SUPPLY CHAIN MANAGEMENT: COUNTERFEIT PRODUCT DETECTION

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Abstract— **Manufacturing and marketing of fake or knockoff items and goods puts consumers' finances, health, and safety at risk. Through revenue loss, product slander, downtime, and replacement costs, it also negatively impacts the economic growth of original manufacturers and enterprises, compelling many brands to spend money on legal defenceIn this project, QR (Quick Response) codes and barcodes offer a method to reduce the practise of product counterfeiting due to the significant rising trends in wireless technology. The fraudulent products are detected using a camera scanner, and the QR or barcode of the item or items is connected to a blockchain to save the item's information and the guaranteed unique code, which are stored as database blocks. Given the huge upward developments in wireless technology, this initiative uses barcodes and QR (Quick Response) codes as a way to limit the practise of product counterfeiting. The fraudulent products are identified using a camera scanner, and the QR or barcode of the product or products is connected to a blockchain to store the product's details and the guaranteed unique code, which are kept as database blocks.**

Keywords: Block chain, smart contracts, QR(Quick Response) code, anti- counterfeit.

I.   INTRODUCTION

Risk issues including product duplication and counterfeiting that can have an impact on a company's name, reputation, revenue, and customer satisfaction are always present when a product or brand is developed globally. The sale and promotion of fake goods are expanding rapidly. It has a negative impact on the companies' sales, reputation, and revenues and does constitute a serious threat to the lives of gullible customers. A fully functional blockchain system is suggested as a solution to this issue in order to guarantee the identification and traceability of phoney goods or products across the supply chain. In the suggested method, we assign a QR code or barcode generated for a certain product created by a manufacturer along with all the information about the product. To obtain all of the product's details, the end user can scan that QR code. A working blockchain technology can be utilised to determine the product's uniqueness. A chained arrangement of recorded information known as a blockchain makes it difficult or impossible to alter or manipulate the system. After the product is stored on the network, a hash code is generated for it, and a chain is constructed for the product's transactions that may be used to retain the product's transaction history as well as its present owner. The blockchain will be used to store all of the transaction information as blocks.The user can determine whether a product is genuine or counterfeit by scanning the QR code or barcode on it.

II. LITERATURE SURVEY

Counterfeit goods have become increasingly important in recent years to the companies that make products. The effect of this phenomenon on business sales and profits. Product counterfeiting is avoided by using functional blockchain technology, which ensures the identification of genuine products along the supply chain[1]. Customers may safely determine the source of the acquired product without having to rely on third parties they can trust by using blockchain technology.The barcode of the product is linked to a Blockchain Based Management (BCBM) system in this study's attempt to detect counterfeit goods using a barcode reader.

In order to store product information and its unique code as database blocks, the proposed approach may be employed. The customer's unique code is obtained, and it is then checked against records in the blockchain database. In the absence of a match, it asks the customer where they purchased the product in order to identify the producers of counterfeit goods. If the code matches, it notifies the customerThis paper [2] presents a contemporary and practical phenomenon utilising blockchain and supply chain technologies, which by themselves provide high security and transparency in the system, but to enhance these features some additional characteristics are added in this study which is using the One Time Password (OTP) authentication for verifying the one-time password (OTP).

especially for potential buyers, to read product reviews before making a purchase. Positive customer evaluations can have a big financial impact on a company, and they can be used as information when making decisions about the design of products and the services offered to customers. By posting false reviews and giving an unfair evaluation to support or attack a good or service, the scammers attempted to take advantage of the current system. Although it is a crucial responsibility, research is still lacking in automatic detection of spammers.The fraudsters attempted to game the system by writing false reviews and offering an assessment that is unfair to promote or discredit a product or service for a company after realising the financial rewards associated with positive customer reviews of the product or service. Positive customer reviews can lead to significant revenue for a company.

III. METHODOLOGY

 firstToday, as technology and markets have developed, customers, distributors, retailers, and manufacturers have all suffered significant losses as a result of the difficulty in telling authentic products from fakes. A blockchain-based application called fake product detector is therefore suggested as a solution to this problem. The system's design is briefly described in this chapter, along with a detailed explanation of the system's operation and user interface. In order to deliver a practical, precise, and affordable product anti-counterfeiting solution, the blockchain's characteristics will be leveraged. The method uses an Android application built on blockchain technology to regularly spot fake goods.
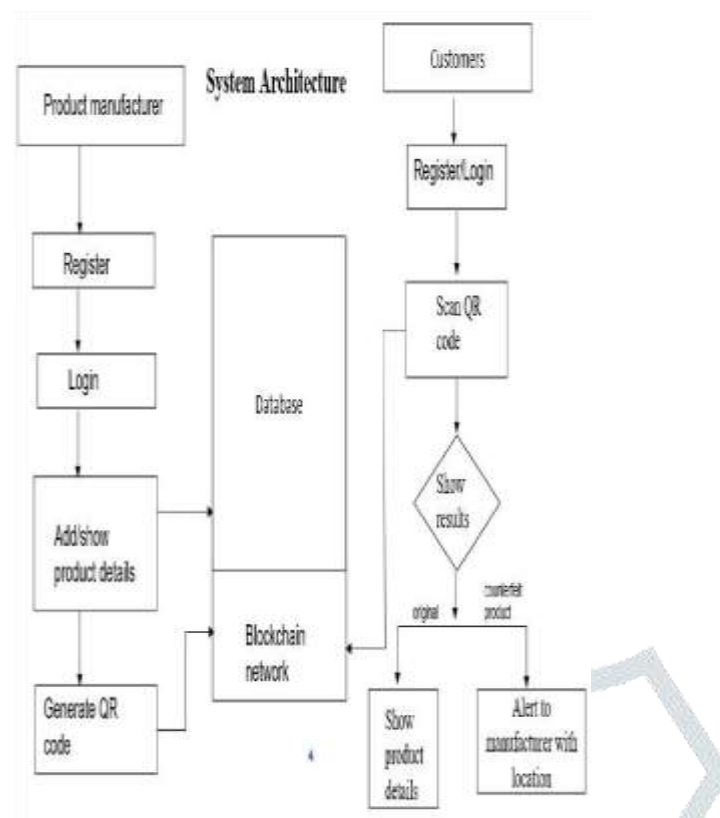
MANUFACTURE END:

After verifying the mail ID for registration and authentication purposes, the company. They can log in to the system and add new products or items, submit the product details, and use the system to generate a QR code that contains all the product information. It's also suggested to serialise the QR code to increase security and trace the product.

The product information will be kept in a database, and a secure graphic technique was used to create a QR code that is tamper-proof and copy sensitive, meaning that when copied, it loses information and prints irreversibly.

It is obvious that Random Forest provides the highest accuracy among the three algorithms when compared to other algorithms.

V. CONCLUSION

The fully functional application can efficiently lower the bar for preventing the counterfeiting of branded goods, give industries with limited financial resources an easier approach, and give consumers the confidence and assurance that they won't be buying susceptible counterfeited goods. Overall, this blockchain-based application can be a lifesaver for businesses by offering a new, more secure and user-friendly system for trading, marking, and purchasing.

The distributed apps' code complexity has a direct impact on the overall cost of running on the Ethereum public chain. Due to dispersed applications, the system's future performance may serve as evidence of the code's simplicity, increasing user confidence. The manufacturer may find it challenging to include all of the information about the made goods, therefore data can be pulled via the company's API to boost productivity and be more helpful to the maker.

Although information contained in a QR code cannot be hacked, it can be copied or used to generate another QR code that can be scanned and used to retrieve information. To get around this secure graphic, a QR code can be used. However, if the QR code is photocopied, the information will be lost due to ink smearing. A digital image with the best design to lose information when duplicated and printed irreversibly is called a copy detection pattern or secure graphic.

VI. REFERENCES

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