BLOCKCHAIN BASED FAKE PRODUCT IDENTIFICATION SYSTEM

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ABSTRACT

There are many fake products in the existing supply chain. It is necessary to have a system for end user to check all details about product that they are buying so that the customer can check if the product is genuine or not. In recent years, Counterfeit products play an important role in product manufacturing industries. This affects the company name, sales, and profit of the companies. Block 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 database/node-computers which is connected with the chains. Blockchain technology is secure as the data stored once in the chain is immutable 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 authenticity and safety.

Our System provides the emerging technology of web use cases, Quick Response (QR) codes provide a robust technique to fight the practice of counterfeiting the products. Counterfeited products can be detected using a QR code scanner, where a QR code of the product is linked to Blockchain. So, this system may be used to store product details and generated unique code of that product as blocks in 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 all the information of the product otherwise no information will be outputted to the customer which shows that the product is fake or counterfeited.

Keywords: Blockchain, Counterfeit, Supply Chain.

I.   INTRODUCTION

In the current advancing world of technology, the global development of a product or technology always comes with risk factor such as counterfeiting and duplication, which can affect the company name, company revenue, and 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 traditional supply chain. Traditional supply chain provides centralized network where the data is in the hand 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. Counterfeiting of the product are produced to take advantage of the superior value of the imitated products. As mentioned, traditional supply chain provides centralized network whereas Blockchain provides decentralized data base, every transaction involving the data value for 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 manufacturer 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. Data contains the relevant information and hash consists of the unique code. It is impossible to change data of any block since person changing the data requires to own the majority of the network. If we try to change the data of any block the hash 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 REVIEW

Author of paper [1] paper discusses how the traditional cloud storage model runs in a centralized manner, so single point of failure might lead to the collapse of system. The system is a combination of the decentralized

storage system, IPFS, the Ethereum blockchain, and attribute-based encryption technology. Based on the Ethereum blockchain, the decentralized system has keyword search function on the cipher text solving the problem in traditional storage systems where cloud server returns wrong results.

Author of paper [3] introduces the concept of Blockchain technology in information security of the food supply chain and comparing it with the traditional supply chain system. The proposed system focusses on the disadvantages, promoting the blockchain in tracking, monitoring and auditing the food supply chain and helping manufacturers to record the transactions in authenticity. The proposed system is not implemented in practical, they just gave the theoretical idea.

Author of paper [4] demonstrates how blockchain works in the food supply chain with HACCP. The system proposed a new decentralized traceability system based on the internet of things and blockchain technology and explored the challenges in scaling block-chains in general. This system will deliver real-time information to all supply chain members on the safety status of food products. Also, the system can significantly improve the efficiency and transparency of the food supply chain, which will obviously enhance the food safety and rebuild the consumers' confidence in the food industry. The other Papers are reference Papers are helpful in different ways for implementation of proposed system.

III.   METHODOLOGY

System is maintaining Status of product i.e., Manufacturer of product, current owner of product, and history of owners, time stamp i.e., at what time product was updated and a QR code.

Stage 1: Product Enrollment Process:

Initially manufacturer will be the first owner of product.

So, manufacturer will request administrator to add product on the network, at that time QR code will be generated. Administrator will enroll product and manufacturer on the network, and QR code is taken.

Stage 2: Ship Product to Distributor:

In the next step manufacturer will ship the product to distributor. When distributor receives product will scan the QR code and update his details on the network, about product ownership, time Stamp and date.

Stage 3: Ship Product to Retailer:

At this Stage, the retailer receives product from Distributor and scan QR code assigned to product using QR code scanner, and will update owner details of the product on the network.

Stage 2: End User Authentication Process:

At the end of the chain, customer will take the product, go to website and upload QR code over there, and customer will able to get all detail about product from manufacture to last retailer. And after getting details, it his question where to buy the product or not.

IV.   RESULTS AND DISCUSSION

The results of the project show that how the system work. It uses QR code for authenticating the product originality, if the scan QR code shows the details of the for the product which includes the description, product name, manufacturer name, company name, unique product id, and others then we can say that product is authentic.

If by scanning the product QR code if it does not show any details the we can say that the data for the product does not present in the blockchain system and it has been counterfeited. So, we can say that the product is fake.
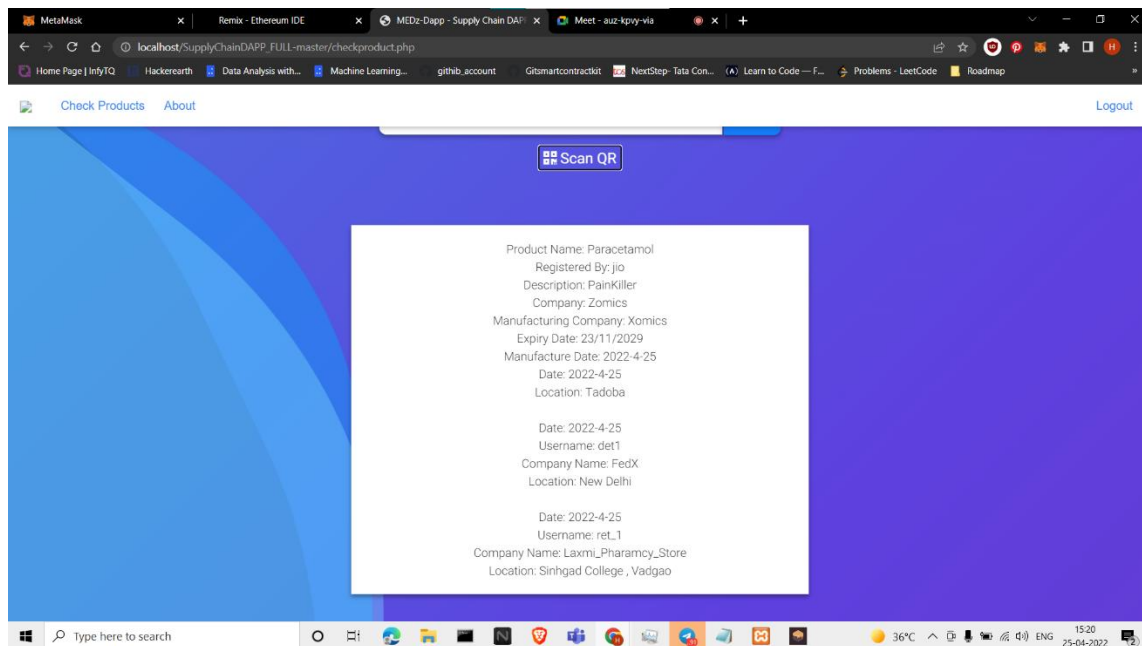
Figure 1: Scanned product shows all details proves authentic.
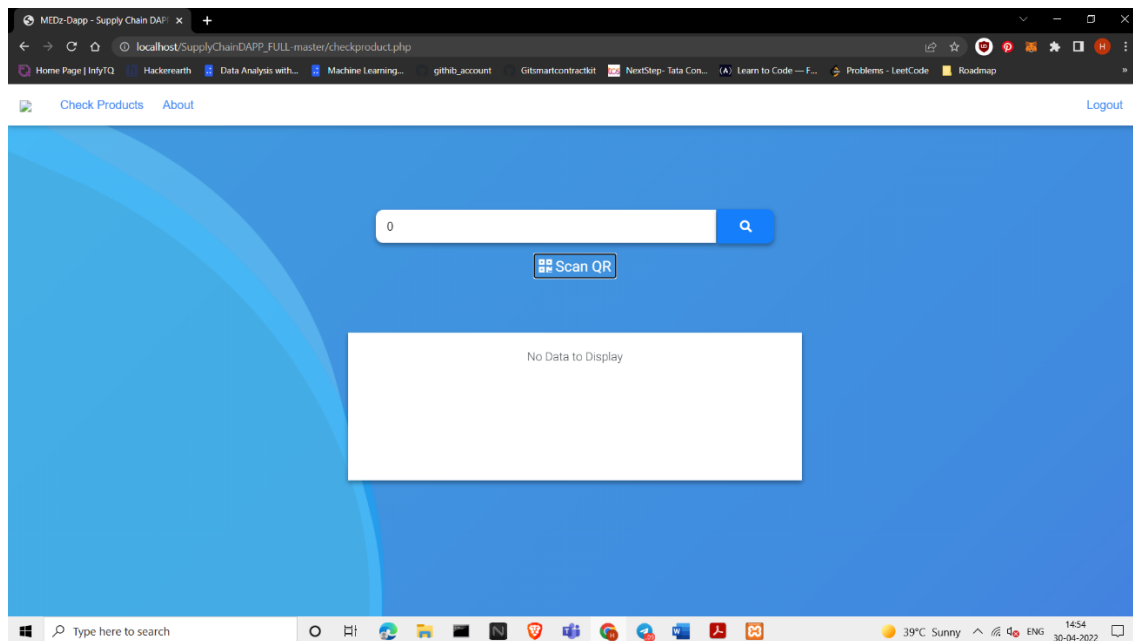
Figure 2: Scanned product shows no details proves fake.

V.   CONCLUSION

Counterfeiting products are growing exponentially with the enormous amount online. So, there is a strong need to detecting 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 product can be stored in the form of blocks in blockchain technology.

Thus, in this paper we discussed the system and the solution to fight against the malpractices of counterfeiting of the products, and proposed the system which is useful for end user to detect whether the product is fake or not by checking the throughout history of the product in the supply chain. End user can scan QR code assigned to a product and can get all the information that has been put up throughout the supply chain in the blockchain on which end to end user can check whether the product is genuine or not.

VI. REFERENCES

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