



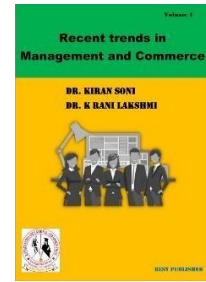
Recent trends in Management and Commerce

Vol: 1(1), 2020

REST Publisher

ISBN: 978-81-936097-6-7

Website: <http://restpublisher.com/book-series/rmc/>



Understanding a Recent Trends in Block Chain Technology

*¹Krishna Kumar TP, ²M. Ramachandran, ²Kurinjimalar Ramu

¹SNMV Institute of Management, Shri Gambhirmal Bafna Nagar, Malumichampatti, Coimbatore, Tamil Nadu, India.

²REST Labs, Kveripattinam, Krishnagiri, Tamil Nadu, India.

tpk683@gmail.com, Kurinjimalar@restlabs.in

Abstract

Block chain is a technology Such as mathematics, algorithms, cryptography and economic models Developed using a combination of different techniques. The Black Chain is all digital and decentralized is the general ledger of crypto currency transactions. Block chain is posts or all is a database of transactions or digital events Public ledgers are a database that is activated and shared between participants. In the company of each transaction in a public parade Verified with the consensus of the majority of participants. Also, once logged in, Information can never be erased. Made so far on the Black Chain There is a specific and verifiable record of each transaction. Bit coin, decentralized probing digital currency, for the use of block chain technology The most famous example. Bit coin, the digital currency, is highly controversial, But the basic block chain technology Flawless, it is pervasive Detected applications. The world of operating finance and finance. These white papers are some specific applications of block chain technology Describes the financial and non-financial sectors. We see challenges and business opportunities in this basic technology; it is ready to revolutionize our digital world..

1. Introduction

The Black Chain is for all transactions or digital events Distributed records Is the database, they are processed and shared participants. Every transaction was verified by majority of the systems participants. Black chain technology is a decentralized system that records the source of digital assets. Is very as a distributed ledger is defined? With intrinsic design, the data in a block chain cannot be changed; making it a systemic barrier to businesses such as payment, cyber security and healthcare. Blockchain has the potential to grow into the foundation of systems that hold global records, but was launched 10 years ago. It was created by unknown individuals behind the online currency Bit coin under the nickname Satoshi Nagamoto. Black sits at the top of the chain-web a peer-to-peer network was launched in October 2008 of the project for Bit coin in part, a virtual Currency system avoids the To issue a coin, And transfer of ownership For secure transactions Central Authority. First proposed as a research project in 1991, the concept of block chain preceded its first widespread use: Bit coin, in 2009. A Block chain is information Chain of blocks containing. Stored within a module Volume of data Depending on the type of chain. For example, sender, receiver and exchanger on a bit coin block there is information about the number of bit coins owed. The first volume of the chain called the Genesis volume. Black Chain is shared, unchanging ledger that allows you make transactions on a business network you can register and track assets. A property Fixed (a house, car, money, land) Or abstract (intellectual property, Copyright, copyright, trademark).Block chain Technology in 1991 Time stamping of digital documents Computational practical solution for doing They wanted to introduce pushed back or distorted.

2. Block chain

Block chain technology for future Internet systems has great potential for construction. Which face many technological challenges? The volume size of Bit coin is now of 7 transactions per second the rate is controlled, which makes it impossible to deal with high frequency trading. However, large volumes are large storage space and slow spread through the network. Fewer users are so big wanting to maintain block chain this will gradually lead to centralization. So the transition between sound level and security is a tough challenge. Second, miners through selfish mining strategy than they play a fair role It has been proven that large returns can be achieved. Miners to earn more in the future are hiding their cut blocks. In that way, branching can occur frequently, this inhibits block chain growth. So we have to come up with some solutions to solve this problem. Furthermore, Users can use their public key and private key only despite the transactions, there may be a privacy leak in the block chain. Furthermore, current consensus mechanisms, such as proof of employment or stock certification, face some serious problems. For example, proof of work Wastes too much electricity, at same time the event participates in the rich becoming richer of the consensus process May appear in the demonstration. [1]Block chains are data structures or ledgers that are shared and distributed so that Digital transactions without the use of central authority they can be stored safely. Most importantly, smart deals on peer-to-peer networks Allow block chains to activate automatically. Many users make changes to the ledger at once they are seen as an alternative to allowable databases, as a result of its block chain networks Makes it very flexible and safe. Each Whether the transactions of network users are valid You can check for yourself, Transparency and reliability, provides undamaged records [2]Public key of cryptography with help Block chain technology ensures duplication

issue eliminated, which assigns unique key to each agent in cryptographic mode the generated addresses will be Stored in block chain. Each currency Transactions, although detectable, are carried out without revealing one's identity; with legal authority, except for cash transactions with legal authority, except for cash transactions this is a big difference. [3]"Block chain is the indestructible digital ledger of economic transactions, it can record not only financial transactions, but all valuables "- This report was produced by Dan and Alex Tops Code Is one of the most popular definitions of block chain. [4]The third Technology of block chain era is now worried with the non-economic makes use of block chain. For this purpose, out of funding Attempts had been made to switch the era to other utility regions, thus other industries and application cases can enjoy the thrilling functions of block chain. As a result, block chain has observed packages in a spread of industries. Identity Management, Dispute Resolution, Contract Management, such as deliver chain management, coverage and fitness care taken into consideration a general purpose technology that uses certain things. [5]

3. Structure of Block chain

Block chain is a set of linear sequences; they Are added to a chain with regular spacing Information in blocks is block chain Depending on the network, but the time label, Transaction and hash all Is kind of block chain. Each volume contains the cryptographic hash of the previous volume. All information in the hash will be generated automatically, that means no information in the hash can be changed. In this case, each subsequent block is valid for the previous block and increases the security of all block chains. More volumes in the chain - secure and reliable block chain. [6]Control of information infrastructure in general Distributed and negotiated dynamically. Block chain / Bit coin is a clearly distributed technology, Because the main purpose of its design is to avoid central control, E.g. By a trusted third party peer-to-peer technology was developed from the beginning. Recent discussion on volume size shows that no page restricts changes, these changes are dynamic it also shows that negotiations need to take place: Theatrical workers can express their opinion; Full node clients have their own opinion and Leading developers, but none. Groups may dictate the terms. This is currently the subject of heated debate; The community is not over yet. [7]

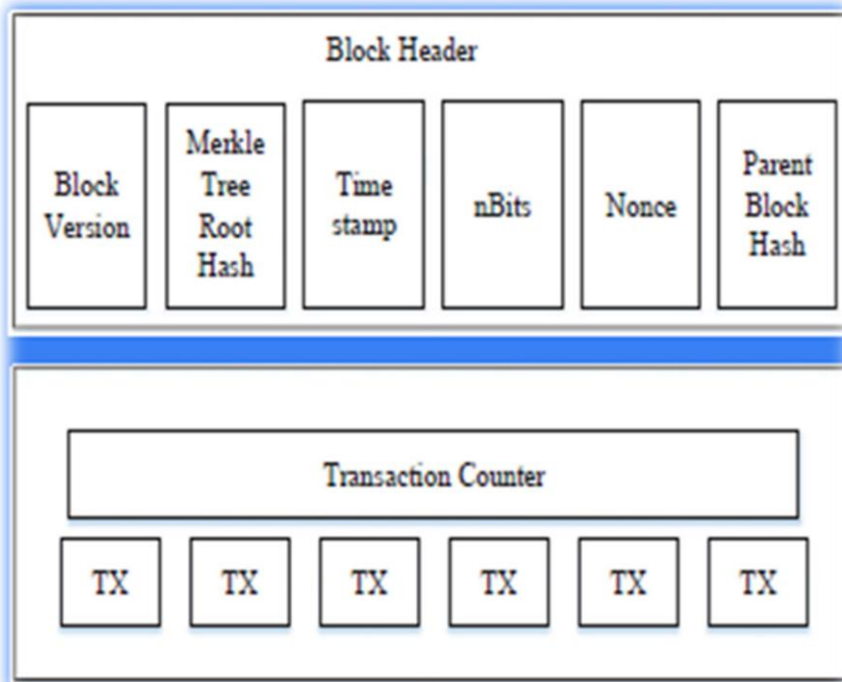


FIGURE 1. Black chain structure

In the age of block chain technology, the information system of a service delivery chain can significantly affect the efficiency of operations. Uncertainties 26 and full of obstacles this is very important in the market. In rental service platform operations, based on the information provided by the site Users decide whether to rent the product or not. In the age of block chain technology, this is especially true audit costs for each product site after each rental service. For two rental services Product information in between Explore the revealing game sites, this industry is motivated by monitoring, creating a Stylistic Analysis Model, We conduct game-theoretical economic analysis.[9] The structure of the title consists The following components Module verification A set of rules tree root hash value of all transactions; Limited Since January 1, 1970, Also known as increases to zero performs all calculations consistently; 256-bit value is black hash, This is the parent block of its predecessor called the black hash. [8]

4. Types of Block chain

Block chain technologies can be divided into three categories:

- Public Block chains all checks and verifies the transaction and participates in the consensus process. Bit coin and Ethereum are common block chains.
- Federal block chains are, The approved node can be selected in advance, Usually with business-to-business partnerships, Data in block chain may be open or private, And may be partially distributed. Both Hyper Ledger and

R3CEV are Confederation Block chains.

- The individual block chain node will be controlled, each node will not be able to participate in this block chain, and there will be strict power management in data access. Regardless of the type of block chain, both have advantages. Sometimes we need public block chain for its convenience, But sometimes the service we provide Or depending on where we use it, Such as federal block chains or private block chains Personal control may be required. [10]According to our survey findings, Block chain can be classified into two main types, i.e. unlicensed block chain and allowed block chains.

Unauthorized block chains: Unauthorized Block chains at its ends does not impose any restrictions; According to the consensus protocol of a particular block chain, Bit coin, Ethereum and many other crypto currencies are licensed Run on undeceived block chains. These block chains use advanced cryptography Are fully utilized considered decentralized and secure. While at the same time providing economic benefits to users who maintain the Integrity of the network. Transaction on block chain that are not approved by its design will not change completely, i.e. block chain transactions confirmed by its nodes will not change. [11]**Allowed block chains:** Allowed block chains restrict written access to limited participants, the consensus algorithm received its privilege Used to verify data writing between participants. Reading access, depending on block chain requirements May be open to the public or may be closed to the public. These types of block chains are designed to replace the original unlicensed ones block chains to address the need to enable block chain technology among known and identifiable participants who are openly responsible for the block chain network, Participants do not need to trust each other completely. [12]

5. Block Chain Architecture

Block chain's data system such as Python SQ Lite and REST full API Uses structures. Block chain Authorized Customer Transaction Register, It encrypts the information using its private key and uploads it to the Block chain Database API. The block chain database encrypts data using a private key through the API and improves user authentication. The Block chain Database API uses Smart City's innovative hybrid architecture software the next step for illegal conversion is to calculate the hash value. Denied networking block chain a technique also creates the concept of POW. Establishing structural factors and, in addition, integrating block chain into a software integration performance attribute development business. [13]There are many characteristics that shareholders need for the survival of service providers in a corporate entity. The first and most demanding asset is to ensure that no transactions are made, updated or changed without a consensus mechanism within the network. This is usually confirmed within an organization by the implementation of cryptographic algorithms. Similarly, companies should provide a fair opportunity for all colleagues to make and renew the right transactions known as equal rights. Another aspect demanded is the establishment of trust, which can be best achieved through consensus. Consensus actually restricts the addition of new items; it contains rules for transactions, transactions and broadcasting and resolving conflicts. [14]Block chain is more than just a central server since it is a decentralized mesh network of interconnected computers, there are many layers that manage and create block chain functions. The protocols for BT applications consider I present a five-block block chain framework:

1. Data Source Module, which enables the creation of block chains in shared and distributed databases. In this module, without reading, updating and deleting data, Can only read and write through queries and retrievals.
2. Transaction Module, which will check the transaction, allows you to write a new transaction. A transaction is an exchange of value between a seller and a buyer; it changes the status of the data in the volume.
3. Block Generating Module, which is called Block Permanently, records transaction data in a file. A module is merged with existing modules, if organized into a linear sequence over time; a block chain will be generated.
4. Consensus block, work certificate, stock certificate or Byzantine fault tolerance Verifies and verifies transactions using a consensus algorithm.
5. When synchronizing and integrating all the IT platforms, software and algorithms required for block chain applications Connection and interface module that facilitates web interfaces between users. About contract status and transaction monitoring using mobile devices this module helps to provide real-time information. This block is between different companies or businesses Makes integration easier. [15]

6. Block chain Applications

Bit coin to solve the dual price Problem of digital money in a decentralized environment Block chain becomes delivered with white paper. Block chain was added with white paper. The unchanging disbursed ledger technology and decentralized ideas in the back of block chain People are fast realizing that it could also be customized and used for smart contracts. Property identifies logs, digital vote casting, deliver chain control, Identity management, digital rights management and more. Therefore, a sizeable amount of research and improvement has been initiated on the packages of block chain, more and more new research on future packages is emerging daily. [16]Swan (2015) noted that the development of block chain applications can be divided into three stages; Lorain 1.0, 2.0 and 3.0. Block chain 1.0 is crypto currencies peer-to-peer is to be used as a Cash fee device. Block chain 2.0 is for stocks, securities, loans, clever assets and is a totally complete block chain utility for simple cash transactions inclusive of clever contacts. Block chain 3.0 develops block chain packages beyond currency, finance and markets, specifically government, fitness, technological know-how, education, culture and the arts [17]First, block chain technology in the fields of economics and crypto currency Designed for its best processing, but today its use is expanding in many areas, including the field of biomedicine. Medicine, genetics, one can see the potential of block chain technology in the fields. Whose mechanism allows users to stabilize and protect a database that they can interact with in a variety of ways? [18]The Internet of Things is a combination of different smart devices. Configuration of most applications is based on a centralized system. There are some issues in the centralized system such as Single point failure, trust management and security issues. In the M2M system using block chain explained the confidence rating consensus protocol for digital ledger. IoT and

Block chain technology integration makes the system robust and vulnerable. The authors explained the energy-efficient, distributed system in the Body Area Network. Security issues are explored with layer-by-layer description and challenges of IOT applications. The survey identified the IOT model and summarized the details thread model. [19]The characteristics of block chain make it unique it will also be promising for future industrial applications:

- Diversified: The data on the system can be accessed on multiple computers, Track, save and update.
- Transparency: Data from the network is recorded by consensus and stored on the network and is visible and detectable throughout its lifespan.
- Unchanged: Block chain provides timelines and controls.
- Autonomy: Every node in the block chain Data can be accessed automatically without third party intervention, Change, save and update.
- Open Source: Everyone on the block chain network Provides open source access with hierarchical consciousness.
- Anonymous: When data is exchanged between nodes, the identity of the individual remains anonymous.
- Ownership and Uniqueness: Every document exchanged in block chain saves its proprietary records with a unique hash code. [20]
- Source: Each product will prove its authenticity and appearance Block chain has a digital registration document.
- Contract Automation: It is a small computerized program; this helps to execute the contract. This will provide better security and lower transaction costs Changes the need for a decent contract. Rules, in general, for smart contracts Penalties are coded as inclusive and terms of action applicable to all parties to the transaction. Smart contract supports quick response functions in supply chains.[21]

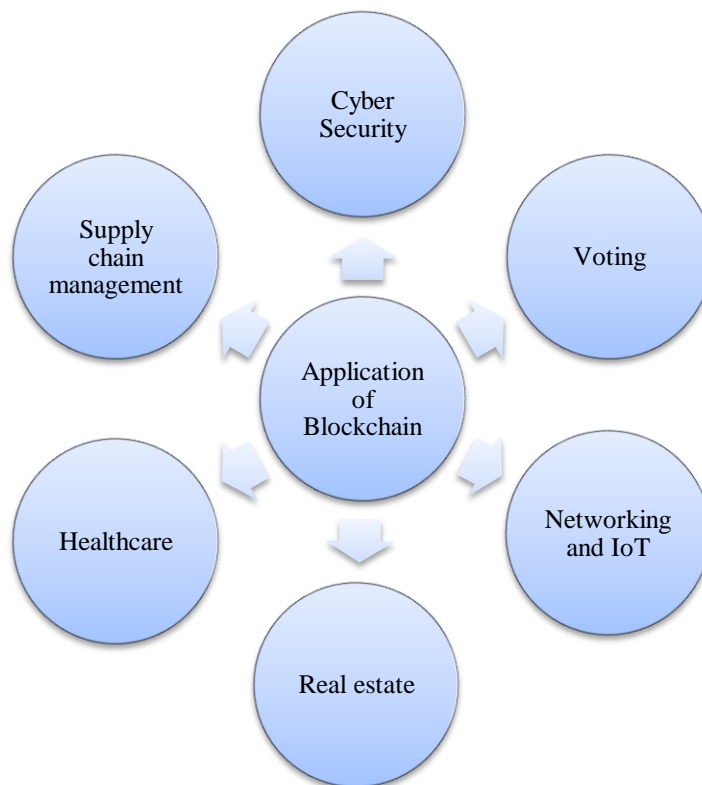


FIGURE 2. Application of Block chain

7. Conclusion

Black Chain generation is progressive. It will make lifestyles simpler and more secure, how non-public records are saved and how transactions for items and offerings are achieved. Block chain generation creates a permanent and unchanging report for each transaction. Black chain generation is modern. It will make life less complicated and more secure, how personal facts Storage and supplies and transactions for offers How are accomplished. Block chain the era is a permanent one and creates unchanging document for each transaction. This impenetrable digital ledger makes fraud, hacking, and information theft and statistics loss impossible. Technology production such as Google, IBM, Microsoft, American Express, Wal-Mart, Nestle, Chase, Intel, Hitachi and Doll will have an effect on all sectors of the sector, which includes retail, transportation, healthcare and real property agencies. Those who initially accepted the black chain.

Reference

1. Zheng, Zibin, ShaoanXie, Hongning Dai, Xiangping Chen, and Huaimin Wang. "An overview of blockchain technology: Architecture, consensus, and future trends." In *2017 IEEE international congress on big data (BigData congress)*, pp. 557-564. Ieee, 2017.
2. Andoni, Merlinda, Valentin Robu, David Flynn, Simone Abram, Dale Geach, David Jenkins, Peter McCallum, and Andrew Peacock. "Blockchain technology in the energy sector: A systematic review of challenges and opportunities." *Renewable and Sustainable Energy Reviews* 100 (2019): 143-174.

3. Pilkington, Marc. "Blockchain technology: principles and applications." In *Research handbook on digital transformations*. Edward Elgar Publishing, 2016.
4. Mettler, Matthias. "Blockchain technology in healthcare: The revolution starts here." In *2016 IEEE 18th international conference on e-health networking, applications and services (Healthcom)*, pp. 1-3. IEEE, 2016.
5. Golosova, Julija, and Andrejs Romanovs. "The advantages and disadvantages of the blockchain technology." In *2018 IEEE 6th workshop on advances in information, electronic and electrical engineering (AIEEE)*, pp. 1-6. IEEE, 2018.
6. Hou, Heng. "The application of blockchain technology in E-government in China." In *2017 26th International Conference on Computer Communication and Networks (ICCCN)*, pp. 1-4. IEEE, 2017.
7. Agbo, Cornelius C., Qusay H. Mahmoud, and J. Mikael Eklund. "Blockchain technology in healthcare: a systematic review." In *Healthcare*, vol. 7, no. 2, p. 56. Multidisciplinary Digital Publishing Institute, 2019.
8. Niranjnamurthy, M., B. N. Nithya, and S. J. C. C. Jagannatha. "Analysis of Blockchain technology: pros, cons and SWOT." *Cluster Computing* 22, no. 6 (2019): 14743-14757.
9. Ølnes, Svein, and Arild Jansen. "Blockchain technology as s support infrastructure in e-government." In *International conference on electronic government*, pp. 215-227. Springer, Cham, 2017.
10. Biktimirov, M. R., A. V. Domashev, P. A. Cherkashin, and A. Yu Shcherbakov. "Blockchain technology: Universal structure and requirements." *Automatic Documentation and Mathematical Linguistics* 51, no. 6 (2017): 235-238.
11. Li, Wei. "Escape analysis on the confinement-escape problem of a defender against an evader escaping from a circular region." *IEEE transactions on cybernetics* 46, no. 9 (2016): 2166-2172.
12. Choi, Tsan-Ming, Lipan Feng, and Rong Li. "Information disclosure structure in supply chains with rental service platforms in the blockchain technology era." *International Journal of Production Economics* 221 (2020): 107473.
13. Khalaf, Osamah Ibrahim, GhaidaMuttasharAbdulsahib, HamedDaeiKasmaei, and Kingsley A. Ogudo. "A new algorithm on application of blockchain technology in live stream video transmissions and telecommunications." *International Journal of e-Collaboration (IJeC)* 16, no. 1 (2020): 16-32.
14. Gamage, H. T. M., H. D. Weerasinghe, and N. G. J. Dias. "A survey on blockchain technology concepts, applications, and issues." *SN Computer Science* 1, no. 2 (2020): 1-15.
15. Khan, FakhriAlam, Muhammad Asif, Awais Ahmad, MafawezAlharbi, and HananAljuaid. "Blockchain technology, improvement suggestions, security challenges on smart grid and its application in healthcare for sustainable development." *Sustainable Cities and Society* 55 (2020): 102018.
16. Zikratov, Igor, Alexander Kuzmin, VladislavAkimenko, Viktor Niculichev, and Lucas Yalansky. "Ensuring data integrity using blockchain technology." In *2017 20th Conference of Open Innovations Association (FRUCT)*, pp. 534-539. IEEE, 2017.
17. Yli-Huumo, Jesse, DeokyoonyoungKo, Sujin Choi, Sooyong Park, and Kari Smolander. "Where is current research on blockchain technology?—a systematic review." *PloS one* 11, no. 10 (2016): e0163477.
18. Ølnes, Svein, and Arild Jansen. "Blockchain technology as s support infrastructure in e-government." In *International conference on electronic government*, pp. 215-227. Springer, Cham, 2017.
19. Min, Hokey. "Blockchain technology for enhancing supply chain resilience." *Business Horizons* 62, no. 1 (2019): 35-45.
20. Akram, Shaik V., Praveen K. Malik, Rajesh Singh, Gehlot Anita, and SudeepTanwar. "Adoption of blockchain technology in various realms: Opportunities and challenges." *Security and Privacy* 3, no. 5 (2020): e109.
21. Syed, Toqeer Ali, Ali Alzahrani, Salman Jan, Muhammad Shoaib Siddiqui, Adnan Nadeem, and TurkiAlghamdi. "A comparative analysis of blockchain architecture and its applications: Problems and recommendations." *IEEE access* 7 (2019): 176838-176869.
22. Lu, Hongfang, Kun Huang, MohammadaminAzimi, and LijunGuo. "Blockchain technology in the oil and gas industry: A review of applications, opportunities, challenges, and risks." *Ieee Access* 7 (2019): 41426-41444.
23. Zubaydi, HaiderDhia, Yung-Wey Chong, KwangmanKo, Sabri M. Hanshi, and Shankar Karuppayah. "A review on the role of blockchain technology in the healthcare domain." *Electronics* 8, no. 6 (2019): 679.
24. Dutta, Pankaj, Tsan-Ming Choi, SurabhiSomani, and RichaButala. "Blockchain technology in supply chain operations: Applications, challenges and research opportunities." *Transportation research part e: Logistics and transportation review* 142 (2020): 102067.
25. Mohanta, Bhabendu Kumar, Debasish Jena, Soumyashree S. Panda, and SrichandanSobhanayak. "Blockchain technology: A survey on applications and security privacy challenges." *Internet of Things* 8 (2019): 100107.
26. Siyal, Asad Ali, Aisha ZahidJunejo, Muhammad Zawish, Kainat Ahmed, Aiman Khalil, and Georgia Soursou. "Applications of blockchain technology in medicine and healthcare: Challenges and future perspectives." *Cryptography* 3, no. 1 (2019): 3.
27. Chen, Guang, Bing Xu, Manli Lu, and Nian-Shing Chen. "Exploring blockchain technology and its potential applications for education." *Smart Learning Environments* 5, no. 1 (2018): 1-10.