



## Fake product identification system in Blockchain using QR Code,

*A system for detecting counterfeited items.*

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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.

**Index Terms**— Blockchain, Counterfeit, Supply Chain, Ethereum

### 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

### II. LITERATURE REVIEW

Author of paper <sup>1</sup> 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 <sup>2</sup> 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 focuses 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 <sup>3</sup> 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 4: 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.

#### IV. RESULTS AND DISCUSSION

The results of the project show that how the system works. 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 that 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. Furthermore we recommend making of DAPPS which will act as a sole mediator between the parties involved

CURRENT BLOCK	GAS PRICE	GAS LIMIT	HARDFORK	NETWORK ID	RPC SERVER	MINING STATUS	WORKSPACE	SWITCH	SETTINGS
9	20000000000	6721975	MERGE	5777	HTTP://127.0.0.1:7545	AUTOMINING	PLACID-ARGUMENT		
BLOCK 9	MINED ON 2023-03-20 23:24:41		GAS USED 21000		1 TRANSACTION				
BLOCK 8	MINED ON 2023-03-20 23:17:17		GAS USED 21204		1 TRANSACTION				
BLOCK 7	MINED ON 2023-03-20 23:17:17		GAS USED 2002117		1 TRANSACTION				
BLOCK 6	MINED ON 2023-03-20 23:17:17		GAS USED 45913		1 TRANSACTION				
BLOCK 5	MINED ON 2023-03-20 23:17:17		GAS USED 250142		1 TRANSACTION				
BLOCK 4	MINED ON 2023-03-20 23:09:22		GAS USED 21204		1 TRANSACTION				
BLOCK 3	MINED ON 2023-03-20 23:09:22		GAS USED 2002117		1 TRANSACTION				
BLOCK 2	MINED ON 2023-03-20 23:09:22		GAS USED 45913		1 TRANSACTION				
BLOCK 1	MINED ON 2023-03-20 23:09:22		GAS USED 250142		1 TRANSACTION				
BLOCK 0	MINED ON 2023-03-20 22:52:48		GAS USED 0		NO TRANSACTIONS				

*Figure 1 Mining & Block Creation.*

#### V. CONCLUSION

Counterfeiting products are growing exponentially with the enormous quantum online. So, there's a strong need to detecting fake products and blockchain technology is used to descry fake products. Likewise, the information is decoded into a QR law. Guests or druggies overlook the QR law and also they can descry the fake product. Digital information of product can be stored in the form of blocks in blockchain technology. Therefore, in this paper we banded the system and the result to fight against the malpractices of counterfeiting of the products, and proposed the system which is useful for end stoner to descry whether the product is fake or not by checking the throughout history of the product in the force chain. End stoner can overlook QR law assigned to a product and can get all the information that has been put up throughout the force chain in the blockchain on which end to end stoner can check whether the product is genuine or not.

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## REFERENCES

- [1] J. M. Song, J. Sung, and T. Park. Applications of blockchain to improve supply chain traceability. *Procardia Computer Science*, 162:119-122, 2019
- [2] M. Sahoo. S. S. Singhar and S. S. Sahoo. A blockchain based model to eliminate drug counterfeiting. In *Machine Learning and Information Processing*, pages 213-222. Springer, 2020
- [3] V. Pallavi, S. Chandra, and S. Sharma. Blockchain technology for sustainable supply chain management: A Systematic literature review and a classification framework. *Sustainability*, 12(18):7638, 2020
- [4] Dursun, Taner, et al. "Blockchain Technology for Supply Chain Management." *Global Joint Conference on Industrial Engineering and Its Application Areas*. Springer, Cham, 2020
- [5] Hunhevicz, Jens J., and Daniel M. Hall. "Do you need a blockchain in construction? Use case categories and decision framework for DLT design options." *Advanced Engineering Informatics* 45 (2020): 101094
- [6] Si Chen, Rui Shi, Zhuangyu Ren, Jiaqi Yan, Yani Shi, Jinyu Zhang, "A Blockchain-based Supply Chain Quality Management Framework", 14th, IEEE International Conference on e-Business Engineering, 2017.
- [7] Mitsuki Nakasumi, "Information Sharing for Supply Chain Management based on Block Chain Technology", 19th Conference on Business Informatics, IEEE, 2017.
- [8] Daniel Tse, Bowen Zhang, Yuchen Yang, Chenli Cheng, Haoran Mu, "Blockchain Application in Food Supply Information Security", 2017 IEEE International Conference on Industrial Engineering and Engineering Management (IEEM).
- [9] Feng Tian, "A supply chain traceability system for food safety based on HACCP, blockchain & Internet of things", 2017 International Conference on Service Systems and Service Management
- [10] Freya Sheer Hardwick, Apostolos Gioulis, Raja Naeem Akram, Konstantinos Markantonakis, "E-Voting with Blockchain: An E-Voting Protocol with Decentralization and Voter Privacy", 2018.
- [11] Neo C.K. Yiu, Member, "Toward Blockchain-Enabled Supply Chain Anti-Counterfeiting and Traceability" IEEE Department of Computer Science, University of Oxford.
- [12] A Novel Blockchain-Based Product Ownership Management System (POMS) for Anti-Counterfeits in the Post Supply Chain Kentaroh Toyoda, (Member, IEEE), P. Takis Mathiopoulos, (Senior Member, IEEE), Iwao Sasase, (Senior Member, IEEE), And Tomoaki Ohtsuki, (Senior Member, IEEE)
- [13] Truffle Suite Ganache <https://trufflesuite.com/docs/ganache/>
- [14] Node package manager <https://www.npmjs.com/>
- [15] Metamask crypto wallet and gateway to blockchain apps <https://metamask.io/>

