# Fraudulent Product Detection for Digital Equipment

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## Abstract
*The aim of this paper is to determine the effect of the availability of simulated products in the market. These products seem to be original while they are the duplicates of the original branded products. This will affect the company's reputation. Over the past few years, block-chain has been involved and various applications have emerged from the technology. Block chain technology is used for identifying the real products and detecting fraud products. Since it is a secure technology, there is no chance of any block to change or be hacked. The main objective of the system is to ensure that consumers need not have to rely on the third-party users for confirmation of product safety, the system is implemented through the decentralized Block chain technology approach. This paper, explains how a decentralized Block chain network with anti-counterfeiting items is being enforced. This system involves the usage of Quick Response (QR) codes which provide a robust technique to fight the practice of duplication of the products.*

## Keywords: *Authenticity, Block chain Technology, Decentralized*

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## I. INTRODUCTION

In recent times, block chain technology has been materialized as a befitted solution for various industries which are beyond crypto currency. Block chain proffers better security, transparency and decentralization. The trade in duplicate goods is immensely growing and is affecting the sales and profits of companies.

Enterprises using this system only need to pay very low transaction fees, and they no longer need to worry about the possibility of obtaining fake products.

In this paper, the application is implemented by storing the product's detail and its ownership status on architecture provided by Ethereum and we use smart contracts to update the owner of the product when the product is sold. We will be using QR code which will be scanned by the customer such that he/she will be able to find out the details of the product like manufacturing details, current owner etc. And will be able to determine whether the product is fake or real.

### 1.1.1 Blockchain Technology

Blockchain can be described as an electronic distributed public tally which is programmed to record each and every data transfer on its network. Thus, for maintaining the security of data exchange on the network, Blockchain provides a process that verifies the asked stoner with distributed tally and also verifies the digital identity of the stoner at the same time guarding the watchwords and data of the stoner. This process is known to be as Block chain Authentication.

• Block chain authentication refers to the system developed for adding the security of the people and vindicating user identity and allows people to connect to the coffers set up on technologies of digital currency, deals, Cryptocurrencies, etc.

• It uses Blockchain's distributed tally technology and authentication ways to enhance the sequestration and security of authentication systems.

• An entire Blockchain-grounded network is able of having its own data integrity.

• The particular information used to corroborate a user's identity is stored on the block's hash similar as username or word.

### 1.1.2 Smart Contracts

Smart contracts are protocols which are often used for machine-driven transactions that are piled up in a blockchain and are run in response to meet certain conditions.

In other sense, smart contracts automate the implementation of transactions so that all the participating entities can determine the outcome as soon as possible without the involvement of the third parties making it a time effective system.

Smart contracts are self-executing where the contents of the buyer and seller agreement are incised directly into the lines of code. It can be ensured that the transactions will be traceable, transparent, and irreversible.

### I.1.3 QR Code

In the recent years, blockchain made a great influence over various industries since variety of applications are being introduced. One of the eminent ones is the QR codes. While implementing the feature of encryption in blockchain, QR code commenced as Asian phenomena and gradationally, it has extended over the other areas.

QR code in blockchain, is being extensively used for transactions, authentication, information exchange and many more. A nearly similar working principle of QR code and blockchain makes it easier to interoperate the two into a single system. Although it is extremely important to comprehend the fact that the blockchain encrypted QR code is a lot safer rather than using regular QR code. Normal QR codes often fail to proffer the robust security as there's a high risk that the information or data in the QR codes can be altered.

### I.1.4 On-site Solution

The on-site solutions which are based on promoting better communication between organizations who want to reduce duplication of products on the market. An example based on this is React. It is a non-profit organization which provides a platform for professional services. These approaches have a huge advantage prioritizing the accuracy but still working manually and need man power. Anti-counterfeiting technologies have loads of limitations. In previous researches, Counterfeiters became extremely professional. They have been developing various approaches for the betterment of counterfeiting the products and bring them to the market unnoticed.

### I.2 Disadvantages

- Identifying manually takes a lot of time and human effort.
- Experts also cannot distinguish between an original and a fake product.
- Tracking the products and dividing them is difficult.
- It is a centralized process.

These drawbacks make the solution unreliable and they have many chances of causing errors. In case of deployment of exactly same solution on a larger scale enterprise, there will be maximum chances for the system being attacked easily.

## II. PROPOSED SYSTEM

**(i) Introduction**

The proposed system puts forward a method, to track every genuine digital device that is to be sold by the use of block chain technology. Here, we add a QR code to the device, while it is being manufactured. This QR code will be linked to a Block chain. Now we can store details and the QR code of the device in the form of blocks in the database. People can be able to scan the QR code using their smartphones, where the scanned QR code is compared against the entries in the Block chain database. If the code is matched, a notification is popped up that the device is original; otherwise it pops up a message that the device is fake. By doing this, customers can be assured of the authenticity of the device. We'll be using the concept of QR codes which have secure graphics. In this system we implement our own tokens which can be sold to users so that they can purchase ownership of a device using tokens which helps while the insurance process.
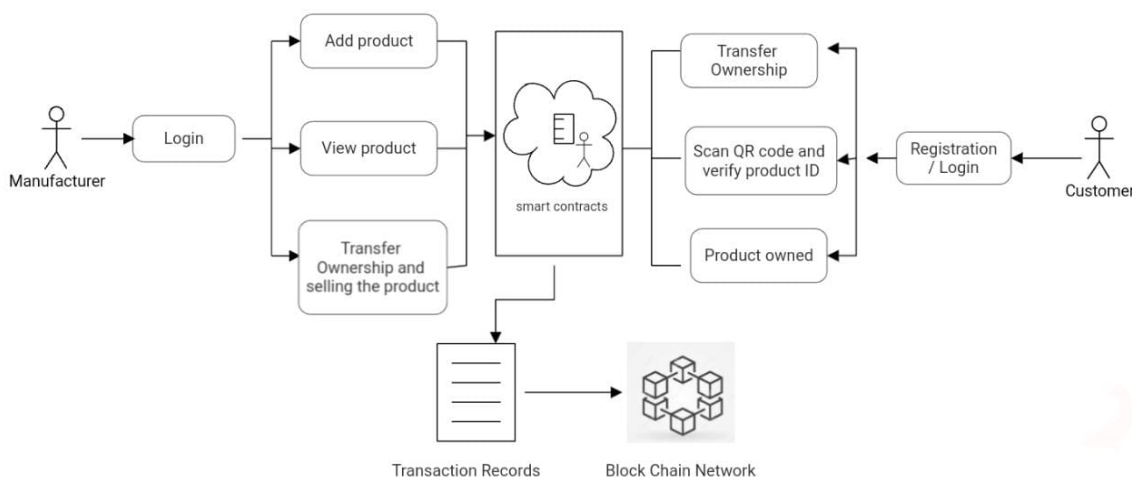
**Figure1: Working of the Proposed Web-Application**

**(ii) Requirements**
The major requirements include the logical characteristics of each interface.
● Java, XML – User interface
● MySQL – Database
● **Block chain:**
● Ethereum - Block chain Network
● Solidity - Smart Contracts
● Ganache - Create private Ethereum block chain to run tests

**(iii) Architecture**
In this paper, the architecture can be described as the manufacturer and user both are allowed to perform transactions in the smart contract. The smart contract will be separate for each company and the company where they will get the features to modify product details, view listed products and transfer ownership to buyer. All the transactions done by the organization will directly update the smart contract data and the transaction records will be pushed into blockchain after verification. For normal users, the features are limited to transfer the ownership status through tokens and also the possibility to scan the QR code. The requests can also be in the form of transactions and hence they get recorded into the blockchain.
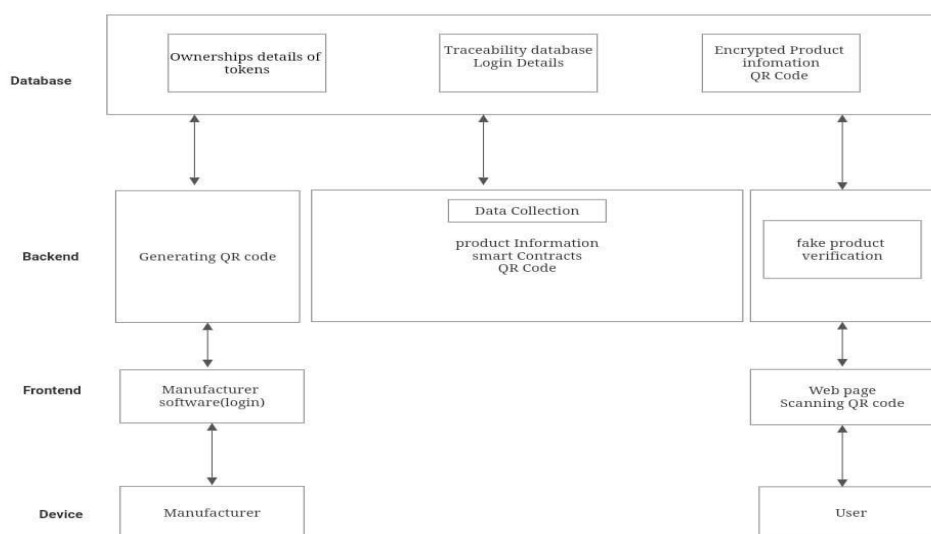

**Figure2: Architecture of the proposed system**

### III. RESULTS
When the user scans the QR code, which is attached to the device, the QR code stored in the database is compared with it which helps in declaration of the authenticity of the product. The user will know whether the product is fake or not through the registered mobile number or mail id in the form of a notification.
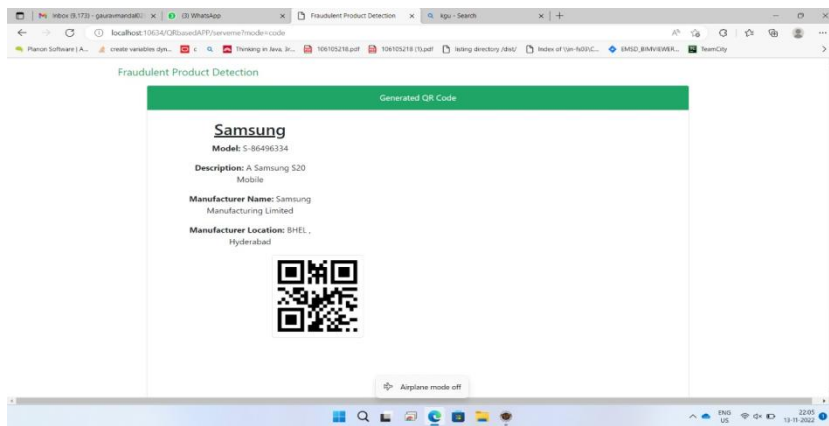
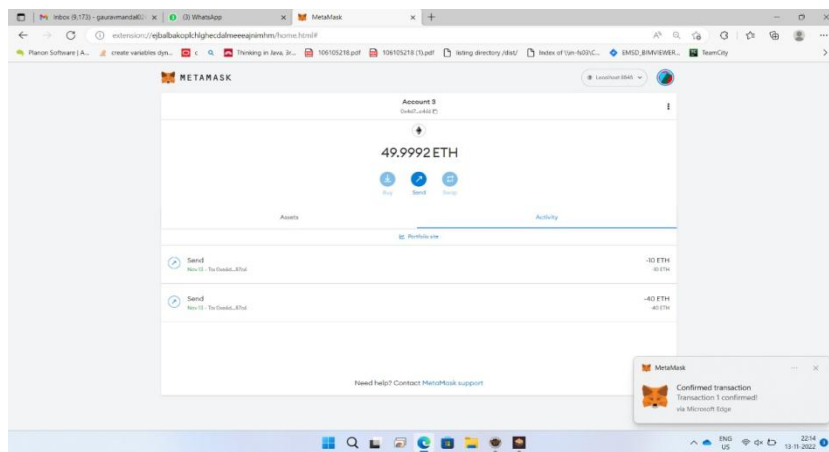**Figure3: User can scan the QR code**
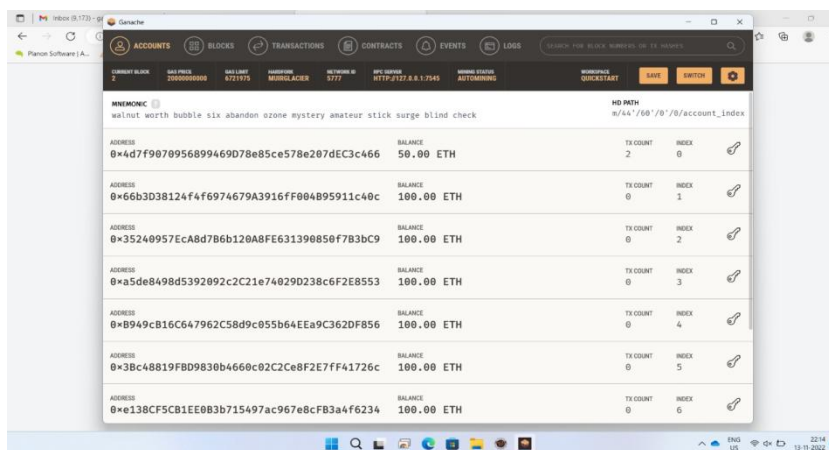

**Figure3: Transaction Confirmation**


**Figure4: Transactions made by the user**

## IV. CONCLUSION

In this paper, we aim to detect false electronic devices. In addition to this, the information is encrypted and encoded into a QR code. Customers can scan the QR code and then they can detect the simulated device. Digital information of devices can be stored in the form of blocks in blockchain technology. Thus, the proposed system is helpful for the users to identify fake devices. Customers can scan QR codes assigned while manufacturing to a product and can obtain all the information like transaction history. This being the basis the end-user can check whether the product is genuine or not.

## ACKNOWLEDGEMENT

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