled access to sensitive information. Additionally, the invention supports interoperability with existing digital payment infrastructures, enabling seamless integration with current banking systems, digital wallets, and financial platforms. This compatibility allows gradual adoption without disrupting established financial operations. By combining decentralized ledger technology, cryptographic security, scalability, and integration capabilities, the invention provides a robust and innovative digital payment processing solution. The disclosed method improves trust, efficiency, and security in electronic financial transactions, making it well suited for modern electronic commerce and global digital payment ecosystems.

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