IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.301
Volume 3, Issue 15, May 2023

Anti-Counterfeiting on Product using SHA 256 and QR Code

Prof. S.C. Deshmukh[1] , Pratiksha Vikhe[2], Vaishnavi Darade[3], Darade Pallavi[4], Satpute Aniket[5]
Professor, Dept. of Information Technology[1]
Students, Department of Information Technology[2-5]
Amrutvahini College of Engineering, Sangamner, Maharashtra, India

Abstract: *Quick Response (QR) codes are an effective method for this project's Quick Response (QR) codes give a strong solution to combat the Practice of manufacturing counterfeit goods. When a product's QR code is connected to a block chain, a QR code scanner may detect counterfeit goods. As therefore, this system may be utilized for storing product information and its special code as a set of database blocks. It asks for the user's special code, then compares it to entries in the Block chain database. The consumer will then be notified whether the QR code matches; if not, the customer will be informed that the goods is a fake.*

Keywords*:* QR (Quick Response), SHA 256(Secure Hash Algorithm), Android OS, Block Chain

I. INTRODUCTION

By supplying details about items (such as originality, components, or locations) throughout manufacture and distribution, a traceability system enables tracking of products. A government-certified independent traceability service provider is typically required by product suppliers and merchants to check the items across the supply chain. The suppliers of traceability services give inspection certifications that attest to the items' uniqueness as well as quality when everything complies with the specifications.

These service providers use a traceability mechanism to disclose data and provide certifications. Security is crucial in this situation for forensic data and accountability. Information is often stored by tracking platforms within traditional databases under the service providers' control. Such concentrated data storage raises possibilities of manipulation and could result in a single point of failure. Information about the traceability of products is provided through its system. Hundreds of product producers and merchants utilize its traceability solutions to manage the information related to the tracking of their products, and a million product users use it to access the information. The system in this instance is created for creating items with QR code markings. By substituting the block chain for the central database, it reorganizes the service provider's current traceability system. This increases information availability, offers visible, tamper-proof traceability data, and automates regulatory compliance testing.

II. LITERATURE SURVEY

Research and Application of Anti-Counterfeiting Technology of Inspection and Test Report Based on Block chain Technology

Examines the "final product" that the inspection and testing organization provides to customers, the product quality inspection report. Forged reports occasionally appear on the market and exhibit an increasing trend as a result of inefficient anti-counterfeiting techniques, upsetting the market order, seriously compromising the safety of people's lives and property, impeding the normal growth of testing and inspection institutions, and becoming a source of concern for the industry.

A Block chain-Based Crypto-Anchor Platform for Inter operable Product Authentication.

Discusses In many businesses, counterfeiting is a serious issue that costs hundreds of billions of dollars in losses annually. The product's worth is further increased by digital twins, which highlights how important it is to protect the link between the physical and digital worlds.

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.301
Volume 3, Issue 15, May 2023

A Block chain-Based Application System for Product Anti-Counterfeiting

Several applications for block chain have evolved in recent years as a result of the technology's growing popularity. The digital currency Bit coin is a well-known example of a block chain app since it not only solves the issue of double spending in an efficient manner but also has the ability to independently confirm the veracity of transactional information.

Block chain-Driven IoT for Food Traceability with an Integrated Consensus Mechanism.

Food traceability is one of the newer applications of block chain technology that has been used to enhance control of quality and anti-counterfeiting in recent years. Existing tools for tracking food do not provide a high level of system dependability, scalability, or data accuracy. In addition, tracking procedures in contemporary supply chain networks are time-consuming and challenging. Block chain technology has the potential to provide a new ontology for supply chain traceability, allaying these worries.

III. PROBLEM DEFINATION

The system is made to identify and track items via the supply chain between a manufacturer, a seller, and the customer along with verifying the product using a QR code.

An explanation of the system flow

1. QRcode are utilized to digitally sign the goods made.
2. The Manufacturer involves retailers who will sell their goods.
3. The Manufacturer gave the merchant the products that were to be sold.
4. The buyer intends to purchase the item from the vendor.
5. By scanning the code with a smartphone, the customer may confirm the merchandise.
6. Following this verification, the customer purchases the merchandise.

IV. METHDOLOGY

The following describes the system's work flow:

1. QRcode are used to digitally sign the goods made.
2. The Manufacturer includes retailers who will sell their goods.
3. The Manufacturer gave the merchant the goods that were to be sold.
4. The consumer intends to purchase the item from the vendor.
5. By scanning the QR code, the consumer may confirm the merchandise.
6. Following this verification, the customer purchases the merchandise. STAGE III: Deliver the goods to the store

V. ALGORITHM

SHA256:

Secured Hash Method, called SHA-256, is a family of techniques which contains the SHA-1 256-bit algorithm. The NSA and NIST partnered to publish it in 2001 as a replacement for the SHA 1 family, which was gradually becoming less resistant to brute force assaults. The 256 in the name refers to the ultimate hash digest value, meaning that no matter how much plain text or clear text there is, the hash value will always be 256 bits. The other SHA family algorithm are somewhat comparable to SHA 256. Look into learning a little more about their rules right now.

The following represent a few aspects of the SHA algorithm's distinguishing qualities:

1. Message Length: The visible textual part of the message must be no longer than 264 bits. To keep the digest as unpredictably as feasible, the amount of space has to fit within the subject area.
2. Digest Length: The length of the hash digest for the algorithm SHA-256 should be 256 bytes; for the SHA-512 algorithm 512 bits, and so on. Larger digests often imply a lot more calculations at the expense of performance and storage.
3. Irreversible: All hash functions, including SHA 256, are intended to be irreversible. When a digest is present, either plain text or the digester's initial value should be returned when the hash function is applied again.

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.301
Volume 3, Issue 15, May 2023

VI. SYSTEM ARCHITECTURE

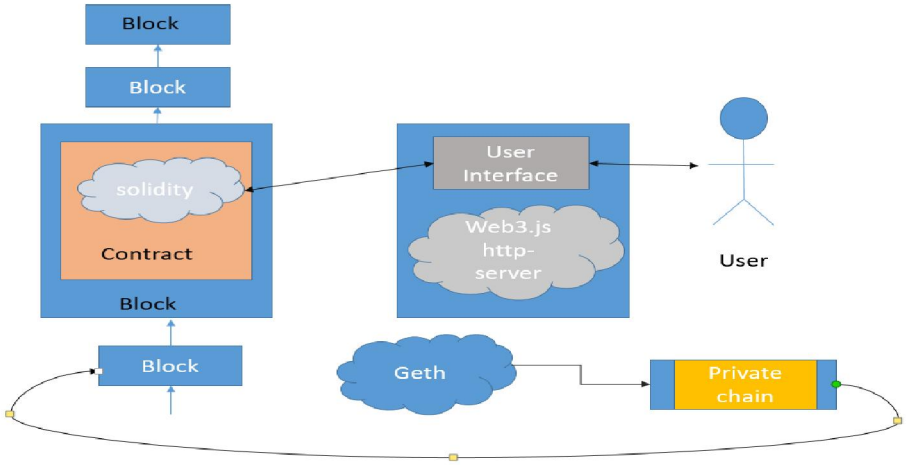


Fig.1.1: System Architecture

VII. FUTURE SCOPE

Our goal is to enable customers to distinguish between genuine as well as counterfeit goods using a genuine QR code that the producer will print on each item. If a customer notices that an item has been tampered with by a third party, they can reach support using the same app that will identify the tampered product.

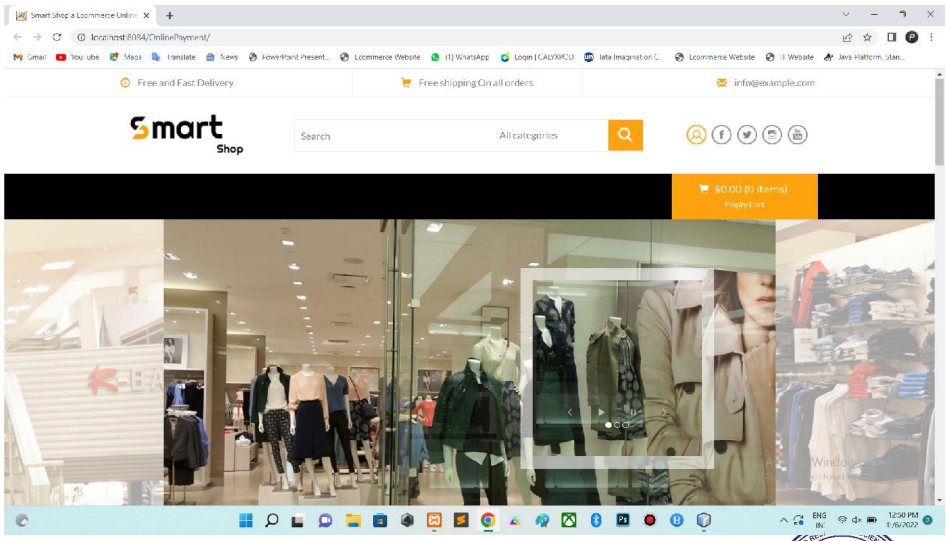
VIII. CONCLUSION

The system makes an attempt to quickly examine how block chain technology functions and how it should be applied to handle product anti-counterfeiting in order to ensure product traceability and consumer confidence.

For a number of sectors, the supply chain industry utilizes technology known as block chain. We successfully created an e-commerce system where customers may purchase new items on a daily basis, validate their purchases with a QR code, and get alerts via their mobile devices about updates.

The whole database was recently successfully uploaded on the computer, where the admin may view it and respond to client inquiries. He has the ability to modify, add, and remove new goods. In our work, we used block chain technology for transactions.

IX. EXPERIMENTAL RESULTS



IJARSCT

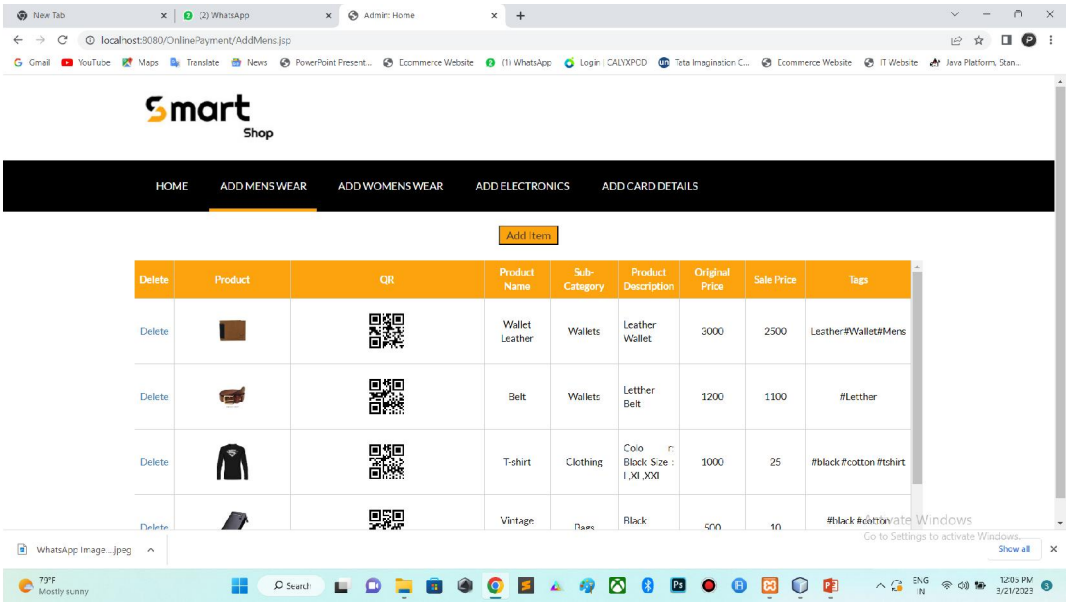
ISSN (Online) 2581-9429

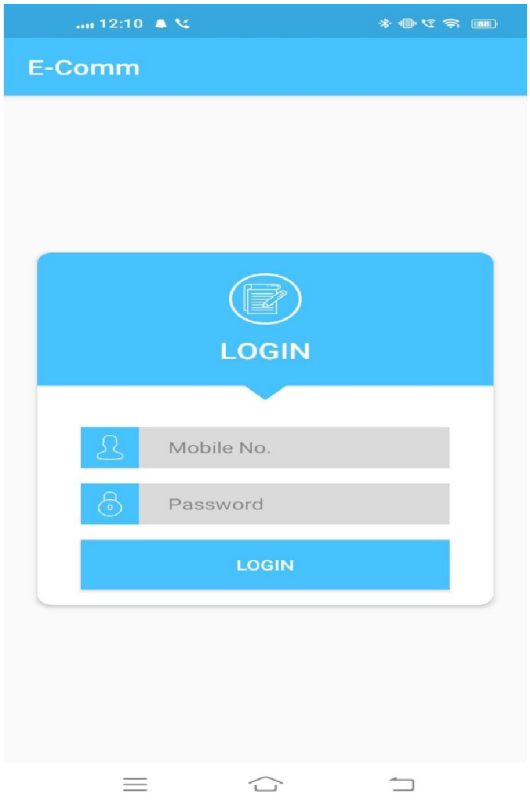
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)

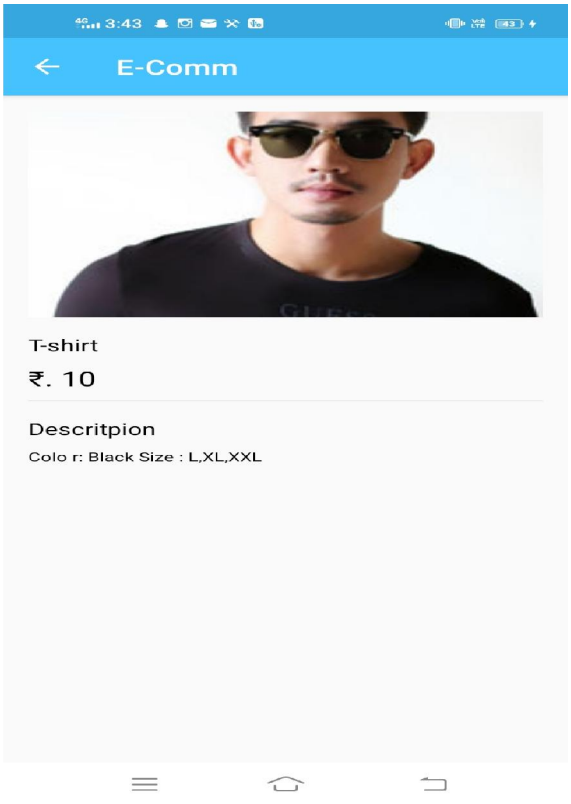
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal

Impact Factor: 7.301

Volume 3, Issue 15, May 2023







IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.301
Volume 3, Issue 15, May 2023

REFERENCES

[1] K. Zeng, D. Hu, W. Zhang, M. Jiang and J. Ding, "Research and Application of AntiCounterfeiting Technology of Inspection and Test Report Based on Blockchain Technology," 2022 7th International Conference on Computational Intelligence and Applications (ICCIA), 2022, pp. 215-218, doi: 10.1109/ICCIA55271.2022.9828437.

[2] M. A. Prada-Delgado, G. Dittmann, I. Circiumaru and J. Jelitto, "A Blockchain-Based Crypto-Anchor Platform for Interoperable Product Authentication," 2021 IEEE International Symposium on Circuits and Systems (ISCAS), 2021, pp. 1-5, doi: 10.1109/ISCAS51556.2021.9401582.

[3] J. Ma, S. -Y. Lin, X. Chen, H. -M. Sun, Y. -C. Chen and H. Wang, "A Blockchain-Based Application System for Product Anti-Counterfeiting," in IEEE Access, vol. 8, pp. 77642- 77652, 2020, doi: 10.1109/ACCESS.2020.2972026.

[4] Y. P. Tsang, K. L. Choy, C. H. Wu, G. T. S. Ho and H. Y. Lam, "Blockchain-Driven IoT for Food Traceability With an Integrated Consensus Mechanism," in IEEE Access, vol. 7, pp. 129000-129017, 2019, doi: 10.1109/ACCESS.2019.2940227.

[5] K. Toyoda, P. T. Mathiopoulos, I. Sasase and T. Ohtsuki, "A Novel Blockchain-Based Product Ownership Management System (POMS) for Anti-Counterfeits in the Post Supply Chain," in IEEE Access, vol. 5, pp. 17465-17477, 2017, doi: 10.1109/ACCESS.2017.2720760