

Study of Blockchain Technology and Uses in Different Sector

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Abstract - This paper explores how Blockchain technology works and structure of the same. Through this paper we will be able to know about its areas of utilization and conceptualization of this technology. We get the information about how this technology helps in future. This technology is very fast growing and boundless, it's make transparent and healthy business. The blockchain is so named because it consists of a series of 'blocks'. The blocks serve as 'proof' of the completed transactions. Blockchain has many advantages with some flaws like large energy consumption and privacy concerns. Blockchain work based on Hash structure, in this paper we know how it's work and what's need of this technology. How it's helpful for Different Industry. For this paper we get information through bitcoin.org 'White Paper' and some other sites that is Related for blockchain, company sites.

Key Words: Blockchain Technology, trends, facts and industry, cryptocurrency, SHA-256

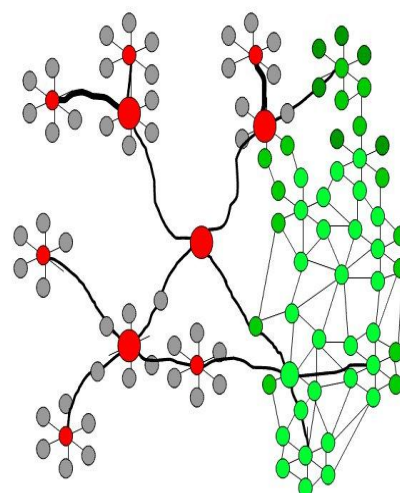
1. INTRODUCTION

Blockchain introduce in 2008 as part of the proposal of bitcoin. Straightforward, blockchain can be a record of data that's not owned by any single entity. That data is stored during a block and each of those blocks of knowledge is secured and guaranteed to one another with the assistance of cryptographic principles. Nobody knows yet the founding father of blockchain, but the planet called him Satoshi Nakamoto.

The blockchain network could be a decentralized technology, during this network there's no single authority. That information one block has, the identical information is contained by other blocks during this network. During this network contend information can see everyone. Anything that's built on a blockchain network it's very pellucid and everybody is involved in answerable for their action. During this technology transaction initiates the method by creating a block. This block is verified by thousands, perhaps several computers distributed around the net, after the verified process the block is added to a sequence, which is stored across the network creating not just a singular record but a singular record with a singular history. During this network, every block is connected and that they use the identical information, these blocks are connected with a cryptographic hash function. Blockchain use SHA-256 hashing algorithm.



Centralized system has core Authority. Only a privileged user can access the history of the



Decentralized System have no core authority. Every participant in the network can access the history of the transaction.

Fig -1: Centralized system & Decentralized System

1.1 Blockchain History-

- Eighteenth August 2008- the name bitcoin.org was registered.
- 2009- initial dealings of ten thousand BTC for 2 Pizzas.
- thirteenth June 2011- initial bitcoin thievery occurred, that price of bitcoin is twenty-five thousand coins (375 thousand USD)
- 2016- writer try (BitPay CEO) declared the company’s dealings rate grew 3x from January 2016 to February 2017, and explained the usage of bitcoin is growing in B2B offer chain payments.
- 2017- Japan and Russia passed a law and allow cryptocurrencies.
- 2018- Ford patent lays out ‘Vehicle to Vehicle’ communication and crypto dealings.
- 2019 - Infosys launched 3 Blockchain-based application.

1.2 How Blockchain Works:-

Each block encompasses a cryptographic hash of the previous block a timestamp and transaction data. Blockchain technology is an open distributed ledger that may record transactions of two parties securely and efficiently. Blockchain is usually managed by a peer to look network working at the same time together to resolve complex mathematical problems to validate new blocks. Once recorded, the info in any given block can’t be updated retroactively without changing all succeeding blocks, which needs the confirmation of the bulk within the network. The most reason behind why blockchain technology is secure and not vulnerable to hacking.

Three Pillars of Blockchain Technology:-

1. Decentralization
2. Transparency
3. Immutability

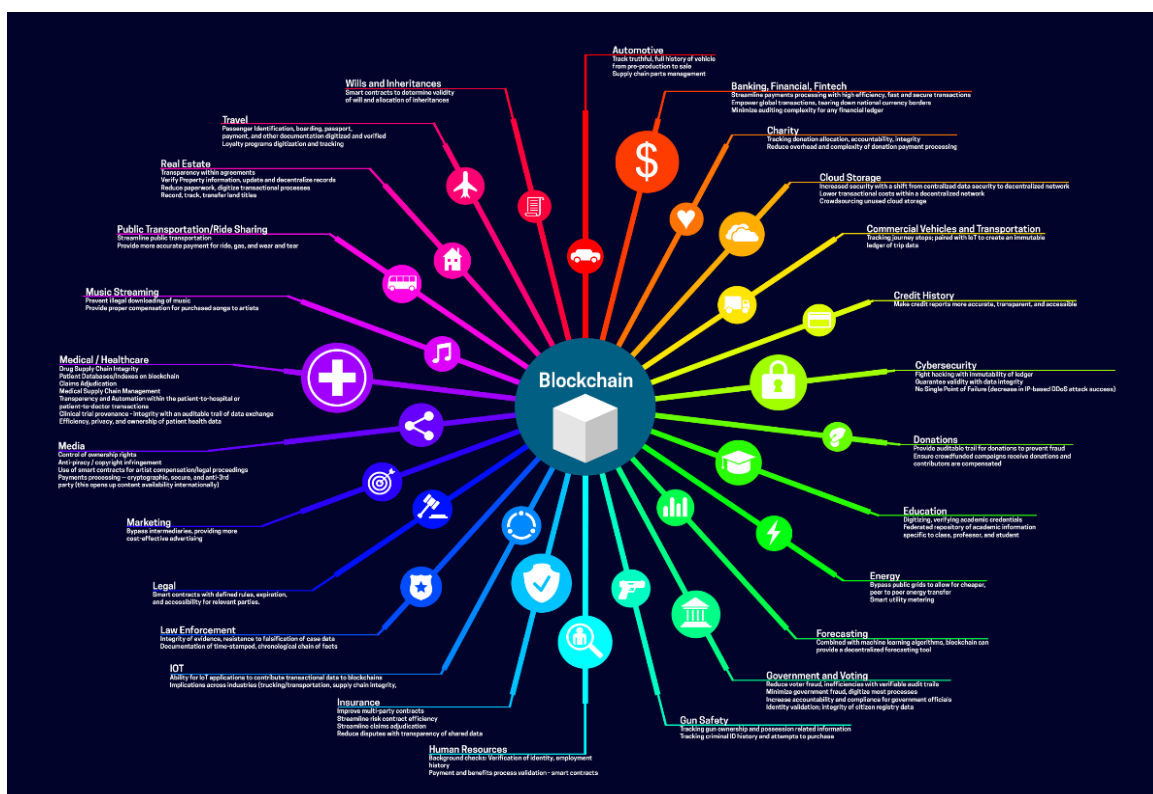


Fig -2: Blockchain Works

2. SHA-256 Hash

SHA-256 is a Value size of SHA-2 set. SHA-2 stands for Secure Hash Algorithm-2, it is a set of cryptographic Hash function designed by US Intelligence Agency NSA and first time published in 2001. It is built by using ‘Merkle-Damgård’ Structure’ from

one-way compression function. SHA-256 is a novel hash function computed with 32-bit 64 bit. SHA-256 is based on the one-way function that converts a text of any length into a string of 256-bits.

3. Smart Contract

Smart Contract is a line of code that is stored on Blockchain and automatically execute when predetermine terms and conditions are met. The benefits of smart contracts are most glaring in business collaborations. Smart Contract work with simple things 'if/when' statements that are written into code on Blockchain. Smart contract is devolved in Ethereum platform. IBM developed an open-source platform that is called Hyperledger Fabric and Hyperledger Composer, with the help of hyperledger fabric anyone can create smart contract for any-one. Smart Contract is developed in 'Go' language, JavaScript and Node js. Ethereum has own language that is called Solidity and solidity compiler is solc.

3.1 Benefits of Smart Contracts

Benefits of smart contracts are:-

1. Speed and accuracy
2. Trust
3. Security
4. Saving

4. Types of blockchain

1. Public Blockchain

In simple words, public blockchain is permission less, anyone can join the network, Read, Write and took part within the blockchain. Data on Public Blockchain is secure and because it isn't possible to change or alter data once they need been validated on the blockchain. Bitcoin and Ethereum is the best example of a Public Blockchain.

2. Private Blockchain

Private Blockchain is additionally called Permissioned Blockchain. Its work supported access controls that restrict those that can participate within the network. During this Blockchain one or more entities which control the network. During a Private Blockchain, only the entities participating during a transaction will comprehend it whereas the opposite won't be ready to access it. Hyperledger Fabric is the best example of personal Blockchain.

5. Blockchain Technology in Supply Chain

Supply Chain grow complicated, involve in diverse stakeholder and external intermediaries, blockchain de-tangling all the documents and exchange happening within the availability chain ecosystem.

Blockchain uses supply chain within the following areas-

- Procurement
- Traceability
- Digital Payments and Contracts
- Logistics
- Manufacturing

5.1 Procurement

A Blockchain-based database can store appropriate data from all partners giving company 360 view of the overall volume of purchase, no matter who managed the acquisition Activity. There'll be no need individual users continuously share operational data and some other person to crosscheck, the audit is conducted automatically.

5.2 Traceability

Most of the businesses want to use Blockchain as a brand new method for increasing visibility and traceability of products, with the assistance of Smart Contracts we trace that products on consumers' ends. Blockchain reduce contention between retailers and customers for lost receipts, unreadable receipts and track history of proprietorship.

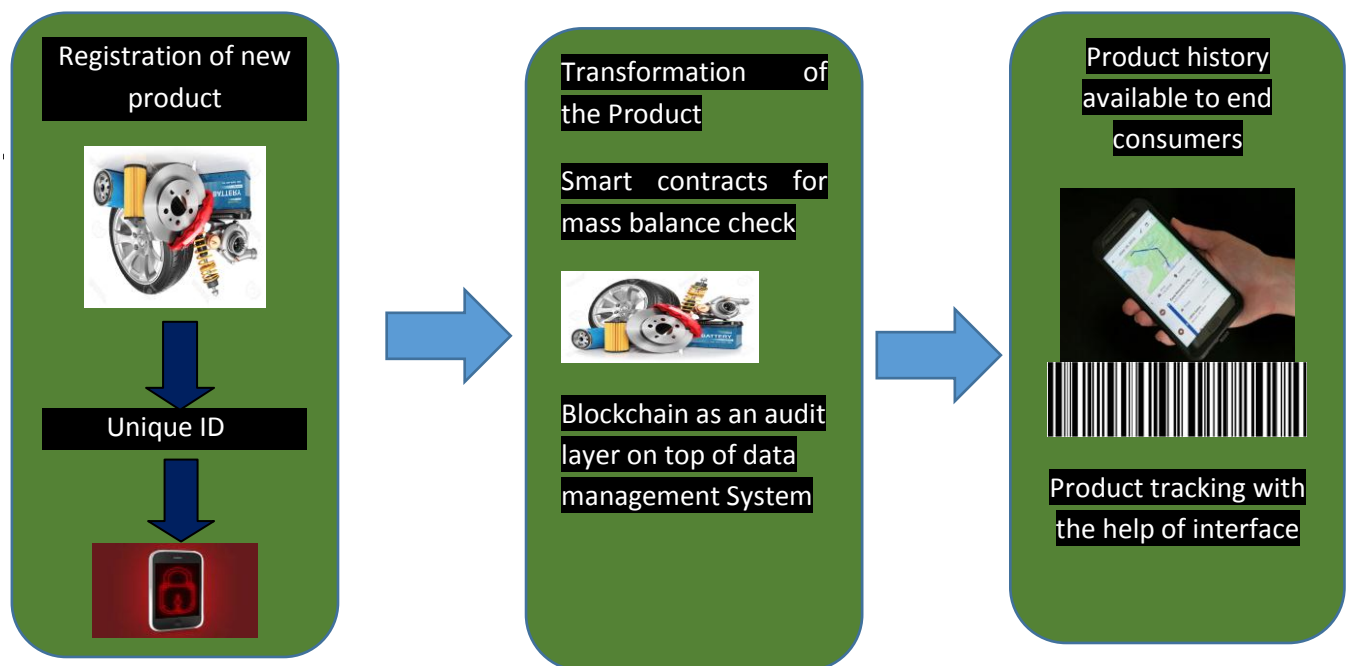


Fig -3: Traceability in Blockchain

6. Blockchain Technology in Logistics

In provision trade blockchain technology is promising to form transparency of all documents transactions across the freight landscape ultimately increasing the potency, gracefulness and innovation of provide chains. Blockchain technology is especially adept at simplifying complicated and fragmented processes— like people who area unit unremarkably found inside the provision and provide chain trade. Blockchain technology records transactions, tracks assets and creates a clear and economical system for managing all documents concerned within the provision method. Blockchain technology helps corporations implement good contracts—computer code hosted on a blockchain that defines associated executes the terms of an agreement between parties. Within the typical state of affairs of shipping merchandise, various parties area unit involved—shippers, 3PLs, carriers and consignees. For each cargo, transactions and documents get dead and saved—BOLs (bills of lading), invoices, PODs (proof of delivery) and additional. Every dealings becomes a permanent ledger record that’s simply valid by anyone with access to the chain. Mistreatment information from a blockchain, the network members will validate the block or payload of the dealings, making a clear and economical system for managing all documents and transactions concerned within the provision and provide chain method.

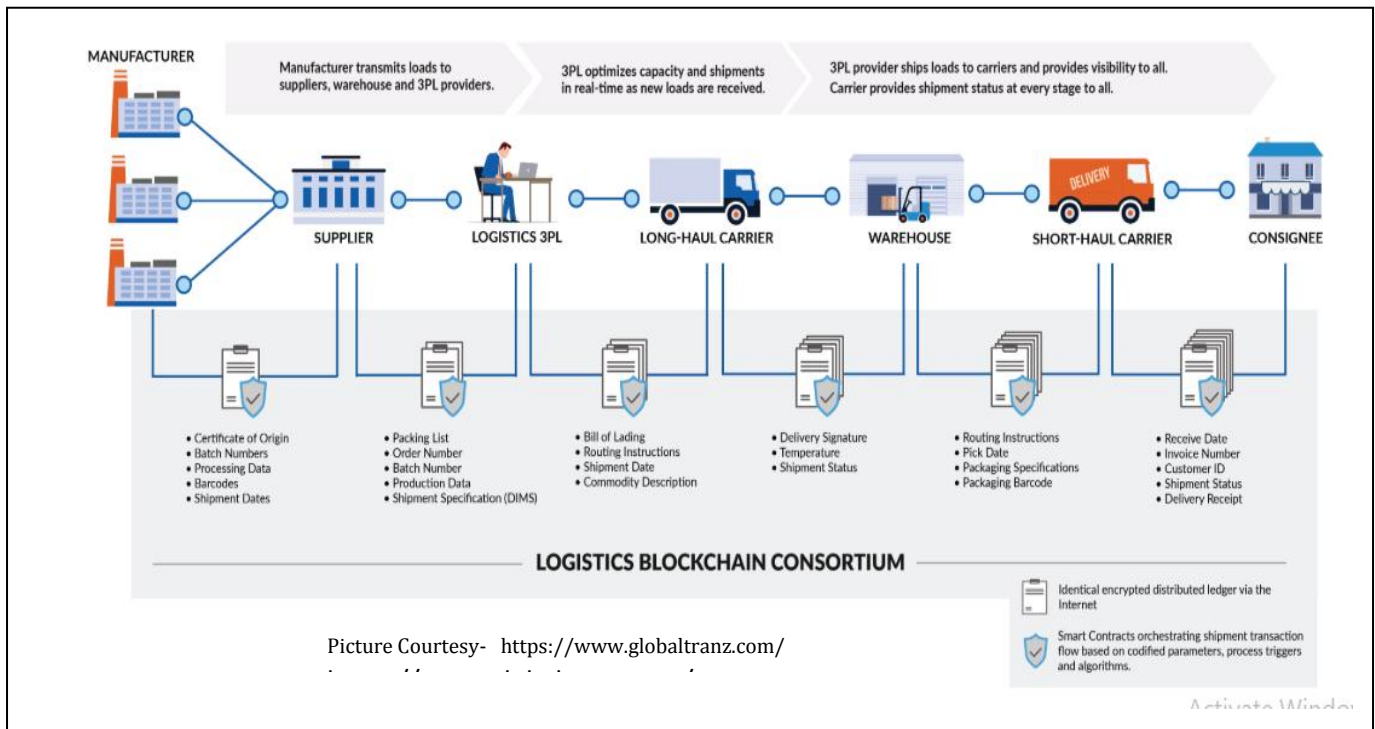


Fig -4: Blockchain in Logistics

7. Blockchain Technology in Healthcare and Life Sciences

Blockchain-based record management system help to keep Patient Record, simplify claim processing, secure medical records and monitor the pharma supply chain.

8. Blockchain Technology in Marketing

The Blockchain is seen by many as means to turnover marketing on its head by providing better metrics for wider audience reducing the influence of information and audience hoarding negotiator, and reworking potentially effective yet underutilized marketing strategies like loyalty programs through new face-lifting approaches. These programs are critical to consumers' shopping decisions, and rebuild them through the blockchain's interoperability is simply one-way marketing can get a lift from the promising technology. Some uses in Marketing are-

- Consolidating gift card merchants in One App
- Anonymity in marketing data collection
- Verifying Engagement
- Preventing Product fraud

8.1 Benefits of Blockchain in Marketing

1. Reduced cost
2. Audience Targeting
3. Increased Efficiency
4. Decentralized Application

9. Blockchain Technology Uses in different sectors

9.1 Public Sector

Land registry, Digital Identity, customer onboarding.

9.2 Insurance Sector

Underwriting, Claims processing

9.3 Banking Industry

Trade Finance, Regulatory Reporting and compliances, Blockchain used in capital market also like trade settlement and commercial Papers Issuance and trading.

10. Blockchain Uses in Other Sector

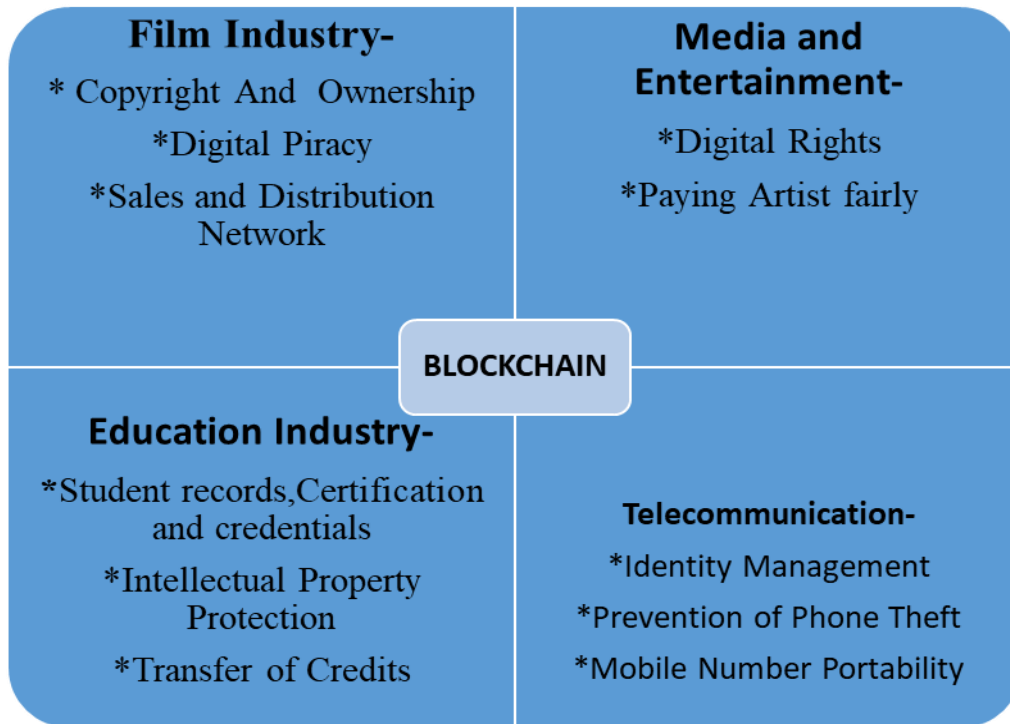


Fig -5: Blockchain in other Sector

11. CONCLUSION

Primary focus of this study was to get information about Blockchain technology and the uses of this technology into various type of industry. Blockchain can help to make more profitable because with the help of this company reduced cost, increased efficiency and provide good security from Cyber-crime and many more fraudulent. Blockchain technology can provide a secure platform for any company, with the help of blockchain we develop smart contract that provides more security. Blockchain helps to create a unique identity which better provides tracking of the mobility of goods and services. The authors can acknowledge any person/authorities in this section. This is not mandatory.

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