

Fake Product Identification

Amrutha S L¹, Chinmaye patel N K², Dhaarini Lokesh³, Harshitha P P⁴, Shreelakshmi C M⁵

^{1, 2, 3, 4} Dept of CSE

⁵ Assistant professor, Dept of CSE

^{1, 2, 3, 4, 5} GSSSIETW, Mysore, Karnataka, India

Abstract- Fake product identification is a critical process in combating counterfeit goods, ensuring consumer safety, and protecting brand integrity. One of the biggest challenges in today's retail market is the counterfeiting of products. Counterfeiting products are just low-quality copies of some genuine brand. Many different methods have been adopted from time to time to combat the counterfeiting of the products such as RFID tags, artificial intelligence, machine learning, QR code-based system, and many more. Counterfeit products, often designed to mimic genuine items, can pose significant risks, from financial loss to health hazards. This growing problem necessitates the development of robust methods and technologies to identify fake products quickly and accurately to address this challenge, various methodologies have been adopted, including physical inspection, digital authentication systems, and machine learning algorithms. Physical inspection involves analyzing packaging, materials, and labels for inconsistencies. Digital tools, such as QR codes and serial number verification, provide real-time authentication. Machine learning and AI enhance the process by analyzing patterns and detecting anomalies in product features with high precision. These approaches are implemented in collaboration with manufacturers, retailers, and consumers to create a seamless verification process.

Keywords- Counterfeit (Fake) product, QR code, Blockchain, Supply Chain, Transaction history

I. INTRODUCTION

Whenever a product is created, it always comes with some risk elements like duplication and counterfeiting which result in affecting the name of the company, reputation, income, and customer satisfaction. Trading and marketing of fake goods or products are increasing very rapidly. For identification and tracking of imitation goods or products and for tackling this activity, a completely functional blockchain system is suggested. Companies have to pay only very little effort and they no longer have to be concerned with fake products. Because of fake products, the company name and brand value are losing a great amount of reputation since customers perceived it as an authentic product of the company so they rate the product on the basis of a fake product. In order to avoid this issue a blockchain-based system can be

implemented. Blockchain is a decentralized based distributed technology that keeps data in blocks in the database and is linked with chains. Whenever new data is about to add to databases it will append to existing data by linking a chain of it to the existing block. Blockchain does not permit any user to modify the existing data every time blockchain will append data as a new block to existing data. Therefore, it is not possible to erase or alter the data in the blockchain which results in the security and safety of data. Blockchain aids in eliminating the issue of counterfeit products. **BLOCKCHAIN BACKGROUND** A blockchain is decentralized-based technology distributed between the computers in a computer network. A blockchain as a database saves data in the form of blocks and chains. The largest successful real-world use of blockchain is cryptocurrency currency such as bitcoin. Blockchain employs a safer and guarded system to maintain records of transactions. Blockchain offers a promise of security to our data. Blockchain databases and normal databases are almost identical. Since both are employed in storing data, the only variation is that data is stored in databases in a different way. In normal database, data is stored as it is given by the user but in blockchain data is stored in blocks and blocks are joined together with the assistance of a chain. The technology utilised for block and chains is hashing. Every block contains its own capacities and contains data when it is full a new block gets attached to it and the new data get stored in a new block and it keeps on repeating as new data keep on arriving. One of the key benefits of blockchain is that it gives us a distributed, decentralized database but not editable. So even though we might wish to modify our current data, the blockchain does not give us that capability.

II. METHODOLOGY

A blockchain network can track orders, payments, accounts, production and much more. And because members share a single view of the truth, you can see all details of a transaction end to end, giving you greater confidence, as well as new efficiencies and opportunities. After the product is recorded in a network it will create a smart contract and a unique QR code of the product in which the details of the product is mentioned in an encrypted text form. The manufacturer will ship the product to the distributor and status is set as shipped; it will not change the ownership of the

product until a request from both parties is approved to buy and sell the product. Once the consumers receive the product the Buyers can scan QR code allocated to the item and verify the authenticity. Business runs on information. The faster it's received and the more accurate it is, the better. Blockchain is ideal for delivering that information because it provides immediate, shared and completely transparent information stored on an immutable ledger that can be accessed only by Fake Product Identification using Blockchain Introduction permissioned network members. A blockchain network can track orders, payments, accounts, production and much more. And because members share a single view of the truth, you can see all details of a transaction end to end, giving you greater confidence, as well as new efficiencies and opportunities. After the product is recorded in a network it will create a smart contract and a unique QR code of the product in which the details of the product is mentioned in an encrypted text form.

III. MODELING AND ANALYSIS

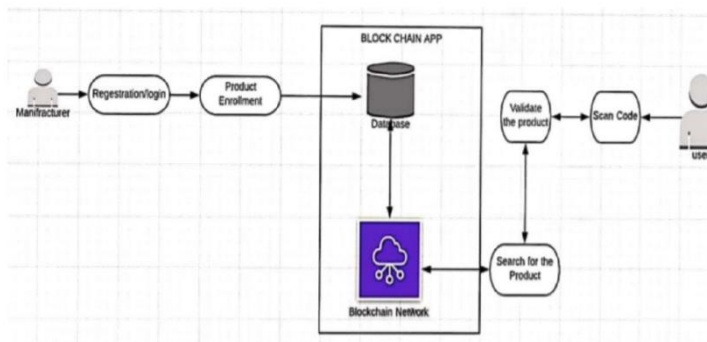


Figure 1:Methodology Diagram of Fake Product Identification

IV. RESULTS AND DISCUSSION

The results and discussion may be combined into a common section or obtainable separately. They may also be broken into subsets with short, revealing captions. An easy way to comply with the conference paper formatting requirements is to use this document as a template and simply type your text into it. This section should be typed in character size 10pt Times New Roman.

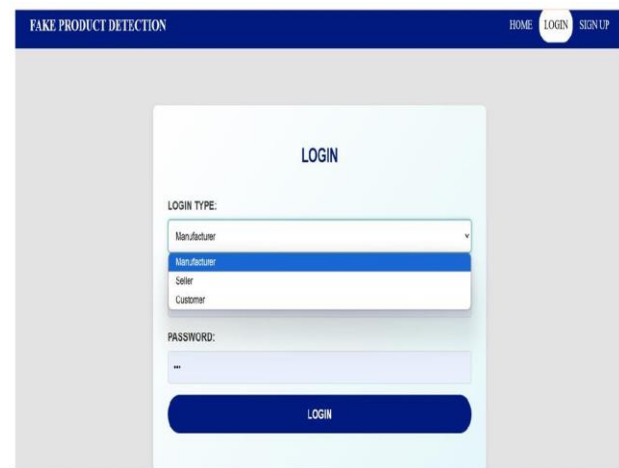


Figure 1. Login Page



Figure 2. QR Code Scanner

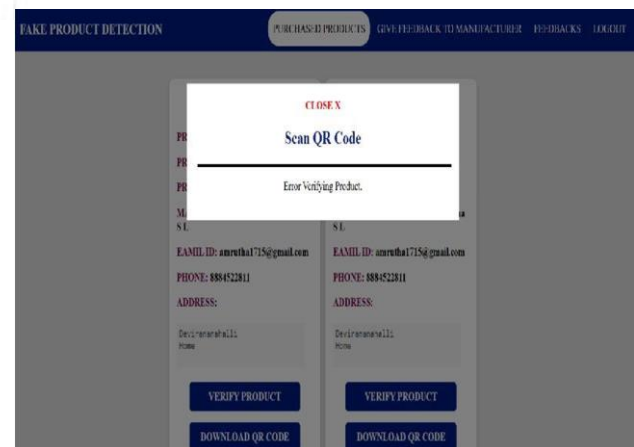


Figure3.Shows Product is not genuine

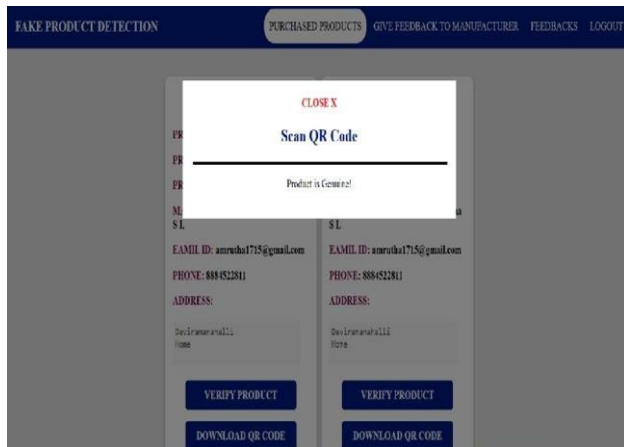


Figure4.Shows Product is genuine

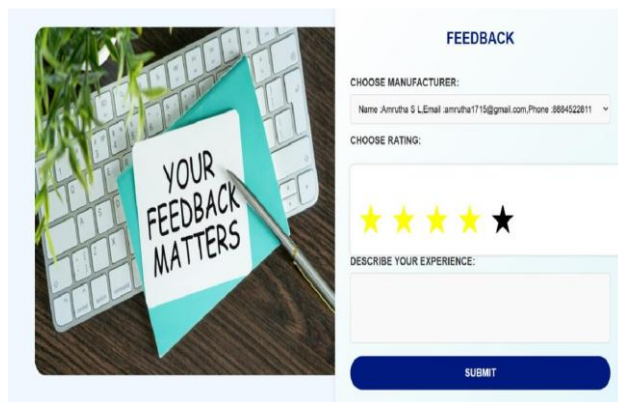


Figure5.Feedback



Figure6.Product Verification

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V. CONCLUSION

The use of blockchain technology ensures that product data is secure, immutable, and easily verifiable, making it difficult for counterfeit products to enter the market. The system provides a fast and reliable way for consumers and businesses to authenticate products through QR codes, promoting trust and reducing fraud..