

# Pharma Supply Chain Management System Using Blockchain Technology

Miss. Kupwade Shraddha Shashikumar<sup>1</sup>, Miss.Patil Pragati Shital<sup>2</sup>, Miss.Kolhapure Ruchira Lalitkumar<sup>3</sup>,  
Miss.Dombale Reshma Balu<sup>4</sup>, Miss.Pote Harshali Hanmant<sup>5</sup>

<sup>1, 2, 3, 4, 5</sup>Sharad Institute of Technology College of Engineering, Yadrav (Ichalkaranji)

**Abstract-** Every popular brand has fake manufacturers selling a fake item at cheaper rates.

*Mostly fake medicines are selling to customer. For these factors combined with blockchain technology can lead to an efficient approach to reduce this fake system. Pharmaceutical organizations face many challenges regarding these fake medicines. Detecting fault medicines so that it will save person life. To discover the percentage of the fake medication issue which requires an security level for the appropriation of lawful pharmaceutical items.*

**Keywords-** Pharma Supply Chain, Blockachain, Authena.

## I. INTRODUCTION

Counterfeit pills are a very massive mission for the pharmaceutical enterprise worldwide. One question arises here: what does Counterfeit drug mean? According to WHO, “The drug which is manufactured fraudulently, mislabelled, with low quality, hiding the supply element or identity and does not follow the defined standard is considered to be fake or Counterfeits”. The survey provided from the WHO referred to that in underdeveloped nations each tenth drug use with the aid of the consumers is counterfeit and has low-quality. This WHO declare may additionally now not be best or have more than this due to the fact there is no correct estimation or data of counterfeits drugs. The use of this low nice and non-standard medicinal drug motives a terrible affect and may additionally increase the dying rate. Counterfeit pills might also comprise some energetic or true substances however the amount of these substances is no longer suitable and might also be low or high, it carries some toxic impurities at the manufacturing degree and it can motive some serious fitness troubles in people while using sometimes the manufacturer of these fake medicines used the logo of some reputed and popular pharma organization to enter their tablets without difficulty in the market besides going through hurdles. Therefore, these tablets have an effect on the income of famous and expansive drug treatments like antibiotics, cancer, pain killers, many different cardiac medicines, etc., and additionally have a lot of facet outcomes and cause more serious fitness problems. In the existing time, anyone has the

fundamental proper to get better health facilities. The a number numbers of tablets have been delivered in the market with a new name and labels everyday because of the increasing number of new diseases every where. These medications assist the affected person get second alleviation from insufferable pain. Instead of benefits from these drugs, there are many negative aspects due to the fact the authenticity of these manufacturer organizations is not registered or known they are unknown and do not follow the specified standards. Many deaths are stated from growing nations due to the utilization of these faux capsules and greater victims of these pills are young people in accordance to WHO. Blockchain is a innovative technological know-how that is primarily based on the consensus protocol delivered with the aid of Satoshi Nakamoto in 2008; basically, it is mainly designed to keep the transactions log for a standard cryptocurrency named as Bitcoin . The blockchain affords a very wealthy digital ledger software to shop the facts records, achieved transaction logs in the structure of organized numbers of blocks. More directly, it is a impervious allotted type of database.+

## II. LITERATURE REVIEW

Recently, blockchain science used to be delivered to the public in order to provide secure surroundings that is immutable, consensus-based and obvious in the finance technology world. However, there have been many efforts to observe blockchain to different fields the place trust and transparency are requirement. The statistics is saved and managed with the aid of giant producers and pharmacy shops using their personal centralized systems. Several present procedures and strategies that allow pharmaceutical records to be saved and shared between the healthcare provider and different stakeholders in a centralized manner. Due to the lack of comprehensive literature review studies that focus on pharmaceutical supply chain using block chain technology, thus this paper highlights and addresses this gap. This overviews that the know-how on blockchain technology, discusses and explores the most current and applicable research that undertake blockchain technological know how in the subject of pharmaceutical grant chains, describes the challenges related with blockchain technology, and provides some thoughts for future work.

### III. MATERIALS AND METHODS

#### Materials

- Visual Studio Code
- Internet Browser,
- Node js,
- Truffle Ganache
- Solidity,
- Web3,
- HTML /CSS

### IV. METHODOLOGY

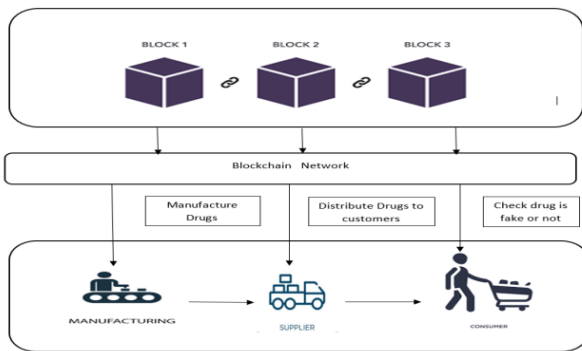


Fig.1 Schematic diagram of the pharma supply module

#### Objective

This find out about give an explanation for a number of facets of furnish chain administration and information technology infrastructure which are associated to on-line pharmacy device of India.

- This lookup additionally emphasizes on dangers and worries of online pharmacy.
- This article depicts about the on-line pharmacies legal guidelines in India and its' recent developments.
- This learn about additionally describe applicable statistics related to Indian on line pharmacy companies.
- This learn about provide an explanation for the advantages and method of on line purchasing medicines.

#### Scope

Blockchain science is the excellent choice for managing and securing the manner of the pharmaceutical drug supplychain. Some of the pharma companies are using

blockchain in their supply chain and others are focusing to shift towards blockchain due to its various facets. The purpose why most of the industries want to shift toward blockchain technology is because it provides a distributed decentralized ledger lectronically where all the pair nodes in the network can see and validate the transactions related information. One extra aspect is its consensus algorithm which empowers the community to shop the only validated data in the repository and remove the hassle of the reproduction transaction. Furthermore, the network failure probability is very low because more nodes from the failure threshold are functioning and besides, fault tolerance is very strong.

#### Step 1: Manufacturer manufactures the pills and provides QR code to it.

A producer produces the pills and provides the QR code to it, The QR code consists of indispensable records like

- Medicine name
- Batch no
- No of dosage
- manufacturing and expiry date

#### Step 2: Distributors ship the pills to hospitals/pharmacists

With the assist of Hash ID saved on the block chain, distributors can affirm the foundation of medicines after accumulating them from the logistics provider providers. They can hint lower back the records brought with the aid of manufacturers such as the date and area of manufacturing, and if it exceeded satisfactory checks.

Distributors validate the obtained drugs and signal the transaction digitally, which is then added to the block chain.

The signed transactions set off the clever contracts to ship pills to the hospitals/pharmacists.

#### Step 4: Patients purchase the tablets and scan the QR code

to hint returned its source patients can make certain if the remedy they are shopping for is secure or not. By scanning the QR code attached to the drug's packaging by way of their cellular app, they can recognize its supply and quality standards.

The hash ID linked to the QR code would fetch statistics from the block chain for patients access. The drug provide chain's transaction statistics maintained through block

chain is consensus-driven, transparent and immutable. A block chain-based answer can assist go the governance mannequin of the drug provide chain from law to surveillance net.

### V. RESULT

This venture has carried out the lookup goal of investigating the opportunity of the use of block chain as the cornerstone in creating a traceability answer to counteract the drug frauds and protection problems existed in the pharma industry.

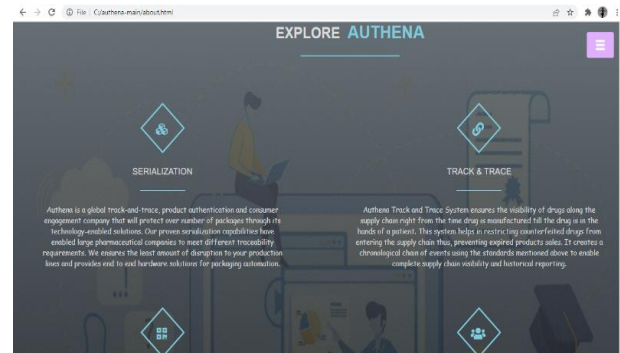


Fig 4 About us



Fig 2 Home page

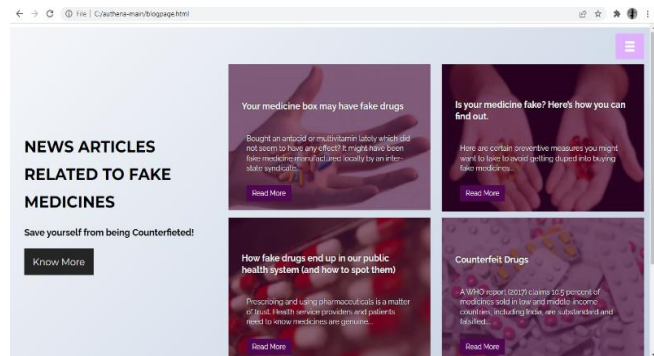


Fig 5 Blog page



Fig 3 Modules

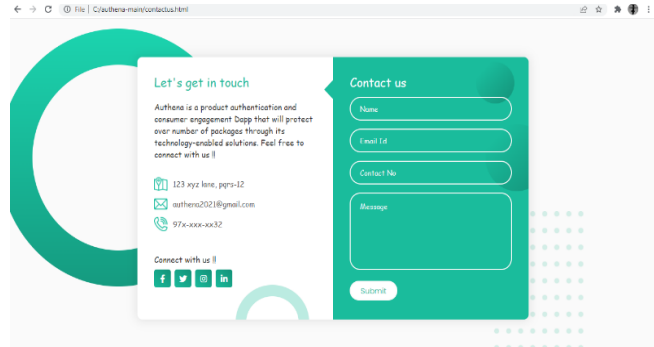


Fig 6 Contact us

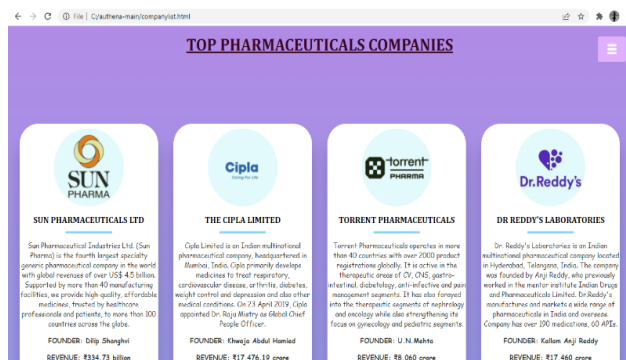


Fig 3 Pharma Companies Information

### VI. CONCLUSION

Block chain technological know-how has modified the standard provide chain technique to a new robust, automated, secure, audible and obvious way. It ensures that the complete provide chain process is foolproof and prevents pretend capsules from getting into the machine completely. The primary goals and Novelty of our proposed scheme are implementing a block chain and machine learning –enabled system, which has two modules: the drug furnish chain device and the drug recommendation system. The system has used machine learning algorithms and block chain technology in health care, with extraordinary results. Several experiments have been carried for checking out the overall performance of our system with the aid of the use of some overall performance symptoms such as throughput, transaction

response time and latency. The simulation outcomes of our device indicates promising performance. This system helps the pharmaceutical businesses to cast off counterfeit drug treatments hassle and a significant extend in the business. As future work, we will amplify the community measurement and implement in real time pharmaceutical companies to test the performance and validity of our system. Further, we will additionally enhance our computer getting to know fashions in phrases of accuracy and recommendation n results.

## REFERENCES

- [1] Williams, L.; McKnight, E. The real impact of counterfeit medications. *US Pharm.* 2014, 39, 44–46.
- [2] Newton, P.N.; Green, M.D.; Fernández, F.M.; Day, N.P.; White, N.J. Counterfeit anti-infective drugs. *Lancet Infect. Dis.* 2006, 6, 602–613. [CrossRef]
- [3] Jen-Hung Tseng, Yen-Chih Liao, Bin Chong and Shih-wei Liao, “Governance on the Drug Supply Chain via Gcoin Blockchain”, *International Journal of Environment Research and Public Health*, MDPI, 2018.
- [4] Andrew O’Hagan, April Garlington, “Counterfeit drugs and the online pharmaceutical trade, a threat to public safety”, *Forensic Research Criminology International Journal*, Volume 6 Issue 3 – 2018.
- [5] Xiaoguang Liu, Ziqing Wang, Chunhua Jin, Fagen Li, And Gaoping Li, “A Block chain-based Medical Data Sharing and Protection Scheme”, *IEEE Access* ( Volume: 7 ), 2019.
- [6] A. K. Jha, D. Doolan, D. Grandt, T. Scott, and D. W. Bates, “The use of health information technology in seven nations,” *Int. J. Med. Inform.*, vol. 77, no. 12, pp. 848–854, 2008
- [7] <https://www.leewayhertz.com/blockchain-in-pharma-supplychain/#:~:text=The%20use%20of%20a%20pharma,an%20efficient%20stock%20management%20system>
- [8] Wilson JM, Kinghorn R. *The Global Risk of Product Counterfeiting: Facilitators of the Criminal Opportunity*. Michigan State University Centre for Anti-Counterfeiting and Product Protection; 2015