

## Fake Product Identification Using Blockchain Technology

**Tarannum J. Sayyad**

*Computer Science and Engineering Department  
Karmaveer Bhaurao Patil College of Engineering, Satara.  
Satara, Maharashtra, India.  
Email: tarannum.sayyed@kbpcoes.edu.in*

**Adil Tofiq Mulla**

*Computer Science and Engineering  
Department Karmaveer Bhaurao Patil  
College of Engineering,  
Satara, Maharashtra, India.  
Email: adilmulla091@gmail.com*

*Computer Science and Engineering  
Department Karmaveer Bhaurao Patil  
College of Engineering,  
Satara, Maharashtra, India.  
Email:  
devisha.palkar25@gmail.com*

**Mukesh Janardhan Pandit**

*Computer Science and Engineering  
Department Karmaveer Bhaurao Patil  
College of Engineering,  
Satara, Maharashtra, India.  
Email: mukeshpandit219@gmail.com*

**Vaishnavi Sanjaysinh Rajput**

*Computer Science and Engineering  
Department Karmaveer Bhaurao Patil  
College of Engineering,  
Satara, Maharashtra, India.  
Email: vaishnavisrajput15@gmail.com*

**Devisha Babasaheb Palkar**

### **Abstract**

*Blockchain innovations have acquired interest in the course of the most recent years. One of the most talked about issues is currency exchange, but its application is not limited only to Digital currency. So it has the potential to influence different business sectors. Blockchain technology has brought greater transparency and ease in large transactions. We can detect counterfeit goods using blockchain technology. This paper is to unravel various cases in the anti-counterfeit areas. The question that arises when buying any item in today's world is whether it is fake or not. And the lack of these things has been shown a huge impact on economic progress. Therefore, in order to curb all counterfeit goods, it is important to bring transparency about the goods to the notice of the consumers. The growing presence of counterfeit and unsafe products in the world is a cause for concern and blockchain technology has taken the next step towards its complete annihilation. Not only the use of technology will reduce the production of counterfeit goods, but everyone needs to be aware of this. By producing and packaging the right items each of those items needs to be given a digital code with its own identity. This research paper proposes the prototype for identification of counterfeit products using blockchain technology. It discusses the software implementation process in which the product code is scanned using this application and then verify if the given product is counterfeit or not.*

**Keywords**—*Blockchain Technology, Counterfeit, Transparency.*

## **I. INTRODUCTION**

Identification of counterfeit products in today's market is being a great challenge for consumers and it is very life threatening for the consumers when this takes place in pharmaceutical fields. Other fields like electronics, apparel, fashion-accessories also face a huge impact on their brand due to counterfeit products. E-commerce has seen phenomenal growth over the years from \$39 billion in 2017 and it is projected to rise to \$200 billion by 2026. This comes in the wake of extending penetration of the internet and cell phones. After various market surveys it is found that the counterfeit products are increasing rapidly and the rise of counterfeit products can badly affect the development and economic growth. Also because of this the many top companies are getting bad remarks and losing their positions from the brand list. Counterfeit products are twins of the real products in the market.

Mostly all reputed companies are working to stop this process which is harmful to everyone in the entire world. The various branded or reputed companies are working on modern technologies to identify the counterfeited products from the original product in the market and to improve this working, the IT sector can give them positive signals and can help to prevent counterfeit goods. Among these various technologies available in the IT sector blockchain is one of the promising technologies which can be used for reducing the counterfeiting of goods. A blockchain is a type of distributed ledger that is designed to prevent tampering. Based on the distributed consensus algorithm, smart contracts and encrypted algorithms. Blockchain technology helps to solve the problem of counterfeiting of a product. And In this research paper we proposed a product surveillance blockchain system that will share information about products from the manufacturer to the customers. We are developing such an application that will work on smartphones which will be giving all the detailed information about the products to the consumer who buys that product and help them to identify if the product is original or counterfeited.

## **II. LITERATURE SURVEY**

A fake commercial center can influence the improvement of a country. Fake items are fakes or unapproved copies of the genuine item. Fake items are regularly created with the expectation to exploit the prevalent estimation of the imitated item. Pretty much every organization faces a fake danger since it's influencing an organization's income as well as harms the brand's standing. While technology offers several solutions to authenticate the original product, some technological tools, particularly artificial intelligence help create clones, blockchain technology creates chaining and tracing. What is required is consistent up-gradation and development to remain in front of the forgers. Therefore, it is important that we have regulations for the marketplace.

### **Existing System:**

#### **1. RFID Based Anti-Counterfeiting Systems :-**

The paper entitled 'A Comparison Survey Study on RFID Based Anti-Counterfeiting Systems' describes Radio frequency identification tag Anti-forging is an applied arrangement that has gotten consideration in the previous few years. This system represents a review concentrating on the exploration subject hostile to duplicating items utilizing Radio Frequency Identification tags on product. Radio frequency identification (RFID) and remote sensor networks (WSN) are

two significant remote advances that have a wide assortment of utilizations and give limitless future possibilities, while RFID tags are like an actuator which requires a control signal and a wellspring of energy. RFID perceives areas and recognizable proof of labeled things — yet as opposed to perusing laser light reflections from printed standardized tag names, it uses low-power radio frequencies to gather and store information. In a stockroom or distribution center, this system is utilized to automate information assortment. The transceiver scans radio frequencies and sends them to a RFID tag. The distinguishing data is then communicated from a little microchip inserted in the tag and communicated to the RFID reader.[1]

## **2. Fake Product Detection Using AI-Based Technology :-**

This system proposes a solution that relies on machine learning-based technology which enables end-consumers to identify and verify products without any special equipment. By using image and text recognition. For identification, the end-consumers take photos of an item packaging, which contains product text information, logos, and perhaps accreditation marks/logos. These photos will be sent in a solicitation to the worker for processing and confirming. Afterward, the detection result will be returned to the end-consumer to make a further decision. In the case of fake product detection, the end-consumer has the ability to report this counterfeit product to the government system, such as the Safety Gate - EU's Rapid Alert System[2].

## **3. Security with holographic barcodes using Computer generated holograms :-**

Holograms have been utilized to fight against fakes and to diminish forgery. Incorporating the possibility of standardized identifications into holograms give two level protection from forging. This framework acquaints a technique with increased security and genuineness in item distinguishing proof by utilizing holographic standardized identifications. The unique and client characterized item distinguishing proof code accommodated every item is changed over into Quick Response (QR) Code. The QR Code created is then changed over into a 3D image, hence giving a prominent security to the item. In this framework, Holographic standardized tags utilizing Computer created visualizations are actualized utilizing MATLAB. The decoding of the barcode recreated from the holograms gives the corresponding product recognizable proof number assigned for the product.[3]

## **III. PROPOSED WORK**

There is no proper solution before tackling this problem. As barcodes can be copied easily there is no guarantee system either, nor a good solution to differentiate fake products from original products. Blockchain technology is one of the promising technologies which is emerging in recent years that can be helpful to tackle such a problem. Blockchain Technology can be used to monitor and regulate the product supply chain in the market so users can only get original products. The project's main goal was to deliver people's original product and help people to identify whether the product they are buying is an original or fake easily.

The system prototype will be a distributed application (DApp) with a supporting blockchain network. The network will be developed on hyper-ledger fabric which is an open source Blockchain development tool and uses DPoS/PBFT consensus algorithm by default.

### ***System execution stages:-***

#### ***Stage 1: Product enrollment on the network***

The first step is to bring all manufacture into the blockchain network and collect their huge product database. The manufacture authentication is done via registration and giving them a proper id and password. Manufacturer will be the primary proprietor of the item. Manufacturer will request the administrator to add a product on the network at the time QR code will get

assigned to that product. Administrator will enroll the product and manufacturer on the network if the requestor is a genuine manufacturer. After the product is recorded in a network it will create a smart contract and a unique QR code of the product in which the details of the product is mentioned in an encrypted text form. To Secure the QR code from copying there is a Copy Sensitive digital image in QR code.

### **Stage 2: Shipping of Product**

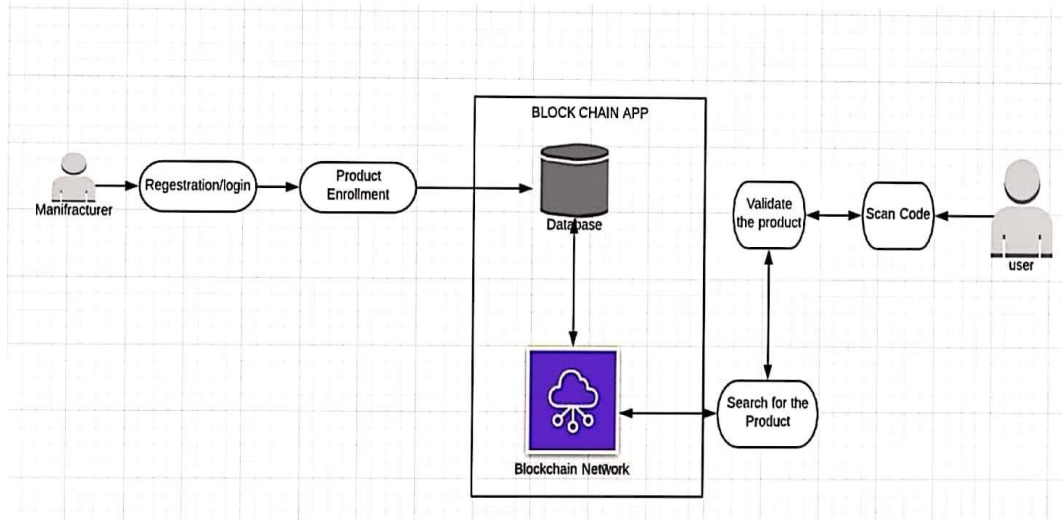
In the next step the manufacturer will ship the product to the distributor and status is set as shipped; it will not change the ownership of the product until a request from both parties is approved to buy and sell the product. As soon as both parties approve mutually, its ownership in the blockchain network will be transferred in the form of smart contract automatically after the payment is successful.

### **Stage 3: End user get detail about product**

In this stage clients will be given an android application and buyers can scan QR code allocated to the item utilizing android application. The Scanner scans the product and decrypts the encrypted text in a given algorithm and gets the detail about the product that is the manufacturer and current owner of the product and can conclude if to purchase the item or not.

## **IV. ARCHITECTURAL DIAGRAM**

### **Architectural Diagram for NESTA:-**



CS Scanned with CamScanner

## **SYSTEM FEATURES**

### **Advantages: -**

#### **1. Enhanced Security: -**

The information utilized by this methodology is obtained by an organization of distributed computers (nodes) around the world. Every last one of these distributed computers submits its computational ability to make these information bases secure and immutable.

## **2. Decentralization: -**

Using decentralized tasks and capacity, every hub of the Blockchain executes the confirmation, conveyance, and the executives of data at the local side. Blockchain technology doesn't depend on an extra outsider control, has no centralized control, and is independent.

## **3. Transparency: -**

The move towards blockchain is completely conveyed and straightforward. Anybody can get to them from any place in the world. While the substance isn't put away in the blockchains, the confirmations of legitimacy, presence, and responsibility for the substance can be autonomously checked by anybody by utilizing the public keys, regardless of whether it be an end customer, customs, an advanced criminologist or an authority.

## **4. Privacy :-**

Is any of my client information openly obvious? No, we use cryptography calculations to enlist simply a special identifier of the individual information and we implant such identifiers in the Blockchains. It is absolutely impossible to reproduce the substance from any identifier since we utilize single-direction cryptographic functions(hashes).

## **5. Increased Efficiency:-**

Due to its decentralized nature, Blockchain removes the need for middlemen in many processes for different fields. In comparison to traditional, blockchain facilitates faster transactions by allowing P2P cross-border transfers with digital currency.

## **V. REQUIREMENT ANALYSIS**

### **Software requirements: -**

Android studio, VMware, Flutter and Hyper-ledger.

### **Hardware Requirements: -**

i) A computer with a minimum 8 GB ram with a processor like i5 or i7 with 15 to 20 GB storage space.

ii) A good android device for testing work or a PC emulator of android

OS.

### **OS Requirements: -**

Windows 10 OS for Pc and Android OS to run the application.

## **VI. FUTURE SCOPE**

1. Blockchain technology is as of now still in its general early stages in terms of use thus further investigation is required.

2. The future work of this framework can be proof of code simplicity. The client can believe that the appropriate application on account of the simplicity of code, and no excess code in will have extra utilization.

3. With the experience gained in this project, it is clear that by assigning a blockchain that is resistant to falsification and traceable, then platform improvement is guaranteed by a move

towards genuine product assurances. This would improve clients' experience by delivering the whole supply chain framework more open and transparent.

4. Additionally, it is trusted that a buyer intellectual framework on cross-line products tracing could be built, furnishing administrative authorities with more far reaching and precise worldwide vendors and merchandise tracing information. Getting such quality data will be conceivable with coordinated effort estimates, for example, administration support, framework building, and data sharing.

## VII. CONCLUSION

This paper is the main Blockchain framework that proposes a completely functional fake item forgery framework. Without paying any transaction charge, clients of our framework at this point should not be worried about the chance of obtaining a counterfeit item. Accordingly, the proposed framework is valuable for end clients to identify counterfeit items in the inventory network. End client can check QR code allotted to an item and can get all the data like exchange history, current proprietor dependent on which end client can check if the item is counterfeited or not.

## REFERENCES

1. <https://www.mdpi.com/2224-2708/8/3/37/pdf>  
A Comparison Survey Study On RFID Based Anti-Counterfeiting Systems
2. [https://www.researchgate.net/publication/339983307\\_IMPROVING\\_FAKE\\_PRODUCT\\_DETECTION\\_USING\\_AI\\_BASED\\_TECHNOLOGY](https://www.researchgate.net/publication/339983307_IMPROVING_FAKE_PRODUCT_DETECTION_USING_AI_BASED_TECHNOLOGY) (AI)
3. <https://ieeexplore.ieee.org/document/6731643>  
Security With Holographic Barcodes Using Computer Generated Holograms
4. <https://alibabatech.medium.com/blockchain-based-qa-the-end-of-fake-products-in-e-commerce-6f9b28a75735>