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# Blockchain Based Fake Product Identification in Supply Chain

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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 they are buying so that customer can decide product is genuine or not. Our system manages ownership of products using IPFS(Inter Planetary File System) which is the Distributed Web.**

**IPFS is more useful than http as it can distribute huge volume of data efficiently and IPFS doesn't allow duplication. IPFS and the Blockchain are similar. You can address large amounts of data with IPFS, and place the immutable, permanent IPFS links into a blockchain transaction. This timestamps and secures your content, without having to put the data itself on the chain. System maintains information about manufacturer of product, how ownership is changing and customer can check who is current owner of the product. For this purpose customer will be provided a GUI to scan QR code assign to a product and information about that product will be displayed.**

*Keywords* – IPFS.

## I. INTRODUCTION

There are many fake products exist in supply chain and to ensure genuineness of products system is needed. To check genuineness of product Ownership history of the product need to be maintain. IPFS(Inter Planetary File System) is useful to maintain ownership of products. IPFS is peer to peer distributed file system it stores huge volume of data in either object or block or in the file form, it is similar to the Blockchain protocol. Also it is better than http as http downloads file from single device and with help of IPFS network it is possible to distribute huge volume of data efficiently. One more important feature of IPFS is that it doesn't allow duplication. Once the product is stored on network hash code is generated of that product and it is possible to maintain all transaction history of the product and its current owner as chain will be generated for that product transactions. In proposed system we are assigning a QR code to a particular product and end customer can scan that QR code to get all information about that 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[2] paper proposes a system that provides solution to originality and authenticity of published and posted online digital content like music, books, etc. The system utilizes emerging technologies that primary include blockchain and (interplanetary file system)IPFS. The solution is focused on authenticity of online books, but the solution in terms of architecture, design, logics, smart contract code are generic enough to be easily extended and is used to provide the originality, authenticity and integrity to all other forms of digital assets. The author considered two scenarios based on approval results provided by author for every publication requesting an attestation or validation before uploading the content.

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 focus 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. BASIC STEPS OF SYSTEM

System is maintaining status of the product ,current owner of product ,time stamp i.e at what time ownership changed.

**STAGE I: Product enrollment on the network:**

Initially manufacturer will be the first owner of the product.

Manufacturer will request administrator to add product on the network at that time QR code will get assigned to that product. Administrator will enroll product and manufacturer on the network if requestor is genuiene manufacturer.

**STAGE II: Ship product to Distributor:**

In the next step manufacturer will ship the product to distributor and status is set as shipped it will not change the ownership of product until Acknowledgement from distributor is received. After receiving ACK, ownership of that product is given to distributor.

**STAGE III: Ship product to retailer:**

In this stage distributor will ship the product to retailer and status is set as shipped and after receiving ACK from retailer that product received successfully, ownership of that product is given to retailer.

**STAGE IV: End user get detail about product:**

In this stage customer will be provided an android app and buyer can scan QR code assigned to the product using android app and get the detail about product that is manufacturer and current owner of the product and can decide whether to buy the product or not.

## IV. PROPOSED FLOW

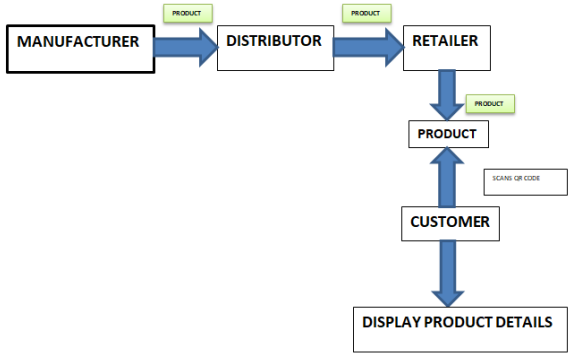


Fig.1.1: POMS System

## V. CONCLUSION

Thus, proposed system is useful for end user to detect fake products in supply chain. End user can scan QR code 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.

In future we will implement the system which controls and monitors product transportation details.

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