

A Cyber Secure Medical Management System By Using Blockchain

ABSTRACT:

The pharmaceutical industry faces challenges such as counterfeit drugs, including vaccines, and supply chain management issues related to transparency, immutability, and traceability. Detecting fake vaccines is especially challenging due to limited public awareness, and online pharmacies pose a risk of introducing counterfeit vaccines into the authentic supply chain. To address these problems, a framework called Transparent, Immutable, and Secure Vaccine Supply Chain (TISVChain) has been proposed, leveraging blockchain technology. This framework can be implemented on both private and public blockchains.

In the public blockchain implementation, smart contracts created using the Solidity programming language are used with low gas costs. Experiments were conducted by varying the number of nodes and block time to assess performance in terms of transactions per second (TPS), gas costs, and propagation delay. TISVChain enhances security through the use of offline unique account addresses in blockchain systems and improves efficiency by minimizing gas costs, reducing the number of lost blocks, and achieving high TPS values. Overall, TISVChain shows promise in enhancing the security, efficiency, and performance of vaccine supply chain management.

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