

# **FAKE PRODUCT DETECTION USING BLOCKCHAIN TECHNOLOGY**

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**Abstract:** In today's market, the proliferation of counterfeit goods poses a significant challenge to consumers and businesses. To tackle this issue, blockchain technology offers a robust solution for verifying the authenticity of products. Blockchain is a decentralized digital ledger that securely records transactions across multiple computers, ensuring transparency and preventing tampering. This paper explores how blockchain can be utilized to create an immutable and transparent system for tracking products from their origin to the end consumer. Each product is assigned a unique digital identity and recorded on the blockchain. As the product moves through the supply chain, every transaction and change of ownership is documented and verified by network participants. This creates a tamper-proof record that can be accessed by consumers to verify the authenticity of the product. By integrating blockchain technology into the supply chain, businesses can enhance trust, protect their brand reputation, and provide consumers with a reliable method to verify the authenticity of their purchases. This innovative approach has the potential to significantly reduce the circulation of counterfeit goods and ensure product integrity in the global market.

*Keywords : Blockchain, QR code, Fake Product*

## **INTRODUCTION**

The improvement of an item or innovation continuously comes beneath the hazard components such as counterfeiting and duplication, and fake which can influence the company's title, and their brand notoriety, and too client well being. There are so numerous items that exist in the supply chain. To guarantee that the item is genuine or fake. Since of counterfeit or fake items producers confronting the greatest issue and huge sum of misfortunes. To discover the inventiveness of the item we can utilize blockchain innovation. Blockchain is decentralized and agreement of recording data framework that makes it troublesome or difficult to alter, hack, or deceive the system. A blockchain is basically a computerized record of exchanges that is copied and distributed all over to organize of PC frameworks on the blockchain. In blockchain each square contains numerous transactions, and each time a modern exchange happens on the blockchain, a record of that exchange is included to every participant's record. The decentralized database overseen by the number of members is known as Distributed Record Innovation (DLT). Blockchain is a sort of DLT in which exchanges are recorded with an immutable cryptographic signature called a hash. Blockchain innovation makes a difference to unravel the issue of forging an item. Blockchain innovation is more secure. Once the item is put away on to organize hash code is produced of that item, and it is possible to keep up all exchange records of the item and its current proprietor

as a chain will be made for that item exchanges. All the exchange records will be put away in the shape of pieces in the blockchain. In the proposed framework we are allotting a created QR code to a specific item and the conclusion client can filter. After scanning the QR code so we can find the product real or fake.

## LITERATURE REVIEW

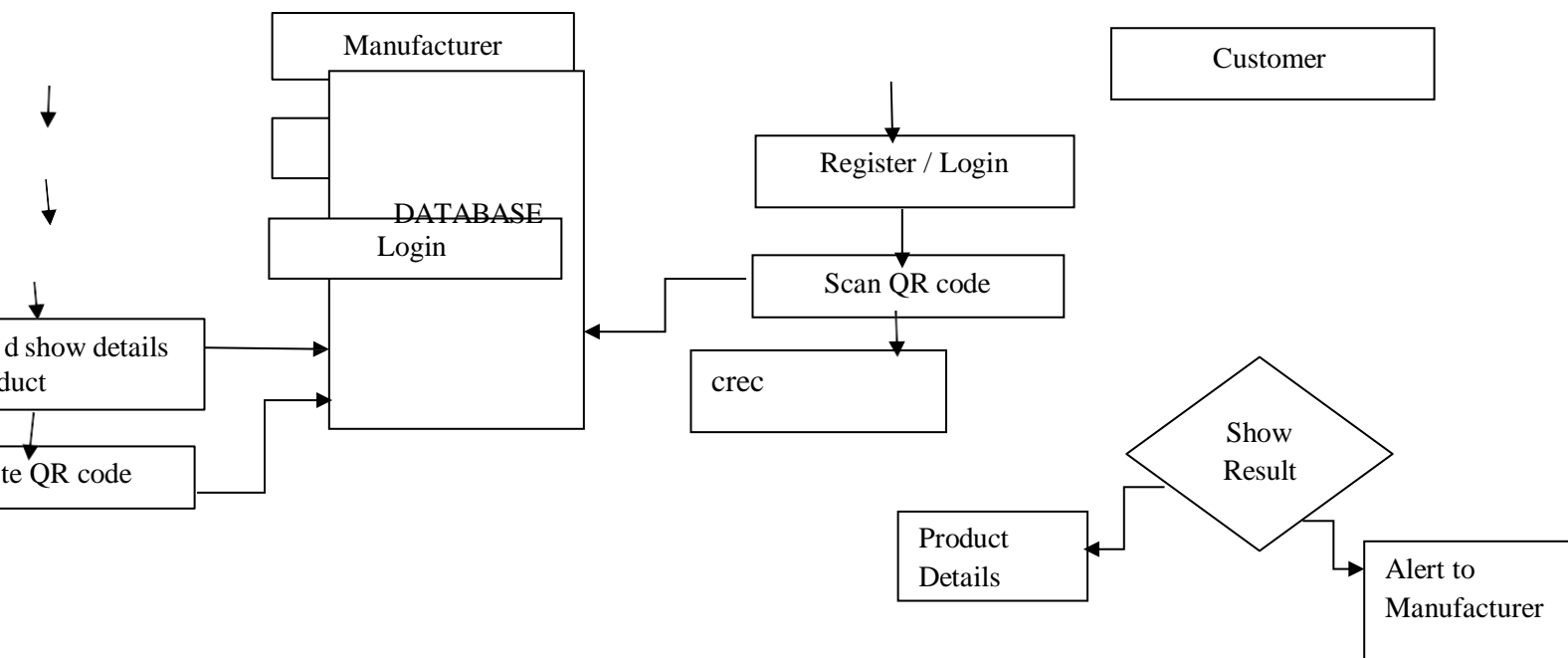
- 1) A survey of counterfeit product detection by Prabhu Shankar, R. Jayavadivel (IEEE2019). Many people are not aware when they buy a product if the product is real or fake. So, we will use blockchain technology to deal with this problem. In this work, a QR code is generated for each item because the manufacturer and customer are both satisfied with product authenticity.
- 2) Smart Tags for Brand Protection and anti-counterfeit in the wine industry by Steven Marwi (IEEE 2018). In the wine industry, a lot of low quality wine is sold in shops. Because of the low quality of wine, consumers face health problems. So, we can drive the solution for that with the help of blockchain, each bottle of wine with smart tags. It consists of a QR code & label printed with functional ink with the help of a cloud platform.
- 3) A blockchain-based supply quality management framework by Si Chen, Rui Shi (IEEE 2017). In this paper, we discuss how to improve supply chain quality management by adopting blockchain technology and purpose a framework for blockchain-based supply chain quality management. This framework consists of blockchain smart contracts & various IOT sensors. Breakfast provides a safely distributed ledger with various quality information, asset information, and transaction information.
- 4) Fake News detection of social media news in the blockchain framework by Akash Dnyandeo Waghmare (IEEE 2021). Social media are becoming an increasingly important tool for journalists for to give news content to their audience. Fake news is a popular term around the world now. The purpose of this work is to detect fake news with the help of a blockchain framework.
- 5) Fake check scams are a blockchain-based detection solution by Badis Hammi & Yves Chrisan Elloh Adja (IEEE 2019). Fake checks are typically used in scams. Fake checks can look so real it's very difficult for the consumer, or even bank employees to detect. We propose a blockchain to authenticate checking and identifying fake check scams.
- 6) Towards Blockchain Enable supply chain anti-counterfeiting and traceability by Neo C. K Yiu in (IEEE 2021). During this analysis, we offer the answer to the matter of counterfeit product mercantilism together with merchandise and pharmaceutical. It has been one of the among the foremost challenges of the provision chain business blockchain technology helps to notice counterfeit product.

- 7) Fake product detection using blockchain technology by Tejaswini Tambe, Sonali Chitalkar, Manali Khurud, S.Y. Raut (IEEE 2021). The growing problem of brand counterfeiting threatens businesses and consumers in nearly every region of the world. In this work, we will identify whether that is real or fake by using blockchain technology. Blockchain technology is secure in that blocks cannot be changed or hacked.

## PROBLEM STATEMENT

In the world of e-commerce and global supply chains, counterfeit products have become a significant problem for consumers, manufacturers, and retailers. Fake products not only deceive customers but also harm brand reputations and lead to substantial financial losses. Therefore, developing an efficient and reliable system for detecting fake products is crucial.

## METHODOLOGY



Counterfeit products are growing exponentially with the enormous number online. So, there is a strong need to detect counterfeit products and blockchain technology is used to detect fake products. Furthermore, the information is encoded into a QR code. Customers or users scan the QR code, and then they can detect the fake product. Digital information of products can be stored in the form of blocks on blockchain technology. The data can be stored in the firebase cloud. Thus, the proposed system is useful for the customer to detect fake products in the supply chain. Customers can scan QR codes

assigned to a product and can get all the information like transaction history, current owner based on which end-user can check whether the product is genuine or not.

## **FUTURE SCOPE**

- To track every genuine product that is to be sold.

Implement this idea in other fields.

- Virtual transactions.

Using tamper-proof tags

Dynamic (read & write NFC tags)

QR codes that have secure graphic

- Implement our own tokens which can be sold to users so that they can purchase ownership of a product using tokens which helps in insurance processing's

## **CONCLUSION**

Using the blockchain, manufacturers can create a unique and immutable digital identity for each product, enabling the traceability and verification of product information throughout the supply chain. This allows consumers to easily verify the authenticity of a product, reducing the risk of purchasing counterfeit or fake products. Manufacturers and Suppliers can use the system to store product details in the Blockchain, which offers certain properties such as security and privacy of the data on the network. The customer views the good's supply chain history and verifies if the goods are genuine. Customers can be sure about the integrity of the goods they purchase. This system helps to lower the rate of counterfeiting and boost the economy. Further systems can be extended to avoid fraud in healthcare, the voting system, online shopping, banking, and so on. Moreover, these real-time systems can enable the creation of decentralized marketplaces that prioritize authenticity and transparency, reducing the risk of fraud and counterfeiting in online transactions.

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