



CONTENT DETECTION SYSTEM USING BLOCKCHAIN

Dr.Aarti.J. Vyavahare

HOD, Department of Electronics and Computer,
P.E.S Modern College of Engineering, Pune, Maharashtra, India

Sakshi Kokadwar, Arpita Ubarhande, Prachi Jagdale

UG Student, Department of Electronics and Computer,
P.E.S Modern College of Engineering, Pune, Maharashtra, India

ABSTRACT

The rise of counterfeit products within global supply chains poses substantial risks to consumer safety and brand integrity. In response, this study proposes an innovative system for detecting fake products through the integration of blockchain technology. By employing a permissioned blockchain network and smart contracts, the system establishes a secure and transparent ledger that records product-related data in an immutable and tamper-proof manner. Unique product identifiers, such as QR codes or RFID tags, are linked to blockchain entries, allowing consumers and authorized stakeholders to easily verify the authenticity and origin of a product. The decentralized nature of data storage across the blockchain network ensures resilience against tampering, providing end-to-end traceability and transparency throughout the supply chain. The suggested arrangement not only improves trust and security but also empowers consumers to make informed choices, strengthens brand protection, and contributes to the overall integrity of the global supply chain.

Keywords: Counterfiet Product, QR Code, Blockchain

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I. INTRODUCTION

1.1. Project Idea

The primary objective of the project is to create a blockchain-based system for identifying counterfeit items. Using the immutable ledger and smart contract features of blockchain, the system will make transparent and businesses and consumers in confirming the legitimacy of items and thwarting the sale of fake goods.

1.2. Motivation of the Project

The proliferation of counterfeit goods has expanded worldwide in recent years. The existing supply chain contains an abundance of fake goods. The research claims that occurrences involving phoney products have increased in recent years. In order for users to determine if a product is genuine or not, a system that allows them to review every detail of the product is required.

By utilizing the transparency and security characteristics of blockchain technology, the "Identifying Fake Product Detection System Using Blockchain" aims to address the urgent problem of counterfeit items in international supply chains.

The system is designed to provide a comprehensive and decentralized solution to ensure the authenticity of products throughout their journey in the supply chain.

Key components of the system include the integration of a permissioned blockchain network and the use of smart contracts to establish a secure and transparent ledger for recording product-related data. Every product has a distinct identifier, such as an RFID tag or a QR code, that connects to the corresponding item on the blockchain.

This enables consumers and authorized stakeholders to easily verify the authenticity and origin of a product. management systems, facilitating seamless integration and adoption by industry players

The decentralized nature of data storage on the blockchain ensures immutability and tamper resistance. Every transaction, transfer of ownership, and changes in product status are recorded on the blockchain, providing end-to-end traceability and transparency. The framework is made to work with the current supply chain.

However, the source of shopping has changed in the modern day. Products from many brands' online shops are available for purchase. Here, you are required to place the order without physically viewing and inspecting the original item.

You purchase the product after reading the reviews. Consequently, you are reliant on the product reviews. These evaluations might be fake or real. Customers want to purchase authentic and trustworthy products, which can only be done when you obtain the product's original reviews. However, if you are granted access to the system, you can find the original ratings and reviews for a specific product there. For you, then, it is the source of satisfaction and stability. There views for a product for which the URL is provided are extracted using the suggested method. Consequently, the algorithm identifies fraudulent reviews, and ultimately, through analysis of these evaluations, it locates the real product reviews.

II. METHODOLOGY

SHA Algorithm

Secure Hash Algorithm, or SHA algorithm, is a cryptographic hash function that is employed in a number of security applications. It is helpful for confirming data integrity and generating digital signatures since it takes input data and produces a fixed-size hash result.

The SHA algorithm, or Secure Hash Algorithm, is a widely used cryptographic hash function. It takes an input message and produces a fixed-size hash value, typically represented as a string of numbers and letters. The main purpose of SHA is to ensure data integrity and security. It's commonly used in digital signatures, password storage, and data verification.

Algorithm 1: Protocol for Peer Verification

Input : User get IP address, User Transaction TID, Output : Enable IP address or current query if any connection is valid

Step 1 : User generate the any transaction DDL, DML or DCL query

Step 2 : Get current IP address If (connection(IP) equals(true)) Flag true

Else

Flag false End for

Step 4 : if (Flag == true) Peer to Peer Verification valid

Else

Peer to Peer Verification Invalid End if

End for.

Algorithm 2:Hash Generation

Input : Genesis block, Previous hash, data d, Output : Generated hash H according to given data Step 1 :

Input data as d

Step 2 : Apply SHA 256 from SHA family Step 3 : Current Hash= SHA256(d)

Step 4 : Return Current Hash

Algorithm 3: Mining Algorithm for valid hash creation

Input : Hash Validation Policy P[], Current Hash Values hash Val

Output : Valid hash

Step 1 : System generate the hash Val for i th transaction using Algorithm 1

Step 2 : if (hash Val. valid with P[]) Flag =1

Else Flag=0

Algorithm 4: Recover Block Chain Data Input : User Transaction query, Current Node Chain C

Node[chain], Old Nodes Chain [Node id]

Output : Recover if any chain is invalid else execute current query

Step 1 : User generate the any transaction DDL,

DML and DCL query.

Step 2 : Get current server blockchain Cchain \leftarrow Cnode[Chain]

Step 3 : Foreach (read I into NodeChain) If (!.equals NodeChain[i] with ((chain))

Flag 1

Else Continue Commit query Step 5 : if (Flag == 1)

Count = Similarly Nodes Blockchian() Step6 : Calculate the majority of server Recover invalid blockchain from specific node

Step7 : Endif Endfor Endfor

LITERATURE SURVEY

One of the biggest challenges in today's retail market is the counterfeiting of products. Counterfeiting products are just low- quality copies of some genuine brand. In this research, we have attempted to enhance the use of blockchain technology in the identification of counterfeit goods. Blockchain helps us to store the supply chain of products as a blockchain-based system makes a decentralized system and one of the main advantages of blockchain is that if the data is recorded in the system then nobody can change it at any cost so it makes our data more secure and protected from the third parties.[1] End users are put in danger financially, physically, and mentally when counterfeit or duplicate goods are manufactured and marketed. Through revenue loss, product defamation, downtime, replacement expenses, causing many brands to spend money on battling counterfeits, risking business partner trust, stealing sales, etc., it also negatively impacts the economic growth of original manufacturers and enterprises.

In order to prevent and counteract these significant impacts of counterfeiting, authentic products are identified using a blockchain-based system that also identifies copies of the same commodities.[2]

The worldwide growth of a technology or product always has a risk component in the rapidly evolving world of technology, such as copying and counterfeiting, which can harm the reputation the health of its customers. The main goal of the project is to confirm that the customer's purchased item is as described in the fake or genuine We have the conventional supply chain in comparison to blockchain. To profit from the better value of the imitation products, counterfeit goods are created.[3]

Risk considerations such as duplication and forging sometimes accompany the worldwide innovation or product enhancement process. Forging might have an impact on the company's reputation as well as the customer's wellbeing. These days, the largest challenge is identifying phony goods.

In order for the consumer to determine whether or not the thing they are purchasing is authentic, a system that allows them to review every aspect about it is required. False items seriously jeopardize the welfare of the clientele as well as the organization. Product manufacturers are thus having a very difficult time.[4]

Both consumers and businesses are becoming increasingly concerned about the proliferation of counterfeit goods. The spread of counterfeit goods seriously jeopardizes consumer safety and health as well as the standing and financial stability of businesses. Customers can quickly detect and steer clear of fake goods thanks to blockchain's decentralized and secure platform for tracking and authenticating things. This study investigates the application of blockchain technology to the detection of counterfeit goods. We look at the salient characteristics of blockchain technology and discuss how it might be applied to build a transparent and safe system for product identification. We propose a blockchain-based system for product identification that utilizes smart contracts to automate the verification process. With the help of the technology, producers might register their goods on the blockchain and give each one a distinct digital identity. Customers would be able to view the product's digital identification and confirm its legitimacy by scanning the QR code on the product. We also go over the possible advantages of utilizing blockchain technology for product identification, such as better manufacturer, less fraud, and more transparency. To add the item to the network, of the company, its revenue, and challenges and limitations challenges putting blockchain-based product identification systems into practice, include problems with interoperability and scalability. In summary, blockchain technology presents a viable approach to detect and counteract counterfeit goods.

Because of its decentralized and secure design, it offers a transparent and trustworthy platform for confirming the legitimacy of products, shielding both consumers and companies from the negative impacts of counterfeit goods.[5]

Counterfeit goods have become increasingly important in the creation of products in recent years. The companies' sales and profit are impacted by this phenomenon. By using a functional block chain technology that ensures the authenticity of real products across the supply chain, product counterfeiting is prevented.

When using block chain technology, consumers can dependably ascertain the origin of a product they have acquired without relying on dubious third parties. "Tamper resistance" for the data content is guaranteed by any application that uses block chain technology as its base. Keeping in mind that a block chain is a distributed, decentralized digital ledger that records transactions across multiple databases and networks using what are known as public blocks. Because of this, changing any related block in the past will likewise change every block that comes after it. In this study, a product's barcode is connected to a Block Chain Based Management (BCBM) system via a barcode reader in order to identify counterfeit items.

As a result, the proposed method may be used to record product details and the unique code connected to that product as database blocks. A unique code supplied by the customer is then gathered and cross-referenced with entries in the block chain database. If the codes match, the consumer will receive a message; if not, the maker of the counterfeit product will be identified by asking the customer where they purchased the item.[6]

IV. PROPOSED SYSTEM

The product's current owner and the time the ownership changed are time stamps that the system will keep track of.

Online Product enrolment

At first, the product's original owner will be the customer faith. Finally, we review the administrator per the manufacturer's instructions, and simultaneously the product will be assigned a QR code. Admin will enroll the product and manufacturer if the questioner is a legitimate manufacturer.

Shipping product to the Distributor

Under this scenario, the manufacturer will ship the product to the distributor and mark it as shipped. Until the distributor acknowledges receipt of the product, ownership of the product will remain unchanged. Following receipt of the acceptance, the distributor will become the owner of that product.

Shipping product to the retailer

In this instance, the distributor will send the product to the retailer; the retailer will then certify that the goods was successfully received and mark the product's status as dispatched. At that point, the store will own the product.

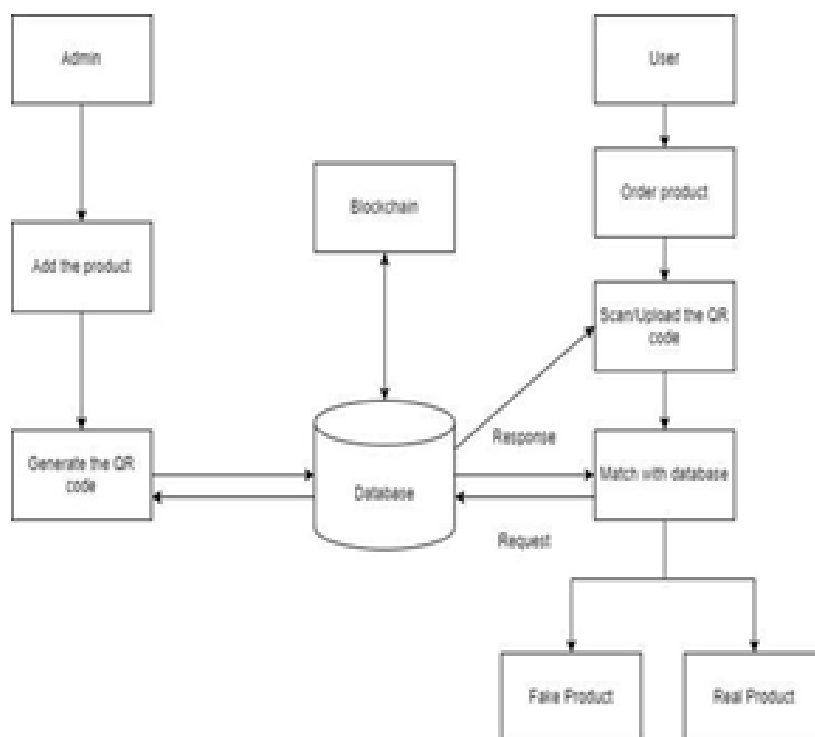


Fig 1: System Architecture

DATA FLOW DIAGRAMS



Fig 2: DFD 0 diagram

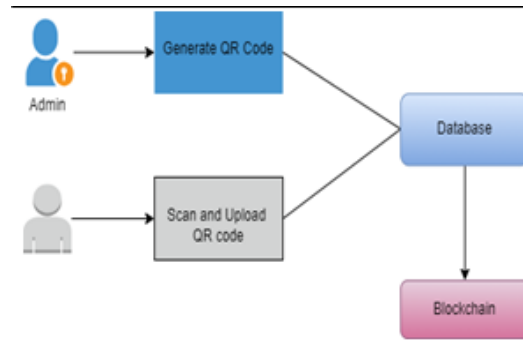


Fig 3: DFD 1 diagram

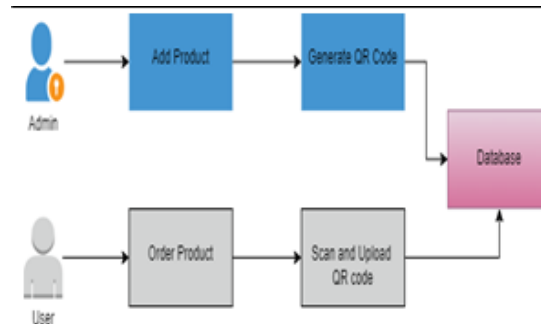


Fig 4: DFD 2 diagram

UseCase Diagram:

In software development, a use case is a particular feature or interaction that a system provides for its users. It specifies a series of actions or stages that an actor or user takes within the system to accomplish a particular goal.

Use cases are used to collect and document a system's requirements from the perspective of its users. They help define expected behaviour and consequences and indicate the different ways users might interact with the system.

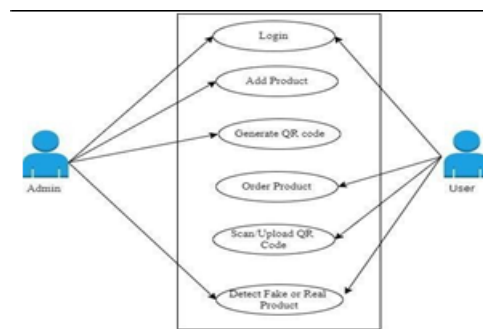
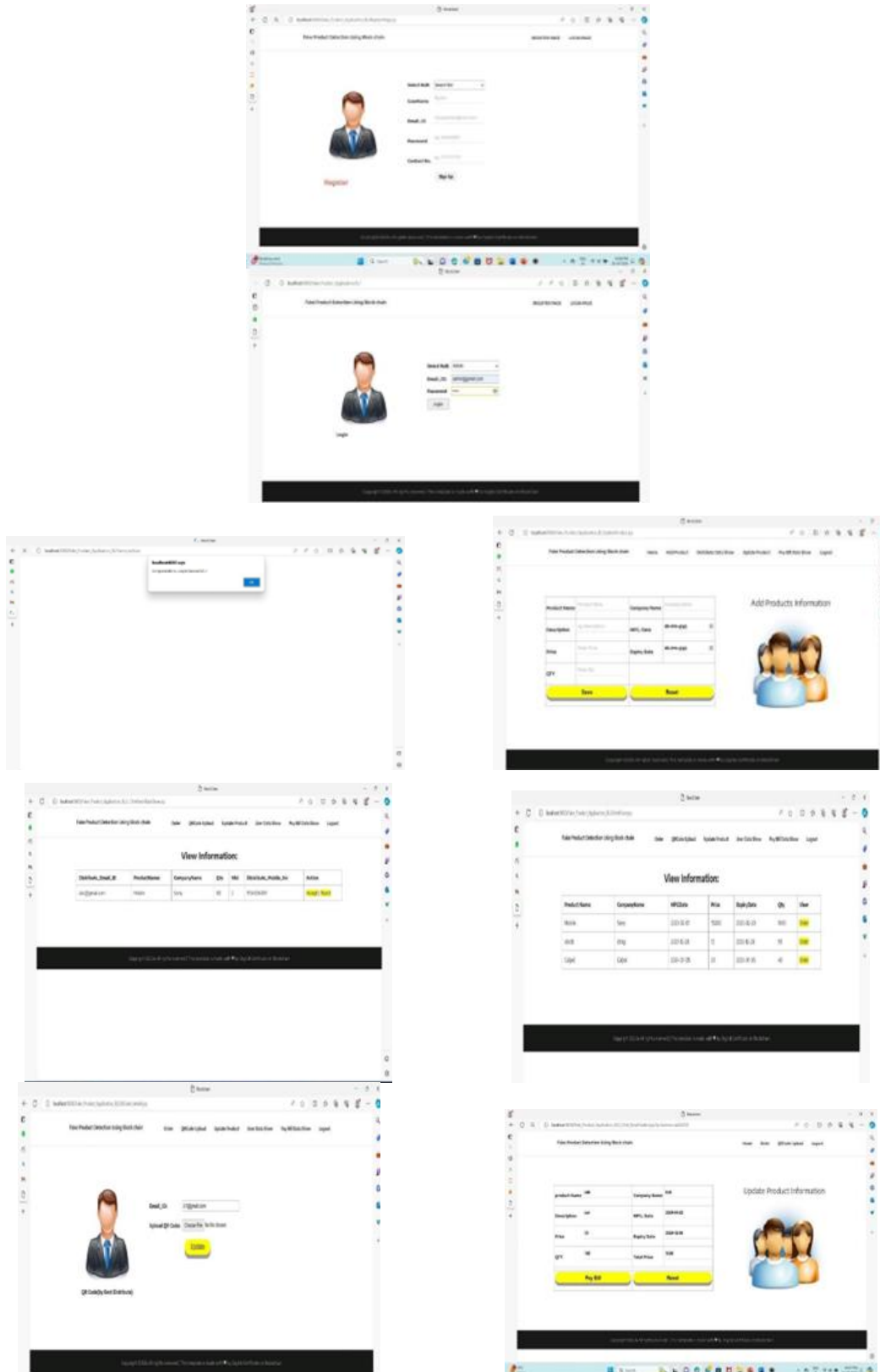
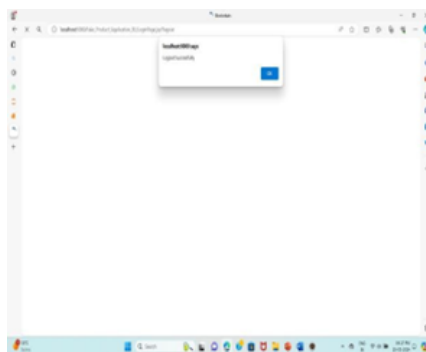


Fig 5: Use Case Diagram

V. RESULT

This real-time technology can be used to confirm the authenticity of the product being received or to identify fakes. The SHA-256 method is used by the manufacturer to generate a QR code with blockchain technology. To confirm if the product is authentic or not, the user scans the QR code that has been generated.





VI. FUTURE SCOPE

The future scope of identifying fake products with Blockchain includes enhanced security, increased trust in product authenticity, and improved efficiency in chain of supply management. Blockchain technology has potential applications in revolutionizing product verification processes.

VIII. CONCLUSION

The volume of easily accessible counterfeit goods online is causing the counterfeiting sector to grow exponentially. As a result, there is a great demand for the detection of counterfeit products, and blockchain technology is employed in this process. We will use this data to refine our algorithm for spotting counterfeit goods. Solutions to combat product forgery malpractices have also been deliberated. As a result, the suggested method can assist customers in spotting counterfeit goods in the supply chain.

Manufacturers can use blockchain technology to provide each product a distinct, unchangeable digital identity, which makes it possible to track and validate product information all the way through the supply chain. This lowers the possibility that customers may buy phony or counterfeit goods by making it simple for them to confirm a product's legitimacy. Clients can feel secure in the quality of the products they buy. This system promotes economic growth and lowers the rate of counterfeiting. Additional systems can be added to prevent fraud in the banking, healthcare, online shopping, and other sectors. Furthermore, by facilitating the development of decentralized marketplaces that value authenticity and transparency, these real-time systems can lower the possibility of fraud and counterfeiting in online transactions.

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