

Fake Product Identification using Supply Chain

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Abstract: *In recent years, counterfeiting has become a major factor in the manufacture of goods. This affects a company's brand, revenue and bottom line. Identify genuine and counterfeit products using supply chain technology. Supply chain technology is a digital ledger that keeps track of transactions in a number of databases that are linked together through chains. In this paper, QR codes offer a potent method to tackle the practice of product counterfeiting due to new developments in wireless and mobile technologies. This system can therefore be used to store product information and generate unique codes as database blocks. It asks for the user's unique code and compares it to entries in the supply chain database. If the codes match, the customer will be notified. Otherwise, the consumer will be notified that the product is counterfeit.*

Keywords: Quick Response code

I. INTRODUCTION

Risk factors like product duplication and counterfeiting are always present when a product or brand is developed globally. These risk factors can have an impact on a company's name, reputation, revenue, and customer satisfaction. The buying, selling, and marketing of fake goods is expanding quickly. It has a negative impact on the sales, reputation, and profits of the businesses and does pose a serious threat to the lives of unwary customers. A fully functional supply chain system is suggested to ensure the identification and traceability of fake goods or products throughout the supply chain and to combat this phenomenon. Businesses only have to pay very small transaction fees and need not be concerned about supplying end users with fake goods. The biggest issues and greatest losses are suffered by original manufactures as a result of the builders of fake products, both financially and in terms of brand damage. A working supply chain technology can be used to determine the product's originality. A chained arrangement of recorded information known as a supply chain makes it difficult or impossible to alter or hack the system. After the product is stored on the network, a hash code is generated for it, and a chain is created for the product's transactions that can be used to maintain the product's transaction history. In the supply chain, it will store every transaction record as a block. A QR code or barcode generated for a specific product created by the manufacturer is assigned in the proposed system along with all the information about the product. The QR code can be scanned by the final consumer with an android application to access all product details. The user can determine whether a product is genuine or counterfeit by scanning the QR code or barcode on it.

II. METHODOLOGY

Counterfeit products can be identified using QR codes. The generated hash value and whether the products is corrupted. In this project, customers log into the application. After logging in, enter the information for ordering the product and order the product. When a manufacturer adds a product to order, a unique QR code is created for the product. When you make an order for a product online, a hash code is created for that product. The suggestion system generates QR codes for specific products. Customers either scan the QR code on the product or package with an QR code reader app on their smartphone, or the customer app has a QR code reader function. After scanning, getting the result whether the product is real or fake. This increases customer confidence in the seller and increases user satisfaction. In addition, it saves manufacturing time and money by fighting against defamation and sales by counterfeit manufacturers. A hash value is generated for each product added to the block or chain. A hash value is a fixed-length number that uniquely identifies data. Here the product hash value is generated. Hash values work as chains or iterations. At each iteration, the block's final output serves as the input to the next block. The entire cycle is repeated until the last block is reached, after

which the output is considered the final hash digest. System uses a hash algorithm to generate the hash value. A hash is called a message digest. This message digest is usually represented as 40 hexadecimal digits.

III. LITERATURE SURVEY

M.C.Jayaprasanna, V.A.Soundharya, M.Suhana, S.Sujatha, This article described the proliferation of counterfeit goods online and on the black market. Blockchain is the biggest challenge in supply chain. Although the government has enacted some laws and regulations against counterfeit goods, counterfeit goods cannot be regulated. Therefore, an approach is needed that provides security technologies that detect counterfeit goods and alert both manufactures and consumers within the supply chain. The total number sold by the seller and the balance of the seller are transparent. The user can authenticate the manufacturer using cryptographic algorithms. The only way to decrypt it is with the owner's private key. Additionally, counterfeit goods and manufacturers' authenticity are identified by both end consumers and commercial sellers.

B. M. A L. Basnayake, C. Rajapakse, this research builds on the applicability of the blockchain concept to improve the transparency and validity of agricultural supply chains and their processes. In recent years, there have been rapid changes in the production of good and its raw materials. Effective ways of bridging the gap between the farmers who produce the goods in the market and the final consumers were studied. The Blockchain-based architecture and its concepts were introduced to bring trust and transparency to users and their transactions.

Atima Tharatipyakul and Suporn Pongnumkul , blockchain technology is seen as an opportunity to improve traceability in the agricultural and food supply chains and communicate food quality, safety and nutritional information to stakeholders. A limited understanding of comprehensible application user interface design can lead to usability problems. As a step towards a more user-friendly blockchain-based agricultural traceability application, this whitepaper examined existing efforts from a user interface perspective.

Si Chen, Rui Shi, Zhuangyu Ren, Jiaqi Yan, Yani shi, Jinyu Zhang, in this related paper, they proposed a blockchain-based framework. This framework provides a theoretical foundation for intelligent supply chain quality control based on blockchain technology. Furthermore, it provides the basis for the development of information resource management theory in distributed virtual organizations, especially distributed management theory among distributed organizations.

Muhammad Nasir Mumtaz Bhutta, Hafiz Farooq Ahmad, Muhammad Khurram Khan, this research includes the architecture of cryptocurrencies, smart contracts, and blockchain-based applications in general. This article provided a perspective that describes blockchain architecture for cryptocurrencies, smart contracts, and other applications. Advances in consensus research are also highlighted in the context of many important development and implementation frameworks. Additionally, future open research avenues that may help researchers explore key challenges in the blockchain space are discussed in detail.

IV. PROPOSED SYSTEM

Detecting counterfeit goods uses a barcode reader where the product barcode is linked to the chain. Therefore, the proposed system can be used to store product details and their unique product codes as blocks in a database. It collects unique codes and compares them with inputs from customer databases. If the codes match, the customer is notified or receives information about where the product was purchased to identify the counterfeit manufacturer. Manufacturers add products to the chain. Each added product has a QR code. A barcode is a label that contains information about the product to which it is applied. Consumers can use the QR code as anti-counterfeiting tool to determine if the product is genuine. Customers can scan the information with QR code scanner. This allows customers to identify counterfeit products themselves. Distributors and retailers scan, review, and approve products for further steps. Customers can also purchase the product

V. SYSTEM ARCHITECTURE

Due to this system design, customers design, customers must first register or login to the website before scanning the product's QR code. Once the authentication process is complete, a special code provided by the customer is matched against records in the database. If they match, the consumer knows the product is genuine. Otherwise, the purchaser will be asked for information about where the product was purchased in order to trace the origin of the counterfeit

product. The manufacturer acts as the administrator of this system. Manufacturers acts as the administrator of this system. Manufacturer add distributors and each product is assigned to a them. The dealer or retailer will scan his QR code and release the code for the exude to this system design, customer design, customers must first register or login to the website before scanning the product’s QR code. Once the authentication process is complete, a special code provided by the customer is matched against records in the database. If they match, the consumer knows the product is genuine. Otherwise, the purchaser will be asked for information about where the product was purchased in order to trace the origin of the counterfeit product. The manufacturer acts as the administrator of this system. Manufacturers act as the administrators of this system. Manufacturers and distributors and each product is assigned to them. The dealer or retailer will scan his QR code and release the code for the next step if it is genuine. Distributors and retailers scan and inspect products, so it is highly unlikely that they are counterfeit. Customers can install android apps to easily recognize and order great products.t step if it is genuine. Distributors and retailers scan and inspect products, so it is highly unlikely that they are counterfeit. Customers can install android app to easily recognize and order great products

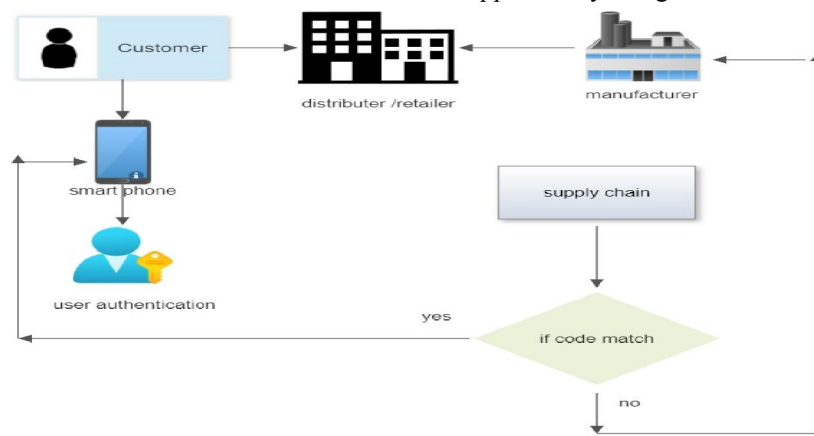


Fig. 1. System Architecture

VI. RESULTS AND DISSCUSION

Counterfeiting is common in existing supply chain technology. Instead, it is important to put in place a system that allows users to retrieve all product-related data in order to determine if a product is genuine. Businesses around the world are affected by counterfeit goods that damage their reputations, prestige and sales. Anti-counterfeiting in supply chain management is a very important product. Any company that wants to succeed in the e-commerce market needs to make it easier. In addition, it provides buyers with a platform for product information and product inquiries.

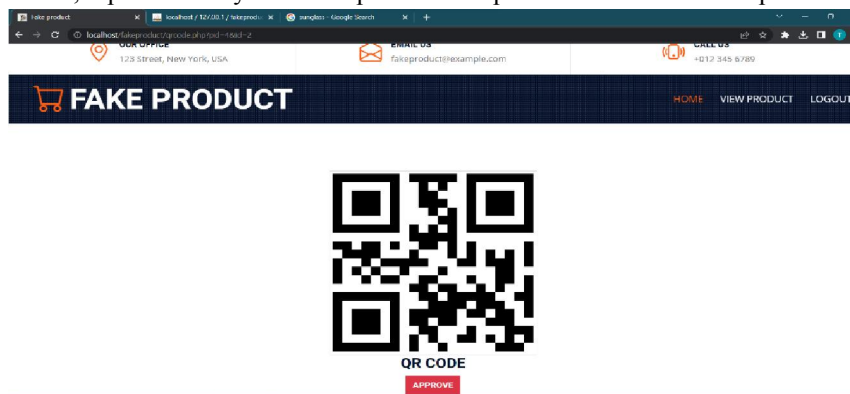


Fig. 2. Product QR code

Consumers need to trust the structure of the system as a whole and understand exactly how the product gets to them. Traditional anti-counterfeiting methods have failed and continue to fail because consumers do not trust the system. Obfuscation doesn’t stop even after using RFID and other mobile technologies. This document proposes a fully functional system. This allows users to identify if the product is fake or genuine. The product in the supply chain that generated the embedded QR code. Finally, customers can use an android application to scan the product and check the

product details with the QR code to check if the product is genuine. Encrypted QR technology should be implemented to prevent various attacks and counterfeits. It is regulated by supply chain system authorities and can only be accessed by authorized individuals.



Fig. 3. Scan QR code by Android app

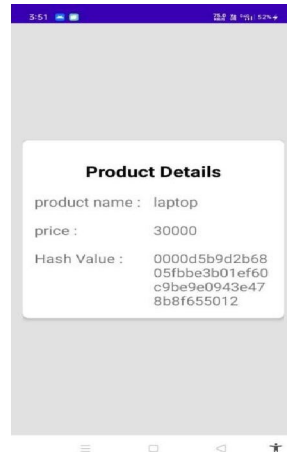


Fig. 4. Original Product

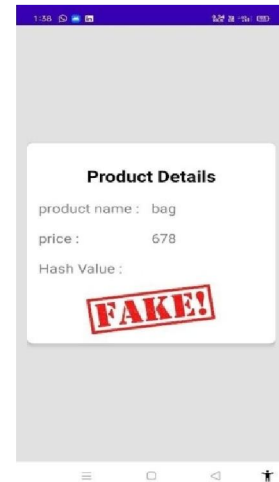


Fig. 5. Fake Product

VII. CONCLUSION

A fully functioning application effectively lowers the bar for anti-counterfeiting of branded goods, with limited financial resources for the industry and a simpler approach to ensuring consumers are not buying vulnerable counterfeit goods. Give consumers peace of mind. The data inside the QR code is also encrypted. Customers or users can detect counterfeits after scanning the QR code. The proposed method helps customers identify counterfeit goods in the supply chain. Users can use the QR code attached to the product to provide information. Products are displayed to customers with the approval of distributors and retailers. An android application makes it easy to identify counterfeit goods. The customer can then use the payment details to place an order

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