

ABSTRAK

Hingga saat ini, proses transaksi jual beli dan pemesanan barang di lingkungan kampus Universitas Islam Negeri Sunan Gunung Djati Bandung, seperti atribut kampus dan jas almamater, sebagian besar masih menggunakan metode konvensional berbasis Google Form. Metode ini dinilai kurang efektif, lambat, serta tidak memiliki transparansi yang memadai dalam memantau status pengiriman. Penelitian ini bertujuan untuk merancang dan membangun sebuah *web app e-commerce* bernama UIN STORE yang dilengkapi fitur pelacakan pengiriman UIN Xpress berbasis teknologi *blockchain* untuk menggantikan metode konvensional tersebut. Sistem ini dikembangkan menggunakan bahasa pemrograman JavaScript untuk bagian antarmuka *web app*, bagian sisi server menggunakan bahasa pemrograman PHP Laravel serta mengintegrasikan *smart contract* berbasis bahasa Solidity yang berjalan di atas infrastruktur jaringan RedHat. Selain itu, sistem memanfaatkan otorisasi dompet digital Metamask guna memastikan setiap pembaruan status pengiriman barang dapat divalidasi secara aman dan transparan oleh pengguna secara *real-time*. Metode pengembangan perangkat lunak yang digunakan adalah *Agile* dengan pendekatan *Kanban* untuk memastikan proses pembangunan berjalan secara fleksibel dan bertahap. Hasil penelitian menunjukkan bahwa integrasi teknologi *blockchain*, *smart contract Solidity*, jaringan *RedHat*, dan *Metamask* pada fitur *tracking* UIN Xpress berhasil mengatasi kelemahan sistem konvensional. Sistem ini mampu mencatat riwayat pengiriman secara permanen (*immutable*) dan transparan, sehingga meningkatkan efisiensi serta kepercayaan dalam aktivitas jual beli di lingkungan kampus.

Keywords: *Blockchain, Smart Contract, Tracking, Solidity, RedHat, Metamask*

ABSTRACT

To date, buying and selling transactions as well as goods ordering within the campus environment of State Islamic University Sunan Gunung Djati Bandung, such as campus attributes, largely still rely on conventional methods using Google Forms. These methods are considered inefficient, slow, and lack adequate transparency in monitoring delivery statuses. This study aims to design and build an e-commerce web app named UIN STORE equipped with a blockchain-based delivery tracking feature called UIN Xpress to replace these conventional methods. The system is developed using JavaScript for the web app interface, PHP Laravel for the server-side, while integrating Solidity-based smart contracts running on top of RedHat network infrastructure. In addition, the system utilizes Metamask digital wallet authorization to ensure that every delivery status update can be securely and transparently validated by users in real-time. The software development method employed is Agile with a Kanban approach to ensure the development process runs flexibly and iteratively. The results of the study indicate that the integration of blockchain technology, *Solidity smart contracts*, the *RedHat* network, and *Metamask* into the UINXpress tracking feature successfully overcomes the shortcomings of conventional systems. The system is capable of recording delivery histories permanently (immutable) and transparently, thereby increasing efficiency and trust in campus-wide commercial activities.

Keywords: *Blockchain, Smart Contract, Tracking, Solidity, RedHat, Metamask*