Comparative Study on Identifying of Fake Product

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Abstract - *Blockchain generation, as a disruptive device, has the capacity to do away with the problem of product replicating in Delivery Network. A web application platform based on blockchain network, alternatively, prices legal manufacturers and shops an operational price for product tracking and authentication. This model is employer profit-pushed analytical models based on Stackelberg equilibrium idea on his work to illustrate the advantages of blockchain-supported e-trade structures in preventing product counterfeiting. To determine the true perks of block chain, I evaluate the sales and profits of all entities in separate delivery chains, both conventional and blockchain-supported. Manufacturers, merchants, and clients do not necessarily benefit from the use of blockchain technology, according to the findings. When a actual company's production prices are sufficiently high, however, blockchain technology allows the producer to make extra cash. Furthermore, a buyer is much more likely to switch to a blockchain-enabled e-trade website in a fee-based market if the vendor's expertise within the application is relatively low than in a distribution chain and the producing fee of the goods is lower for manufacturing company within the web app is great in a distribution chain.*

Keywords – *Blockchain, Distributed ledger, Distribution chain, Goods.*

I. INTRODUCTION

Fake products are common in a variety of industries, including handbags, colognes, medical drugs, and automotive components. In known to cause massive revenue losses for legal companies, faux products endanger lives, which includes automobile components of negative satisfactory, medicines missing energetic compounds, and toys containing toxic parts. A few solutions, such as broadcast identifying, barcodes, and mobile technology, have been proposed to address the problem of product counterfeiting. These technologies, however, are primarily centralised as well as depend on trust - worthy servers, that are prone to several cyber intrusions. Distributed ledger technology or blockchain appears to be the most potential contender for mitigating those certain malicious activities. It can create a clear, trustable, and safe distribution network that restricts product forgery.

Product statistics is completely recorded with the aid of a ledger that cannot be changed, destroyed, or tampered. A blockchain is a digital record of transactions, so ancient product statistics may be freely discovered and demonstrated by means of a store. Because of the clarity of the distributed ledgers e-commerce system, a store can immediately determine whether or not one‘s products are qualified; as a result, pirated goods cannot enter the supply chain. Because distributed ledger technology ensures visibility and traceability, it does provide a trustworthy reselling environment for firms in the supply chain; as a result, it is an appealing quick fix for a numerous deliver-chain demanding situations. Previous research and real time — suggested that blockchain-enabled e-commerce devices could be used to combat piracy.

Moreover, handful studies have established models to assess the actual impact of smart contracts on parties in the supply chain. Blockchain-enabled structures consider charging legitimate manufacturers and retailers an operating fee for product tracking and verification, implying that the use of the public ledger will raise the prices of legitimate establishments. In a traditional distribution chain, genuine businesses suffer financial losses as a result of pirated goods. Companies pay a running rate in a blockchain-supported supply chain. The actual impact of smart contracts on corporate entities in the supply chain is unclear, so the purpose of this study is to draw conclusions about this software and provide a little illumination for professionals and students.

To address the issue of counterfeit goods, a combination of a framework with blockchain technology came to mind. Unlike a logistics system, a blockchain-enabled e-commerce framework can satisfactorily file the overall process of raw-product series, item manufacturing, and

mass transport; thus, an unauthorised producer has no way of supplying inferior merchandise to a store.

II. LITERATURE SURVEY

Si Chen et al. [1] implemented A Blockchain-based Supply Chain Quality Management Framework (2017). They suggest an ethereum - based framework in this paper. Based on the blockchain era, this guideline does provide a theoretical foundation for high-quality supply chain operations. Furthermore, it does provide a foundation for developing theories about information resource management in decentralized, internet groups.

Prabhu Shankar, R. Jayavadivel. [2] wrote A Survey of Counterfeit Product Detection (2019). In this paper, they discuss counterfeit goods, which are constantly increasing with the entire amount of online as well as black market. As a result, there may be a strong desire to deal with the problems of detecting counterfeit goods and designing effective technology to enhance detection results. These are just a few of the current research topics being looked into in the modern world. This paper discusses a variety of strategies for detecting counterfeit goods.

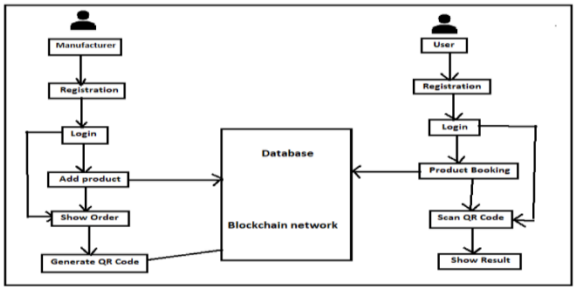

Figure 1. Counterfeit Product Detection Workflow Diagram

Oleh Prokipchuk et al. [3] organized an Intelligent System for Checking the Authenticity of Goods Based on Blockchain Technology (2021). This paper discusses why fake goods identification devices are important and what unique methods can be used to combat them. The device provides a favored template that product manufacturers can use to gain access to a steady blockchain ecosystem, resulting in a product with realistic value.

Shovon Paul et al. [4] developed a Fake News Detection in social media the usage of Blockchain (2019). This paper explains how, at times, false information is more appealing than true information. As a result, humans appear to be flawed. Using the benefits of Blockchain's peer-to-peer network requirements, how can we use blockchain to discuss how to avoid fake news on social media?

Abhinav Sanghi et al. [5] advanced Detecting Fake Drugs using Blockchain (2021). The authors of this paper mentioned If users consume counterfeit drugs, serious health problems, as well as deaths, may occur. As a result, they created a blockchain ability to avoid drug counterfeiting and to facilitate the movement of pharmaceuticals in the blockchain network.

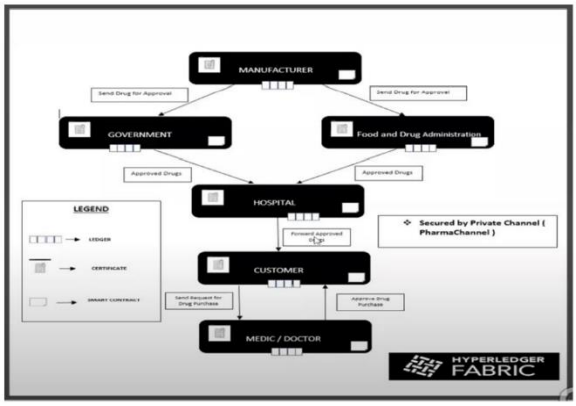

Figure 2. Architecture of detecting fake drugs using Blockchain

Yang et al. [6] Proposed a protocol for election that's based on decentralized approach i.e., blockchain-generation. Their model no longer requires a committee to rely on votes. They successfully developed a cryptographic machine that ensures that no one can decode the votes, but that each of us can verify the credibility of the votes.

Taner Dursun et al. [7] presents Blockchain Technology for Supply Chain Management (2021). The authors of this paper provide an overview of the use of blockchain technology in the supply chain. The blockchain technology can create a lasting, easy to share, and fully transparent record of a product's journey through its supply chain. A proposed use case for blockchain technology in automotive manufacturing—a micro factory—was also presented.

Fabio Della Valle and Miquel Oliver [8] came up with Blockchain-Based Information Management for Supply Chain Data-Platforms (2021). The authors of this study looked at how well public blockchains and logistics and supply chain processes work together.

Ya-Jun Cai et al. [9] proposed a Platform Supported Supply Chain Operations in the Blockchain Era: Supply Contracting and Moral Hazards (2021). The authors show how a moral hazard problem occurs when a retailer has a motivation to overclaim the markdown sponsor's amount. The moral hazard problem causes a loss for the

manufacturer, an immoral gain for the retailer, and no impact on the platform or consumers, according to the authors.

Jing Yang et al. [10] Public and private blockchain in construction business process and information integration (2020). The authors of this paper use two industry cases to investigate the feasibility of using both public and private blockchain technologies in the construction industry. The procedure, advantages, and difficulties in implementing private and public blockchain technologies in the construction industry are also detailed in this study.

III. METHODOLOGY

The proposed system has responsibility of maintaining details about the product, keeping track of current owner and manufacturer of product, and generating time stamps for each action.

The application will be made in .NET Core MVC framework. It will allow the user to interact with the blockchain. And the data of the User is going to be stored on Sql Server. Before connecting to the system, the user must select which account to log in with. The user's accounts can be manufacturer, Seller, or Buyer. Each account will have its own unique ID. The user will have to register on the application by filling all the necessary details. Finally, the user can enter the contract address and save the basic information by clicking the save button.

The blockchain will be implemented using Hyperledger fabric framework. The blockchain will allow the user to store the data in the form blocks. The data will be hashed and then added to the block and after every transaction a new block will be added to the blockchain. In this system the manufacturer can control the product's information. The manufacturers will have the responsibility to add the product details and store them on the blockchain. In the blockchain the data will be hashed and stored in the form of blocks.

The most critical component of our system is product verification. The customers can use this feature when they visit the proposed website. The users will have a page in the website where they can search about a product and see its details by entering the unique id of the product. Users in this system can use the unique ID of the product to see if it exists in the blockchain. The user can then see the details about the product whether it came from the genuine source or not, thus deciding to buy the product or not.

IV. CONCLUSION

The proposed system can be very helpful in maintaining the record of the products and who currently own them. In addition to detecting alteration, cloning, and tag replication attacks, this Blockchain Ledger can track products without the use of a centralized managing server. The cost of running an application on the Hyperledger fabric blockchain is directly related to the distributed utility's code simplicity. This proposed method will be cost efficient. Manufacturers of goods can use the application to store statistical data on item sales and purchases in Blockchain, which is accessible to anyone. The customer who are using this system to purchase the products can assume that the distributed software will have extra intake due to the simplicity of the code and the lack of redundancy. I'd like to thank the authors for the excellent works for their contributions.

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