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Fake Product Identification System Using Blockchain

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Abstract: In recent years, blockchain has received increasing attention and numerous applications have emerged from this technology. A renowned Blockchain application is the cryptocurrency Bitcoin, that has not only been effectively solving the double-spending problem but also it can confirm the legitimacy of transactional records without relying on a centralized system to do so. Therefore, any application using Blockchain technology as the base architecture ensures that the contents of its data are tamper-proof. We will be using the decentralized Blockchain technology approach to ensure that consumers do not fully rely on the merchants to determine if products are genuine. We describe a decentralized Blockchain system with products anti- counterfeiting, in that way manufacturers can use this system to provide genuine products without having to manage direct- operated stores, which can significantly reduce the cost of product quality assurance.

Keywords: Blockchain, Counterfeit, QR code, security.

I. INTRODUCTION

Blockchain is a shared, immutable ledger that facilitates the process of recording transactions and tracking assets in the business network. It is the shared database that stores database and encrypts data in blocks .In simple words it is the chain of blocks that contains data .In today's world ,Counterfeit goods play a vital role in manufacturing industries. This rise in imitated product manufacturing causes profit of the companies with branded tags. To identify the real products throughout the supply chain, a functional block chain technology can be used for preventing product counterfeiting. Here by using a block chain technology, consumers don't need to depend upon anyone to buy trusted products. Just by using Blockchain application customers can get notified about the trusted or fake product and hence can buy the product safely.

II. MOVTIVATION

The growing use of online shopping and marketing is leading to the production of fake products in the market. The urge to grow financially.

The Indian market still doesn't use the system that would scan QR Code and notify the user that the product is fake or real.

III. LITERATURE REVIEW

A blockchain-based supply quality management framework by si chen, rui shi in (ieee 2017).in this paper, we discuss how to improve supply chain quality management by adopting blockchain technology and a framework for blockchain-based supply chain quality management. This framework consists of blockchain smart contracts. Blockchain provides a safely distributed ledger with various quality information, assets information, and transaction information [1]. Smart tags for brand protection and anti- counterfeit in the wine industry by steven marwi (ieee 2018). In the wine industry, many low quality wines are sold in a shop, 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 that consists of a QR code label printed with functional inks with the help of a cloud platform [2]. A survey of counterfeit product detection by prabhu shankar, r. Jayavadivel in (ieee2019). Many people are not aware when they buy a product that 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 both are satisfied with product authenticity [3]. 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 authenticate check and identify fake check scams [4]. 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 pharmaceuticals. It has been one of the foremost

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challenges the provision chain business blockchain technology helps to notice counterfeit products [5]. Fake product detection using blockchain technology by Tejaswini Tambe, Sonali Chitalkar, Manali Khurud, S.Y. Raut in (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 the product that is real or fake by using blockchain technology. Blockchain technology is secure in that blocks cannot be changed or hacked [6]. Fake News detection of social media news in blockchain framework by Akash Dnyandeo Waghmare in (IEEE 2021). Social media is becoming an increasingly important tool for journalists for 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 [7].

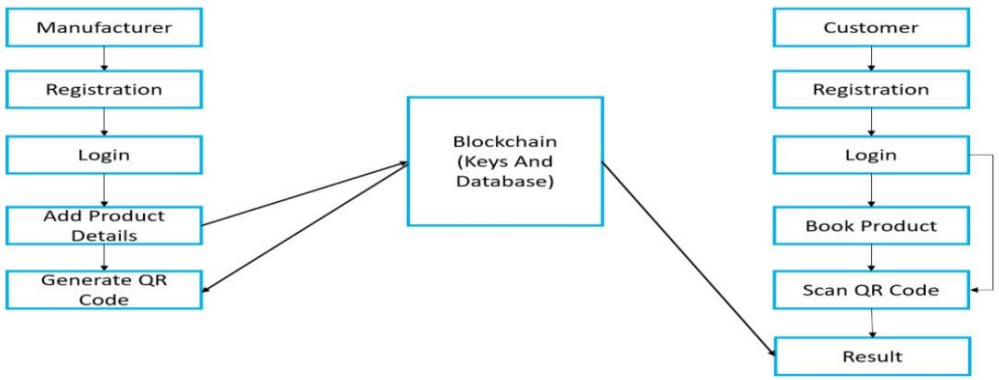
IV. PROPOSED SYSTEM

This proposed system consists of the framework which is based on Blockchain Technology.In this framework the authentication process based on Blockchain Technology is used for identifying counterfeit products in the supply chain . To ensure the identification and traceability of real products throughout the supply chain, this paper proposes a fully functional blockchain system to prevent product counterfeiting. To ensure the identification and traceability of real products throughout the supply chain, this paper is the first to propose a fully functional blockchain system to prevent product counterfeiting.

A. Methodology of Proposed System

Counterfeit products can be identified with the help of blockchain technology. Using the QR code, which itself will be linked to the blockchain system will help the customer in detecting counterfeit products. This architectural system can be used to store product details and can create the unique Barcode of the product as blocks in database.

B. System Architecture



In this system architecture the manufacturer and the user/customer registers and login into their account; Here, the manufacturer is ready to add product details.While adding this details manufacturer also generates the unique barcode for each product. The unique QR Code of the product which will be scanned by the customer is generated by the manufacturer for the product and this unique QR Code is stored in database. User after login, books the product of his/her choice then further when the user receives the product he scans the QR Code on the product. Once, the authentication process is complete the QR Code scanned by the customer will be compared again the original code entry in the blockchain database. The QR Code of the product received then will indicate whether the is fake or real. If the barcode matches, user/customer will get verification details of the product that he/she bought and will receive the message that it is not a fake product. Otherwise it will say that 'product received is fake' and gets information about the detected counterfeit product manufacturer. Using blockchain will provide the user a secured tracking system from beginning till the product is received and verified. Hence blockchain helps in handling counterfeiting by identifying the product origin.

C. Modules And Description

1) Manufacturer: A manufacturer produces finished goods from raw materials using various tools, equipment and well defined processes. He/she then sells the products to the consumers, retailers and distributors. Further, these entities will manufacture the products with needed details including its name, company stamp and content. Unique encrypted QR code is generated by the manufacturer for different products which cannot be reused. This QR code is linked to the blockchain system.

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2) Smart Phone: The major role for smart phones for the customer is to scan the product using a scanner and thus identify counterfeit products.
3) QR Code: It is a unique barcode containing product information. It can be defined and also used as an anti-counterfeiting object; helping customers differentiate between real and fake products.
4) Web Application: It can be defined as the platform to scan the QR code and provide detailed information about products.

5) *User Authentication:* If the user is willing to check the product he/she can visit the product website. Here the user will get to know whether they have registered. User can scan QR code of the product and check whether the product is real. The product barcode is compared with code against the blockchain database. Once, the QR code is scanned user receives details of the product which is manufactured by the real brand manufacturer and now the transaction for the product by the user/customer is verified.

V. CONCLUSION

Fake products are growing exponentially. So, there is a strong need to detect fake products and blockchain technology is used to detect counterfeit products. Here information is stored in QR code. Customers or users can scan QR code and identify products that are genuine or fake easily. The information related to the product is stored in blocks in blockchain technology. No one can hack that information because it is very secure technology. The project is useful to identify any type of fake products. The system will show all details like transaction history, current owner based on which end-user can check whether the product is genuine or not. The model also ensures end user verification system through a QR code and transactions here can be verified on Etherscan too. Customers don't have to rely on a third party to verify the authenticity of the product which will help in smooth and risk- free experience. There are no other means to decrypt the private key of the key owner unless the key owner accidentally leaks the key. Overall, this blockchain technology-based application can emerge as a life saver for the companies and provide a new system for trading, marking and purchasing which is more secure and user friendly.

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