

ABSTRACT

In the digital age, the prevalence of identity fraud and data forgery, particularly in certificates, has become a pressing concern. To address this issue, this research aims to implement a digital credential system using blockchain technology, ensuring the integrity of certificates and providing trustworthy credentials for the public.

This system includes a web-based certificate verification platform, a QR code-based detection system, a blockchain network using Hyperledger Fabric, and server integration. The study adopts a mixed-methods approach, combining quantitative and qualitative methods. The quantitative method evaluates the performance of the developed server and blockchain, while the qualitative method assesses the quality of the web application and system services. This holistic approach aims to achieve a comprehensive understanding of the system's performance and quality under various testing conditions.

The results demonstrate that the system efficiently handles substantial workloads and maintains a high success rate. Through user authentication and verification processes, the system ensures reliable validation of both users and certificates. This digital credential system offers a secure and efficient solution for managing certificates and verifying their authenticity, with potential implications in education, certifications, and workforce development. Overall, this research contributes to the advancement of digital credentialing systems, enhancing certificate verification processes in various sectors.

Keywords: Blockchain, Certificate, Verification, QR Code, Hyperledger Fabric.