Identification of Fake Product or Counterfeit Product Using Blockchain

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Abstract— In recent years, Counterfeit products play an important role in product manufacturing industries. This affects the companies name, sales, and profit of the companies. Blockchain technology is used to identification of real products and detects fake products. Blockchain technology is the distributed, decentralized and digital ledger that stores transactional information in the form of blocks in many databases which is connected with the chains. Blockchain technology is secure technology therefore any block cannot be changed or hacked. By using Blockchain technology, customers or users do not need to rely on third-party users for confirmation of product safety. In this project, with emerging trends in mobile and wireless technology, Quick Response (QR) codes provide a robust technique to fight the practice of counterfeiting the products. Counterfeit products are detected using a QR code scanner, where a QR code of the product is linked to a Blockchain. So this system may be used to store product details and generated unique code of the product as blocks in the database. It collects the unique code from the user and compares the code against entries in the Blockchain database. If the code matches, it will give a notification to the customer, otherwise it will give the notification to the customer that the product is fake.

Keywords— **Counterfeit product, QR code, Blockchain.**

I.Introduction

1.1 Background: The global development of a product or technology always comes with risk factors such as counterfeiting and duplication, which can affect the company name, company revenue customer health. The basic idea of the project is to verify that the product purchased by the customer is fake or real. In comparison with blockchain we have a traditional supply chain. Traditional supply chain provides a centralized network where the data is in the hands of the company which provides the service or the products in the market, and they own the data so they can manipulate as per their wish so they are not secure.

1.2 Relevance: Counterfeits of the product are produced to take advantage of the superior value of the imitated products. As mentioned, traditional supply chain provides a centralized network whereas Blockchain provides a decentralized database for every transaction involving the data value of the product. This is done by creating a record whose authenticity can be verified by the entire community since blockchain runs by peer-to-peer network. In such a way manufacturers can use this system to provide genuine products to the customer. This will help to maintain the customer trust and to increase the brand value of the product in the market. In blockchain every block consists of data, hash and previous block hash.

1.3 Motivation: There In recent years, the spread of counterfeit goods has become global. There are many fake products in the current supply chain. According to the report, fake product incidents have risen in the last few years. It is necessary to have a system for customers or users to check the all details of the product so that users can decide that the product is real or fake. In India currently, there is no such system to detect counterfeit products. So, the solution involves a simple QR code-based identification that can help the end-user or customers to scan and identify the genuineness of the product by using a smartphone.

1.4 Summary: Data contains the important information and hash key consists of the unique code. It is impossible to change data of any block since a person changing the data requires to own the majority of the network. If we try to change the data of any block the hash key will get changed. So, this becomes the major advantage over the traditional centralized architecture where the data in blockchain is immutable so that the customer who buys the product gets the genuine information of the product.

II.　　Literature Survey

STUDY OF RESEARCH PAPER 1

Survey1

1] A Survey of Counterfeit Product Detection by Prabhu Shankar, R. Jayavadivel. Counterfeit products are growing exponentially with the enormous amount of online and black-market. So, there is a strong need to address the challenges of detecting counterfeit products and designing appropriate technology to improve detection accuracy. This'is one of the active research areas to be explored in the current world. This paper discusses various techniques for identifying counterfeit products.

Survey2

2] Smart Tags for Brand protection and anti-counterfeiting in the wine industry by steven, Markq:'This paper describes a brand protection and anti-counterfeiting solution for the wine industry based on smart tags and Cloud 2-enabled technologies. The main idea behind smart tags is to utilize quick response codes and functional links supported by the Cloud system and two-way communication between the winemaker and end-user.

Survey 3

3] A Blockchain-based Supply Chain Quality Management Framework by Si Cgen, Rui Shi. In this paper, we propose a blockchain-based framework. This framework will provide a theoretical basis for intelligent quality, management of the supply chain based technology. Furthermore, it provides a foundation to develop theories about information resource management in distributed, virtual organizations. SKNCOE. Pune-41, Dept. of E&TC Engineering.

Survey 4

4] With the advent of globalization and the evergrowing rate of technology, the volume of production as well as ease of procuring counterfeit goods has become unprecedented. Be it food, drug or luxury items, all kinds of industrial manufacturers and distributors are now seeking greater transparency in supply chain operations with a view to deter counterfeiting. This paper introduces a decentralized Blockchain based application system (DApp) with a view to identifying counterfeit products in the supply chain system. With the rapid rise of Blockchain technology, it has become known that data recorded within Blockchain is immutable and secure. Hence, the proposed project here uses this concept to handle the transfer of ownership of products. A consumer can verify the product distribution and ownership information scanning a Quick Response (QR) code generated by the DApp for a product linked to the Blockchain
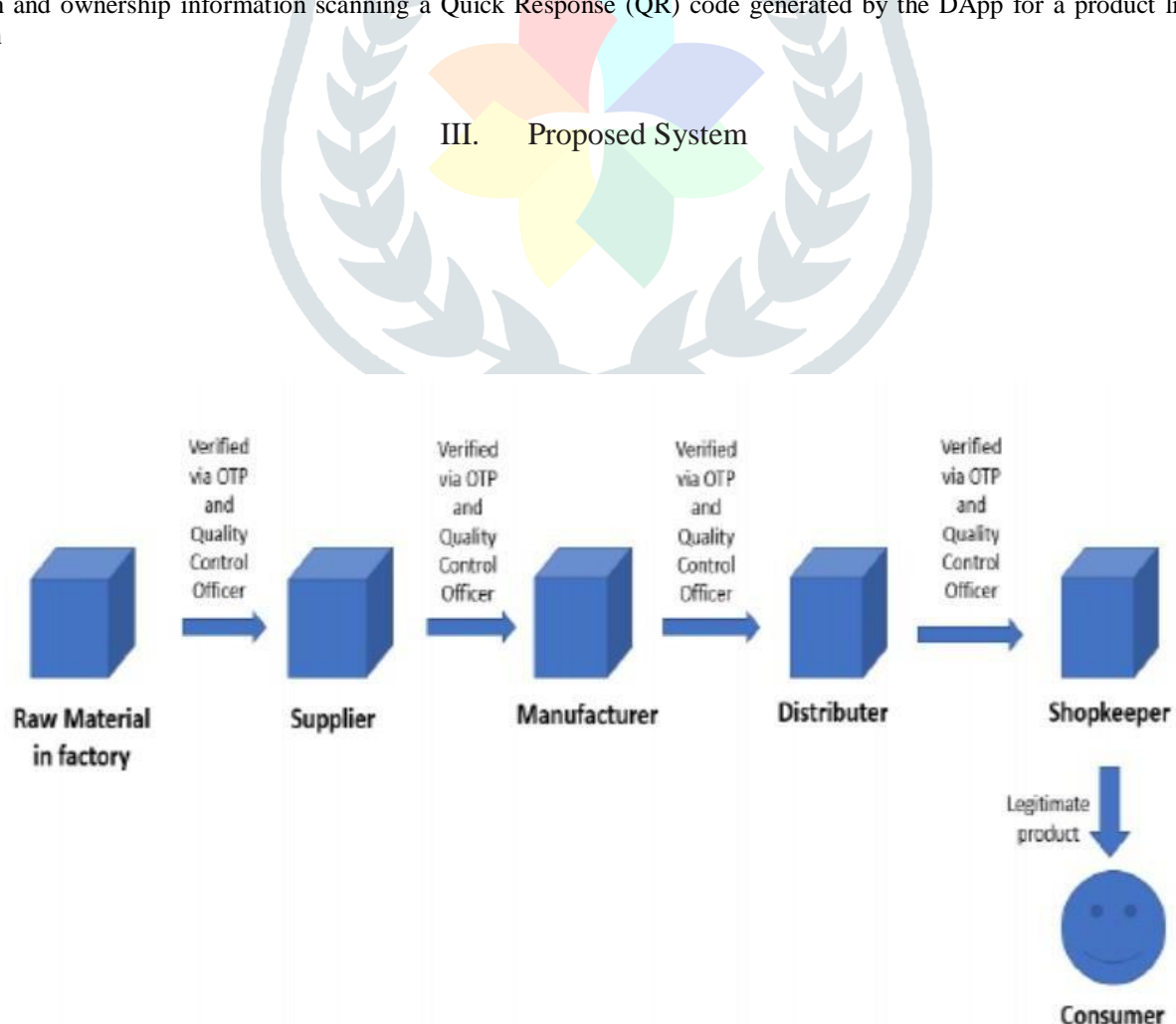
III.　　Proposed System

Fig1. Blockchain in supply chain management.

Flow of Proposed System

The main aim of this proposed system is to maintain the Genuity of the product by helping the customer track the supply chain history of the product. System give cus- tomers the power to track the history of an entire prod- uct from manufacturer to customer using blockchain. This product anti-counterfeiting system based on Blockchain is composed of three roles, the Manufacturer role, the Sellerrole, and the Consumer role[1] In this project customer login, the in the application. After login, he fills in the details for ordering the product and book the product. The order of the product can be shown to the manufacturer. Manufacturer deciding whether the product request is acceptable or not. After the manufacturer accepting the order of the product it generates the unique QR code of a product. Once an order of product is stored on the network hash code is generated of that product and it is possible to maintain the transaction of the product. In the proposed system QR code is generated for a particular product. Customers scan the QR code on the product or package using the smartphone's QR code reader application or customer application have the option of QR code scanner. After scanning, we get the result of the product is real or fake. In the end, the Blockchain system holds these product details along with a history of transactions to enable the tracking of the product along the distribution chain. All the product details, block name, a hash value is stored.[2][3]
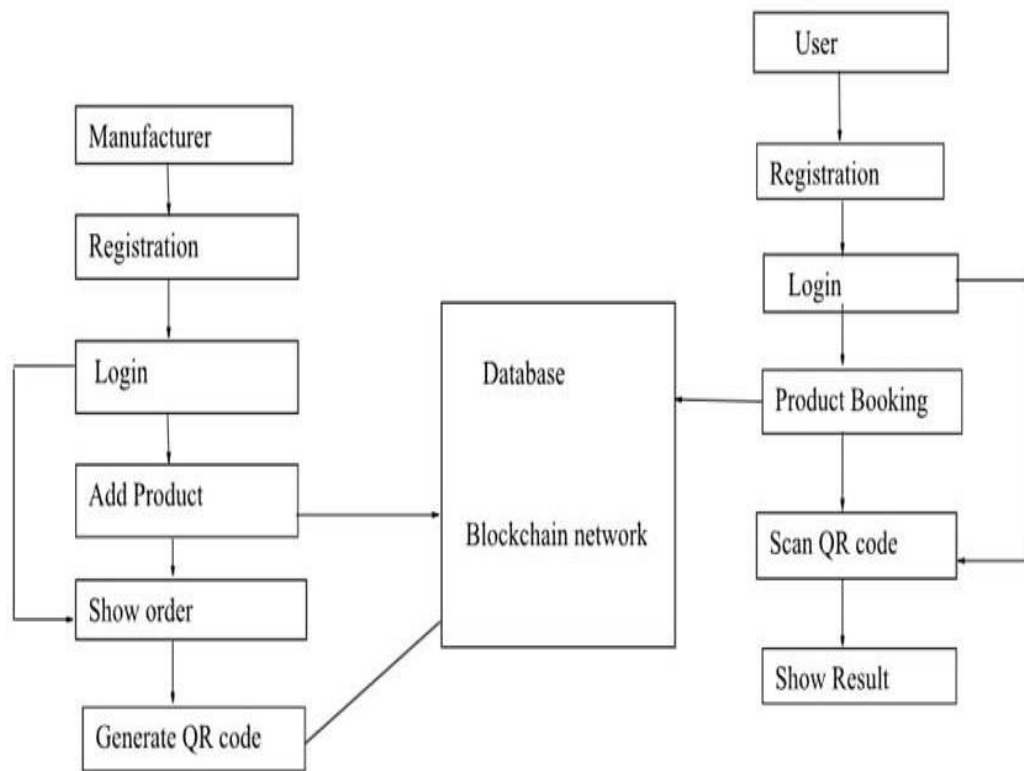

Fig.2. Design Flow

Manufacturer:

Manufacturer logs into the manufacturer account and generates QR Code for Product and adds other required details of the product and by using his ethereum wallet, the manufacturer adds a block to Ethereum blockchain. The user id of our local database and the wallet address ofthe entity will be mapped together, if both the things are there, that is a manufacturer logs in from his own account and uses his own wallet then only the block will be addedto the digital ledger.[1]

Supplier:

Supplier logs into supplier account and scans the QR code on the product. The seller can access information about his products that the manufacturer has entered. It adds its own details of the product like shop destination and pushes it into the Blockchain. Those details can be viewed by the buyer.[1],[2]

Customer:

Customers can check the integrity of the product by scan-ning QR code which will list the history of transactions and thus verifying the genuinity of the product. At the time of customer purchasing the product after the QR scan in supply chain history, if the last location is not matched with the purchase location, the customer will know that the product is not genuine. It concludes that the QR code was copied and the customer becomes aware of counterfeiting.[1]

IV.Result

This real-time system can be implemented to check the received product is a counterfeit product or original product. The manufacturer uses the SHA-256 algorithm to generate a QR code in blockchain technology. The generated QR code is scanned by the user to check given product is fake or real. The Final Output of The Project will be shown in format mentioned below.

V.CONCLUSIONS

Counterfeit products are growing exponentially with the enormous amount 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 in 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 Management. 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.

VI.ACKNOWLEDGMENT

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