

***REVIEW REPORT ON
FAKE PRODUCT IDENTIFICATION***

Submitted in partial fulfillment of the requirements

**Bachelor of Technology
Computer Science and Engineering**



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2020-24**

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INTRODUCTION

The advent of blockchain technology has ushered in a new era of trust and transparency in various industries, and one of its most compelling use cases is product authentication. The project, "**Fake Product Identification using Blockchain**," presents a novel approach to combat the proliferation of counterfeit products by harnessing the power of blockchain technology. In an age where counterfeit products not only pose a threat to consumers but also undermine the integrity of brands, this project sets out to revolutionize the way we track and verify product authenticity.

At its core, this project leverages the solidity of **smart contracts** on a custom blockchain to maintain a comprehensive and immutable ledger of every product manufactured and sold. By implementing a decentralized ledger, we can ensure that product information remains incorruptible and easily accessible, while also reducing the risk of counterfeit goods entering the market. The blockchain, **powered by Truffle**, provides a secure and tamper-proof environment for recording these transactions, allowing consumers, manufacturers, and regulators to easily verify product authenticity.

This innovative solution addresses the pressing need for a reliable system to authenticate products in a world where counterfeiting has reached alarming proportions. With the aid of Metamask, users can seamlessly interact with the blockchain, adding a layer of accessibility and usability to this advanced technology. By introducing this project, we aim to not only showcase the potential of blockchain in combating counterfeit products but also foster a discussion on the importance of consumer protection and brand integrity in an increasingly globalized and digital market. As we delve deeper into the project, we will explore the technical intricacies and practical applications of our blockchain-based approach to identify and eliminate fake products.

LITERATURE REVIEW

In a blockchain-based system, data is replicated across multiple nodes (computers) in a decentralized network. Each node maintains its own copy of the blockchain ledger, which stores data in a secure and tamper-resistant manner. These nodes communicate with each other over the network, sharing information about new transactions and blocks. This decentralized, redundant storage and network-based information exchange ensure data integrity, security, and consensus in the blockchain system, making it resistant to single points of failure and tampering.

The limitations in existing systems that use QR codes on products to verify their authenticity lie in the susceptibility of QR codes to counterfeiting. Brands rely on QR codes for product validation, but these codes can be easily replicated and applied to counterfeit products. This opens the door for unauthorized duplication and labeling of fake items, compromising the trust and effectiveness of the QR code-based validation system, as consumers and authorities may not be able to distinguish between genuine and counterfeit products, ultimately undermining the brand's efforts to combat fraud and protect consumers.

In summary, the literature underscores the significance of blockchain technology in revolutionizing product authentication and counterfeit prevention. The project "Fake Product Identification using Blockchain" aligns with these principles, offering a practical application of blockchain to tackle the issue of counterfeit goods while acknowledging the need for continued research and development to overcome existing challenges and facilitate broader adoption.

PROBLEM FORMULATION

- **Browser Compatibility:** Compatibility across different web browsers posed challenges, as the project relied upon specific features of metamask extension that behaved differently across browsers.
- **Performance:** Ensuring that the frontend operates efficiently and responds promptly to user interactions, even when interacting with the blockchain, was a concern. Slow loading times or lag in transactions can deter users.
- **Security:** Implementing security measures in the frontend to protect user data and private keys was critical. Failing to do so could expose users to risks like unauthorized access and data breaches.

OBJECTIVE

1. Develop a custom blockchain solution to create an immutable and tamper-resistant ledger for tracking product authenticity.
2. Implement smart contracts to automate the verification of product authenticity and ensure real-time validation.
3. Provide a user-friendly interface for consumers, enabling them to independently verify product authenticity.
4. Establish a comprehensive and secure system to track products from production to sale, enhancing supply chain transparency.
5. Contribute to the ongoing discourse on leveraging blockchain technology to combat counterfeit products and improve consumer protection.

WORK TILL DATE

Worked on Solution formulation:

- Got a rough estimation of the scale of the problem by talking to industry experts.
- Made a work pipeline to ensure each piece of the project is tested and reliable.
- Made a structure of the project that clearly defined the goals.
- Decided to use metamask wallet for authentication purposes.
- Divided the work among teammates.

Worked on Frontend:

- Made most of the frontend using html/css/js.
- Worked on prerequisites for integration with the backend.

FUTURE WORK

- Will work on the backend using solidity.
- Improve UI/UX for a better experience.
- Integrate backend with frontend.
- Setup custom blockchain.
- Integrate blockchain with metamask wallet.
- Bring everything together and prepare documentation.

REFERENCE

Base paper link:

1. https://www.itm-conferences.org/articles/itmconf/pdf/2022/04/itmconf_icacc2022_03015.pdf
2. Detection of Counterfeit Products using Blockchain