WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

FAKE PRODUCT IDENTIFICATION USING BLOCKCHAIN TECHNOLOGY USING QR CODE

Ms. Sandhiya BS[1], Mrs. Sangeetha N[2]

[1] III B.Sc Computer Technology, Department of Computer Technology, Sri Krishna Adithya College of Arts and Science, Coimbatore,Tamilnadu
[2] Assistant Professor, Department of Computer Technology, Sri Krishna Adithya College of Arts and Science, Coimbatore,Tamilnadu

ABSTRACTION :

Maximum pointed out issues is forex, but its application isn't always constrained only to Digital currency. So it has the capability to persuade one of a kind business sectors. Block chain technology has added extra transparency and simplicity in massive transactions. We can stumble on counterfeit goods the use of blockchain era. The query that arises while shopping for any object in brand new global is whether or not it is faux or no longer. And the lack of these things has been proven to have a big impact on economic progress. Therefore, so one can cut back all counterfeit items, it is critical to bring transparency approximately to the products to the attention of the customers. The developing presence of counterfeit and risky merchandise in the global is a cause for difficulty and blockchain technology has taken the following step in the direction of its whole annihilation. Not simplest will using technology lessen the production of counterfeit goods, but all people wish to be aware about this. By generating and packaging the right gadgets every of these gadgets needs to take delivery of a digital code with its own identity. The software implementation process wherein the product code is scanned the usage of this utility after which verify if the given product is counterfeit or no longer

INTRODUCTION :

Counterfeiting has emerged as a massive
worldwide difficulty, undermining the integrity of industries ranging from luxurious items and pharmaceuticals to electronics and meals. It no longer handiest poses economic threats via disrupting valid markets however also endangers consumer safety and damages the popularity of hooked up manufacturers. The growing sophistication of counterfeiters and the growing complexity of world deliver chains have made it increasingly more hard to confirm the authenticity of products and hint their foundation. As counterfeit goods flood markets, the need for robust, transparent, and stable answers to guard clients and corporations alike has in no way been more pressing.

Blockchain generation, with its decentralized and immutable nature, presents a promising way to this project. By leveraging blockchain's capabilities, including its dispensed ledger, cryptographic protection, and transparency, it's far feasible to create a device that tracks merchandise from their origin to the consumer. This research explores the application of blockchain within the combat towards counterfeiting by using focusing on the status quo of product provenance, authenticity, and traceability all through the deliver chain.

The proposed solution integrates blockchain's immutable ledger with clever contracts and QR codes, growing a continuing and green system to confirm the authenticity of merchandise at every degree of the supply chain. Smart contracts automate strategies, ensuring that best real products are moved or bought, even as QR codes offer purchasers with a simple approach to verify product authenticity immediately. This mixture of technology permits stakeholders, from manufacturers to purchasers, to confidently music the journey of products, ensuring that the products they buy are not counterfeit.

OBJECTIVES :

The concept of this undertaking got here into life because of the growth in counterfeit products.
The targets of this task are:

- The intention of our mission is to discover whether a given product is fake or original in the usage of Blockchain Technology.
- To make certain the identity and traceability of actual product at some point of the supply chain ,we endorse a fully functional Blockchain machine to prevent product counterfeiting , for what are creating internet interface for the person to experiment the facts of the product through the product QR code.

EXISTING SYSTEM :

A supply chain is a coordinated network. Therefore, any SCM system must also have a cohesive structure that enables functionality and visibility along the product delivery journey. As such, an SCM system would typically integrate features such as inventory management, warehouse management, purchase-order processing, demand forecasting, supplier relationship management, logistics planning, and so on. Also, most SCM systems are integrated

with bookkeeping functionalities to enable the business to manage its ledger and optimize finances effectively.Over the years, there's been increased adoption of cloud-based SCM systems as software-as-a-service (SaaS). Cloud management of the supply chain allows businesses to track the entire lifecycle of a project, offering close monitoring and adequate visibility at each touchpoint. It emerged to fill the gaps with traditional SCM systems, which lack the 360° management enabled by cloud technology. Overall, cloud-based SCM systems are more scalable and efficient.

PROPOSED SYSTEM :

A blockchain deliver chain can help individuals document rate, date, location, satisfactory, certification, and different applicable facts to greater efficiently manipulate the deliver chain. The availability of this facts within blockchain can growth traceability of material supply chain, lower losses from counterfeit and grey marketplace, improve visibility and compliance over outsourced settlement manufacturing, and potentially decorate an employer's position as a leader in accountable production. As blockchain profits publicity, massive groups and startups are exploring uses of the era outdoor of the financial offerings enterprise. Many groups are already experimenting with blockchain improvements to satisfy various wishes. Provenance, a deliver chain transparency begin-up, currently finished a six-month pilot for monitoring responsible Fake Product Identification the use of Blockchain System Analysis sourcing of tuna in Indonesia thru blockchain. Monegraph, a startup released in 2014, uses blockchain to steady the utilization and sharing rights of digital media consisting of video clips or logo-backed content material and permit sharing of revenue throughout the media creators, publishers, and distributors. Skuchain builds blockchain-based totally B2B alternate and deliver chain finance merchandise centered in the direction of the $18 trillion worldwide alternate finance market that involves severa entities consisting of buyers, sellers, logistics vendors, banks, customs, and 1/3 events. Blockchain pushed innovations in the supply chain will have the capacity to deliver incredible enterprise cost by way of increasing deliver chain transparency, decreasing hazard, and enhancing efficiency and usual deliver chain management.

SYSTEM ARCHITECTURE :

The gadget structure for the blockchain-based totally counterfeit detection device is designed to ensure transparency, protection, and performance. At the leading edge is the User Interface Layer, which includes a mobile utility for consumers to scan product codes and verify authenticity, as well as an internet portal for producers and retailers to check in merchandise and screen the integrity of the supply chain. Behind this, the Application Layer accommodates a code scanner module to read virtual product codes, a verification engine that communicates with the blockchain for authenticity assessments, and a notification module to alert users if a product is authentic or counterfeit. Central to the machine is the Blockchain Layer, which makes use of clever contracts to automate verification processes and maintains a stable distributed ledger to shop product details which includes manufacturing data, possession records, and authenticity repute. Supplementing this is the Database Layer, which includes off-chain garage for non-touchy facts like product snap shots and descriptions, whilst essential product statistics and digital codes are securely stored at the blockchain itself. To make certain seamless communication, the Integration Layer employs APIs that join the software to the blockchain and 0.33-birthday celebration structures, which include logistics and stock control. Security is a pinnacle priority, managed by using the Security and Authentication Layer, which makes use of encryption protocols to shield digital codes and transaction information, in conjunction with user authentication mechanisms to verify the identities of manufacturers, retailers, and consumers. Finally, the Manufacturing and Supply Chain Layer supports the registration of merchandise by way of producers, where each product is assigned a unique digital code. This layer also tracks

SECURITY CONSIDERATION :

For a blockchain-Mainly anti-anti-anti-solution solution, many major problems are needed to ensure its efficiency and reliability. Safety requires strong encryption techniques and decentralized identification management to protect you from unauthorized changes or tampering, which is the top priority. The unit also wants to scalable to handle multiple transactions as more goods and stakeholders are part of the platform.Interoperability are all other important factors, which allow the solution to initially be integrated with current delivery chain systems and regulatory frameworks. It ensures pure conversation and sharing of statistics into extraordinary platforms. In addition, the person's access is important, which means designing an individually comfortable interface that allows manufacturers, distributors and customers to interact with the machine without technical headache easily.It is necessary to ensure that the machine complies with criminals and industry standards to achieve reputation and attraction worldwide. By addressing these problems - security, scalability, interoperability, accession and compliance - blockchain solution products can successfully confirm the authenticity and beautify openness during the delivery chain.

MODULES :

Remix Ethereum IDE

Remix Project is a platform for development gear that use a plugin structure. It encompasses sub-tasks along with Remix Plugin Engine, Remix Libraries, and of course Remix IDE. Remix IDE is an open supply net and computing device utility. It fosters a fast development cycle and has a wealthy set of plugins with intuitive GUIs. Remix is used for the whole adventure of settlement improvement with Solidity language in addition to a playground for studying and teaching Ethereum.

Ganache

Ganache is a private blockchain for fast Ethereum and Corda disbursed utility improvement. You can use Ganache throughout the whole improvement cycle; permitting you to increase, install, and take a look at your dApps in a secure and deterministic environment.
Ganache comes in flavors: a UI and CLI. Ganache UI is a computer application assisting each Ethereum and Corda generation. The command-line device, ganache-cli (formerly referred to as the TestRPC), is to be had for Ethereum improvement.
Ganache is used for putting in place a non-public Ethereum Blockchain for trying out your Solidity contracts. It gives greater capabilities when in comparison to Remix. You will learn about the features whilst you work out with Ganache. Before you begin using Ganache, you have to first download and install the Blockchain for your nearby system.

Solidity

Solidity is an item-oriented programming language for imposing smart contracts on diverse blockchain systems, maximum extensively, Ethereum. It was developed by means of Christian Reitwiessner, Alex Beregszaszi, and several former Ethereum core individuals. Programs in Solidity run on Ethereum Virtual Machine.Solidity is a statically typed programming language designed for growing clever contracts that run on the Ethereum Virtual Machine (EVM).Solidity uses ECMAScript-like syntax MetaMask is a browser plugin that serves as an Ethereum pockets, and is mounted like some other browser plugin. Once it is established, it permits users to save Ether and other ERC-20 tokens, allowing them to transact with any Ethereum address.
By connecting MetaMask to Ethereum-primarily based dapps, customers can spend their coins in games, stake tokens in playing packages, and alternate them on decentralized exchanges (DEXs). It additionally gives users with an access point into the rising world of decentralized finance, or DeFi, imparting a manner to get admission to DeFi apps inclusive of Compound and PoolTogether. MetaMask's open platform also performs a key function in selling Ethereum-based totally dApp development for coders and technologists. For developers constructing a dApp, Metamask is pre- loaded with speedy connections to Ethereum and several test networks through Infura. These integrated connections permit developers to begin building a brand new dApp on Ethereum without the want to installation and run a full community node. This may be useful for bootstrapped entrepreneurs looking to construct without delay, whether they're creating a easy browser-friendly person interface (UI) or a full-fledged, mainnet-equipped dApp in an effort to guide a wholly new decentralized market. Additionally, in view that MetaMask extensions are well matched with famous browsers like Chrome, Firefox, and Safari, the utility makes it simpler for builders to create new applications which are designed to paint within conventional browsers. Thus, MetaMask's role in enabling dApp adoption is -fold: It affords a portal for end users to access dApps, even as also permitting developers to streamline their direction to getting the ones packages to market.

Ethereum (ETH)

Ethereum is a permissionless, non-hierarchical network of computer systems (nodes) that build

RESULT AND DISCUSSION :

The implementation of the Blockchain era for tracking the product's authenticity has shown promising results for the supply chain transparency and improvement of safety. Using the irreversible laser, smart contracts and QR codes of blockchain, the device impressively verifies the most important product information, including perfect and satisfactory, in each stage of the data and the supply chain. As a result, traceability, buyers and stakeholders hope to confirm the goods and reduce the prevalence of false objects. Dialogues stated that this solution is not just fighting false, even though further supply chain confirms a platform for control, which has the opportunity to bounce consumer confidence and increase symbol recognition. In addition, the system's decentralized nature is guaranteed that statistical integrity is preserved, which reduces the risk of fraud and unauthorized adjustment. The results indicate that blockchain can perform an important task to reduce economic and safety hazards generated through false goods.

CONCLUSION AND FUTURE ENHANCEMENT :

Finally, the combination of blockchain technology in delivery chain management provides a powerful response to combat counterfeiting by ensuring authenticity and openness. By taking advantage of the irreversible laser, smart contracts and the QR code of blockchain, companies can install a stable equipment to monitor the goods during their life cycle. This structure now protects Handstash consumer protection and brand reputation, but also provides a reliable approach to verifying the product's perfection. The extent of the future of this concept lies in increasing the software of blockchain in different industries, improving scalability and integrating more advanced technologies with AI and IoT, allowing the series to improve efficiency, safety and traceability. Can go as adoption increases, it can be an important tool to protect global economies by unwanted results of false objects.

REFERENCE :

[1] 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 , "A Survey on Blockchain Technology: Evolution, Architecture and Security", IEEE special section on intelligent big data analytics for internet of things, services and people,2021, pp. 61048 – 61073.

[2] Rishabh Sushil Bhatnagar, Sneha Manoj Jha , Shrey Surendra Singh, Rajkumar Shende "Product Traceability using Blockchain", 2020 2nd International Conference on Advances in Computing, Communication Control and Networking (ICACCCN).

[3] Si Chen , Rui Shi , Zhuangyu Ren , Jiaqi Yan , Yani shi , Jinyu Zhang," A Blockchain- based Supply Chain Quality Management Framework", 2017 IEEE 14th International Conference on e-Business Engineering (ICEBE).

[4] M.C.Jayaprasanna, .V.A.Soundharya , M.Suhana, S.Sujatha," A Block Chain based Management System for Detecting Counterfeit Product in Supply Chain" ,IEEE 2021 Third International Conference on Intelligent Communication Technologies and Virtual Mobile Networks (ICICV).

[5] Jinhua Ma , Shih-Ya Lin , Xin Chen , Hung-Min Sun,A Blockchain-Based Application System for Product Anti-Counterfeiting" International Journal Of Scientific & Technology Research Volume 8, Issue 12, December 2019 issn 2277-8616.

[6] B. M. A. L. Basnayake, C. Rajapakse," A Blockchain-based decentralized system to ensure the transparency of organic food supply chain" ,IEEE 2019 International Research Conference on Smart Computing and Systems Engineering (SCSE)

[7] Atima Tharatipyakul and Suporn Pongnumkul, "User Interface of Blockchain-Based Agri-Food Traceability Applications", IEEE vol 9, 2019,pp.82909-82929.