

FAKE PRODUCT IDENTIFICATION USING BLOCKCHAIN TECHNOLOGY

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Abstract: In recent years, Counterfeit products play an important role in product manufacturing industries. This affects the companies name, sales, and profit of the companies. Block chain technology is used to identification of real products and detects fake products. Block chain technology is the distributed, decentralized, and digital ledger that stores transactional information in the form of blocks in many databases which is connected with the chains. Block chain technology is secure technology therefore any block cannot be changed or hacked. By using Block chain technology, customers or users do not need to rely on third-party users for confirmation of product safety. In this project, with emerging trends in mobile and wireless technology, Quick Response (QR) codes provide a robust technique to fight the practice of counterfeiting the products. counterfeit products are detected using a QR code scanner, where a QR code of the product is linked to a Block chain. So this system may be used to store product details and generated unique code of that product as blocks in the database. It collects the unique code from the user and compares the code against entries in the Block chain database. If the code matches, it will give a notification to the customer, otherwise it will give the notification to the customer that the product is fake. Maintain reputation, trust in Product and proof of learning. Nowadays everyone has to show his/her document and QR Code to any other person for some purpose/job. After seeing the document 3rd person cannot validate the originality of the QR Code. The same thing is applied for a Product registry, PAN card and Aadhar card verification. The increased focus on relevance and employability may also push us in this direction, as we also need more transparency. We can solve this problem or get trust by using Block chain technology.

1. INTRODUCTION

The global development of the product or branded product always comes with risk factors such as counterfeiting and duplication of product which in turn can affect the company name, reputation, revenue and customer satisfaction. The trading and marketing of counterfeit products is growing at high rates. It affects adversely on the sales, reputation, and profits of the companies and also poses a fatal threat for the unsuspecting buyers. In order to ensure the identification and traceability of fake goods or products throughout the supply chain and to overcome this phenomenon, a fully functional block chain system is proposed. Companies need to pay very low transaction fees and they don't need to worry about the possibility of delivering counterfeit products to end-users. Because of fake products builder, original manufacturers face the biggest problems and huge losses in sense of brand damage as well as revenue loss. To find the originality of the product a functional block chain technology can be used. Block chain is a chained arrangement of recorded information that makes it difficult or impossible to modify or hack the framework. Once the product is stored on the network, hash code is generated for that product and it is possible to maintain all transaction records of the product as well as its current owner as a chain created for that

product transactions. It will store all the transaction records as blocks in the block chain. In the proposed system we are assigning a QR code or barcode generated for a particular product created by manufacturer along with all the details of the product. The end customer can scan that QR code to get all information about that product. After scanning the QR code or barcode on the product, the user can identify whether the product is real or fake.

2. LITERATURE SURVEY

2.1 A Survey on Blockchain Technology: Evolution, Architecture and Security Authors: Muhammad Nasir Mumtaz Bhutta, Amir A. Khwaja, Adnan Nadeem, Hafiz Farooq Ahmad , Muhammad Khurram Khan, Moataz A. Hanif, Houbing Song, Majed Alshamari , and Yue Cao This survey paper has covered architecture of cryptocurrencies, smart contracts and general Blockchain based applications. The paper has provided a perspective to describe the Blockchain architectures in relation to cryptocurrencies, smart contracts and other applications. The research advances in consensus are also highlighted with some key development and application frameworks. A detailed discussion with respect to future and open research avenues is also performed, which could help to pave the way for researchers to explore the key challenging areas in the Blockchain field.

2.2 Product Traceability using Blockchain Authors: Rishabh Sushil Bhatnagar, Sneha Manoj Jha , Shrey Surendra Singh, Rajkumar Shende The conventional SCM systems are widely used in the current market whereas blockchain is a relatively new system and is yet to be introduced in the industry on a large scale. The current SCM systems have prevailed so long in the market due to its easy and cheaper implementation on a large scale. Despite being used on a large-scale platform, these systems have their flaws which have prevailed since the existence of these systems. The current system is opaque in nature and is very vulnerable to various frauds and scams due to poor maintenance of the records of the transactions within the system. Lack of trust between the participating entities is an issue yet to be resolved. The trust of the customer in the system is compromised by not providing a quality assured product even though it is a major factor in the growth of any business. Even with all these flaws, these systems are being used by various market giants as the prices of the products can be easily exploited with any credibility.

2.3 A Blockchain-based Supply Chain Quality Management Framework Author : Si Chen , Rui Shi , Zhuangyu Ren , Jiaqi Yan , Yani shi , Jinyu Zhang In this appropriate paper, they proposed a framework for blockchain based SCQI. This framework will provide a theoretical basis to intelligent quality management of supply chain based on the blockchain technology. Furthermore, it provides a foundation to develop theories about information resource management in distributed, virtual organizations, especially distributed, cross-organizational and decentralized management theory.

2.4 A Block Chain based Management System for Detecting Counterfeit Product in Supply Chain Authors: M.C.Jayaprasanna, .V.A.Soundharya , M.Suhana, S.Sujatha In this Paper, they have discussed about counterfeit products are growing exponentially in online and black-market. The block market is a biggest challenge in supply chain. The government has introduced several laws and regulations against fake products even though the government cannot control counterfeit products. Therefore, there is a need of an approach for detecting counterfeit products and providing security techniques to alert both manufacturer and consumer in supply chain. Manufacturers may use the block chain management system to store relevant product sales information within the block chain, which is accessible to all. The total number of sales the seller can sell and the rest left behind by the seller are transparent. The user can perform vendor-side verification using an encryption algorithm. Only way to decrypt is to use a private key of the owner. In this paper, we proposed block chain management system activates the consumer and enterprise vendor to track and identify the real product using a Smartphone. It also will detect counterfeit products as well as authenticity of manufacturer for both end user and enterprise vendor

2.5 A Blockchain-Based Application System for Product AntiCounterfeiting Authors: Jinhua Ma , Shih-Ya Lin , Xin Chen , Hung-Min Sun In this particular Paper, Manufacturers can use the system to store relevant information on product sales in Blockchain which is accessible to everyone. The total amount of sales that can be sold by the seller and the number of products currently left by the seller are transparent. The user can use the functions provided by our system to immediately perform vendor-side verification. The system provides identity verification by using digital signatures. There are no other means to decrypt the private key of the key owner unless the key owner accidentally leaks his key. In their system analysis result, the cost of the initial product record contract will only cost 1.2893394289 US dollars, and the cost of each product sale process will cost 0.17415436749 US dollars.

2.6 A Blockchain-based decentralized system to ensure the transparency of organic food supply chain Authors: B. M. A L. Basnayake, C. Rajapakse This study is based on the applicability of Blockchain concept to improving transparency and validity of agricultural supply chain and its process. Since recent past, there has been a rapid change in the production of food and its raw materials. An efficient method to bridge the gap between the farmer producing commodities in the market and the end customer was studied. Blockchain based architecture and its concepts were taken for implanting trustworthiness and transparency within the users and their transactions. In this paper as there is a drawback of farmers may not be knowing about the product traceability once they register.

2.7 User Interface of Blockchain-Based Agri-Food Traceability Applications Authors: Atima Tharatipyakul and Suporn Pongnumkul A Review: Blockchain technology is seen as a way to improve agri-food supply chain traceability and deliver food quality, safety, and nutrition information to stakeholders. Limited knowledge on how to design the user interface for the traceability application could lead to usability issues. As a step towards more usable blockchain-based agri-food traceability applications, this paper reviewed existing works from a user interface perspective.

3. EXISTING SYSTEM

- Generate The Electronic File Of A Paper QR Code.
- And Calculate The Hash Value For It And Store The Hash Value Into The Block.
- The System Create A QR-Code String Code To Affix To The Paper QR Code.
- Used To Verify The Authenticity Of The Paper QR Code Through.
- Mobile Phone Scanning,

4. PROPOSED SYSTEM

If Customer have an option to give verify on web base portal, after completion of verify, results/QR Code is saved on Block chain. In this case other person can view the QR Code online and no 3rd party validation is required for these digital QR Codes. We are proposing a

web base portal for university/college/institution and Customer that will provide option to Company to get QR Code on block chain and minimize the option of fraud and duplicate education QR Code. Block chain-based Product are registered on the Ethereum Block chain that will be secure and tamper proof as data cannot be erased/Rewrite on block chain server. Since a block chain is a permanent record of transactions that are distributed, every transaction can irrefutably be traced back to exactly when and where it happened. In addition, past transaction cannot be changed, while the present cant be hacked, because every transaction is verified by every single node in the network. In this web-based portal, Company and admin(university/Institution)will have login access and other than Company and admin can view verify details and verify QR Code. It will have below two major parts, • Company can select course, give verifys and after successful completion can get QR Code on block chain. • Admin can manage Company, courses papers and question bank and can generate QR Code on block chain.

SYSTEM ARCHITECTURE

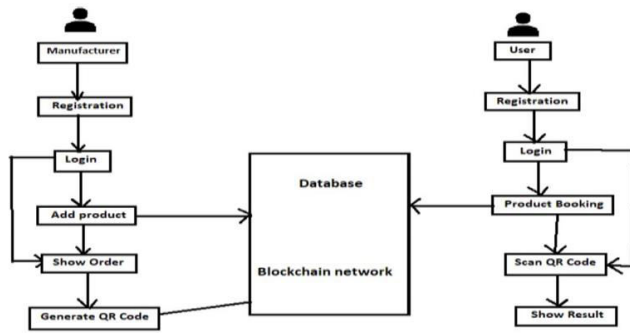


Fig1: System Architecture

5. UML DIAGRAMS

1. CLASS DIAGRAM

Class diagram is a static diagram. It represents the static view of an application. Class diagram is not only used for visualizing, describing, and documenting different aspects of a system but also for constructing executable code of the software application. Class diagram describes the attributes and operations of a class and also the constraints imposed on the system. The class diagrams are widely used in the modeling of object oriented systems because they are the only UML diagrams, which can be mapped directly with object-oriented languages. It is also known as a structural diagram. Class diagram contains • Classes • Interfaces • Dependency, generalization and association.

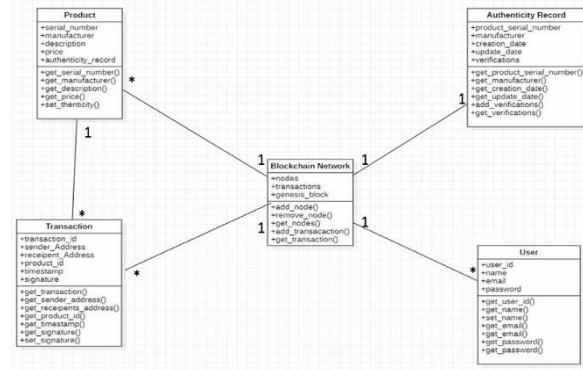


Fig 5.1 shows the class diagram of the project

2. USECASE DIAGRAM:

A use case diagram in the Unified Modeling Language (UML) is a type of behavioral diagram defined by and created from a Use-case analysis. Its purpose is to present a graphical overview of the functionality provided by a system in terms of actors, their goals (represented as use cases), and any dependencies between those use cases. The main purpose of a use case diagram is to show what system functions are performed for which actor. Roles of the actors in the system can be depicted

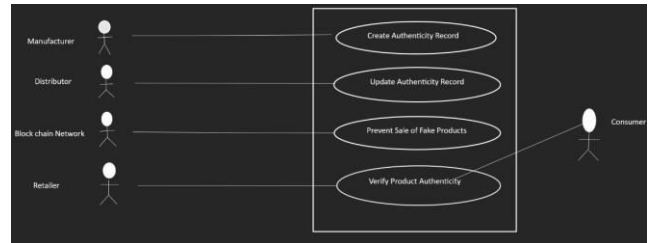


Fig 5.2 shows the Use case Diagram

3. SEQUENCE DIAGRAM:

A sequence diagram simply depicts interaction between objects in a sequential order i.e. the order in which these interactions take place. We can also use the terms event diagrams or event scenarios to refer to a sequence diagram. Sequence diagrams describe how and in what order the objects in a system function. Sequence diagrams are used to formalize the behavior of the system and to visualize the communication among objects. These are useful for identifying additional objects that participate in the use cases. These diagrams are widely used by businessmen and software developers to document and understand requirements for new and existing systems.

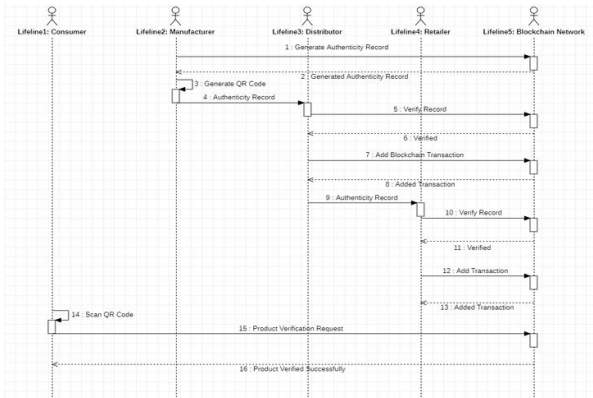


Fig 5.3 Shows the Sequence Diagram

6. RESULTS

6.1 Output Screens



Fig 6.4 QR Code Barcode Reader

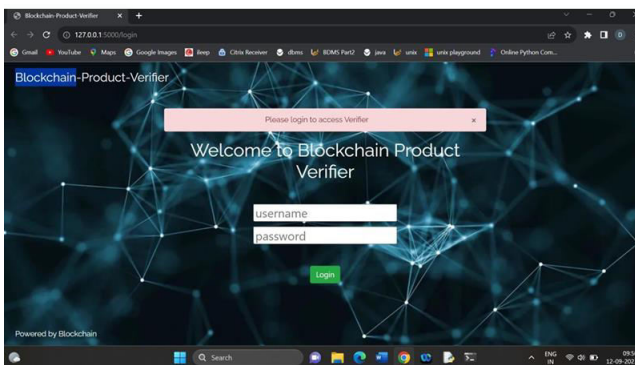


Fig 6.1 Login Page



Fig 6.5 Bar code link

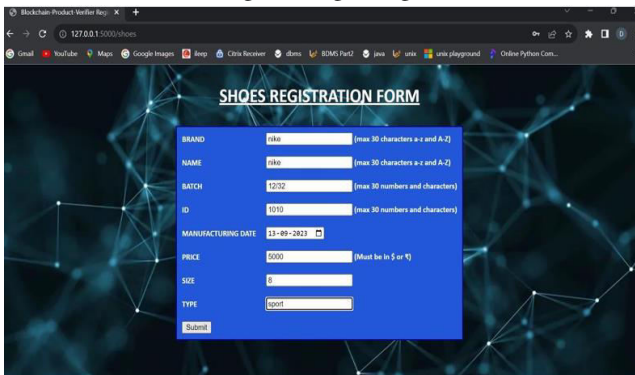


Fig 6.2 Registration Page

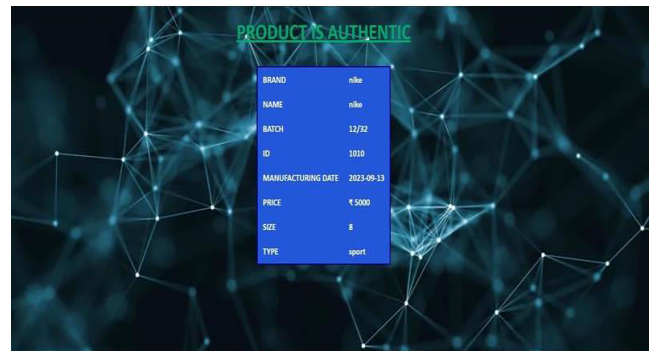


Fig 6.6 Product Authentication

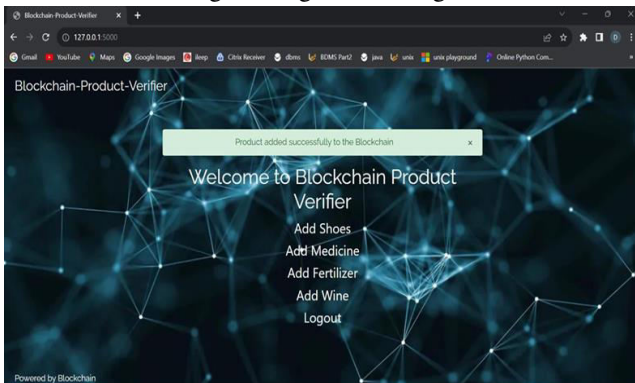


Fig 6.3 Adding Block chain product

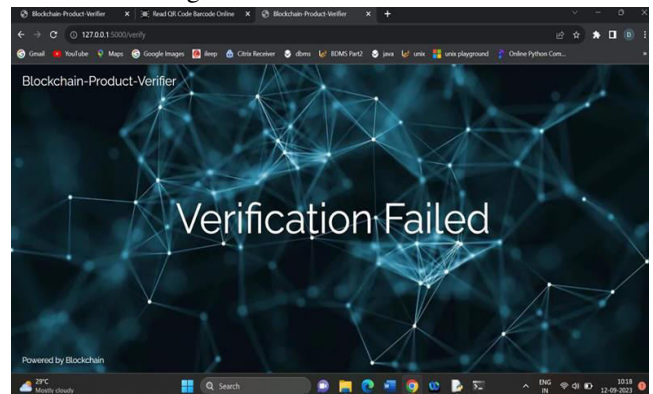


Fig 6.6 Product Verification Result

7. CONCLUSION

As of now we are using internet (which is decentralized online platform) to sharing information. But when we transfer money; we are using old-fashioned, centralized financial establishments like banks. In other areas we are also using centralized system to share information (like education- where university has full control). Block chain technology provides a way to eliminate this "middleman/central authority. It does this by filling three important roles- recording transactions, establishing identity and establishing contracts. Information security is one of the most important features of Block chain. Block chain can be used to store any type of digital information (e.g. computer code) rather than crypto currency usages. Previous work in the field of the block chain, which is mainly focused on the crypto currency and its mining. In 2017, the block chain rose to a high level, Most of the attention has been on crypto currencies such as Bit coin and Ethereum as investors try to catch the next wave. Now it is going to different sector-Education, Product registry, Banking Share marking.... For truly digitization process in Banking and other sectors, we can use Block chain technology as a base. It will build trust and provide a way that someone can verify the other person documents in less time and validate the originality. If we use block chain in Education/Product Registry/ID card verification/Banking sector, then it will be a "1st step towards corruption free country."

FUTURE SCOPE

Use of machine learning algorithms to identify patterns and analogies. Development of block chain increases the scalability and efficiency and also decentralized product verification mechanism is developed. Verify the authenticity of products and enabling the prompt identification of any fraudulent activity

8. REFERENCES

- [1] Lyndon Lyons and Andreas Bachmann Jan Seffinga, "The Block chain (R)evolution-The Swiss Perspective," ,SwitgerProduct,2017.
- [2] Don Tapscott and Alex Tapscott, "Realizing the Potential of Block chain-A Multi stake holder Approach to the Stewardship of Block chain and Crypto currencies," inWorldEconomicForum,2017.
- [3] Alex Tapscott, BLOCK CHAIN REVOLUTION: Understanding the2nd Generation of the Internet and the NewEconomy,2017.
- [4] Satoshi Nakamoto, Bitcoin: A Peer-to-Peer Electronic Cash System, 2008, White Paper.

- [5] George F.Hurlburtand Irena Bojanova,"Bitcoin : Benefit or Curse?, "in IEEE,2014.
- [6] Nicola Dimitri, The Block chain Technology: Some Theory and Applications,2017,MSM-Working Paper No. 2017/03.
- [7] Deokyoon Ko, Sujin Choi, Sooyong Park, Kari SmoProducter Jesse Yli-Huumo, "Where Is Current Research on Block chain Technology?— ASystematicReview,"October2016.
- [8] Nirmala Singh and Sachchidanand Singh, "Blockchain: Future of financial and cyber security,"inIEEE,Noida,2016.
- [9] Engin Zeydan and Suayb Sb Arslan Gültekin Berahan Mermer, "An overview of block chain technologies : Principles, opportunities and challenges,"inIEEE,Turkey,2018.
- [10] Narn-Yih Lee, Chien Chi and Yi-Hua Chen Jiin-Chiou Cheng, "Block chain and smart contract for digital QR Code, "in IEEE, Japan, 2018. 67
- [11] GWYND'MELLO.(2017, Dec.) <https://www.indiatimes.com/technology/news>. [Online]. <https://www.indiatimes.com/technology/news/bitcoin-miners-are-using-more-electricity-than-ireProduct-other-159-countries-no-kidding-335114.html>
- [12] Abdul Wadud Chowdhury. (2017, Nov.) <https://medium.com>. [Online]. <https://medium.com/oceanize-geeks/blockchain-and-the-future-of-digital-trust-354acc279acc>
- [13] Nick Grossman. (2015, June) <https://www.nickgrossman.is>. [Online]. <https://www.nickgrossman.is/2015/the-blockchain-as-time>