



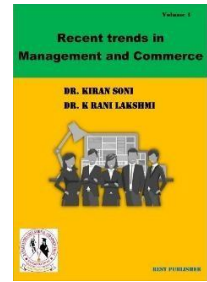
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Exploring Various Applications of Block Chain Technology

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Abstract

Block chain, the foundation of Bit coin Has recently received extensive attention. Block chain acts as a standard ledger; this is the manner in which transactions are decentralized allowing taking place. Block chain based applications are growing, Includes financial services, reputation organization and the Internet of Things and more. However, many challenges wait, such as the scaling and security issues of block chain technology. This paper is about block chain technology Provides a comprehensive overview. We first provide an overview of the block chain structure and used in different block chains and used in different block chains In addition, technical challenges and recent developments are briefly listed. We also set out potential future trends for block chain. Block chain is like moths, algorithms, cryptography and economic models it is a technology developed using a combination of different techniques. Block chain is the public ledger of all digital and decentralized crypto currency transactions.

1. Introduction

The block chain is a Bear-to-Distributed Bear is the database provides constantly evolving Transactions. Referred to as "prevention" "The cryptography of each transaction Protected by, time and each approved database also verified by the member consensual means. Block chain 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. Sitting on Top of Block Chain-Internet A peer-to-peer network was as part of a plan for Bit coin Launched in October 2008, this And the right to issue currency Convertible and safe Central authority for transactions Avoidance is a virtual currency system. As described in the block chain for Dummies, in blocks connected together to form a chain Block chain gets its name from storing transaction data. As the number of transactions increases, Block chain also increases. Dismissal of block chains making them difficult to measure. In block chain, decentralization is from a centralized company Refers to the transfer of control and decision-making to a distributed network. Permitted block chain is a distributed ledger that is not publicly accessible. This can only be accessed by licensed users. Users can only perform certain actions provided by Ledger Administrators and must identify themselves by certificates or other digital means.

2. Block Chain Technology

Block chain, a transactional database technology, has a significant number of participants for full verification and managing of undamaged transactions is a decentralized path, also known as nodes. Distributed block chain Ledger As a type of technology can be classified this means archived information such as certificates are not damaged Assures the user. Various studies suggest that block chain can be reduced Shows that it has energy transaction ambiguity, insecurity, and suspicion by fully disclosing transactions to all participants in the network and additionally providing identical and verified facts. In addition, block chain technology reduces the cost of transactions deepening the economic and social order. Is expected to increase the need for well-recognized and trusted third parties. Furthermore, one research said that the technology could be used for recording transaction details, Saving medical records, Termination of bond agreements, Monitoring the movement of goods, Monitoring the movement of goods, Observing the properties of works of art And verification of scholarships. [1]Complete with block chain technology Distributed and public to the database or any kind of data Ledger for exchange. Each of these and details of the transaction Contains. The basic unit of block chain must be done at a specific time is a module for recording certain transactions. A block is a personal bank statement can understand. When everyone has access to this ledger Blocks are chronologically linked using hashes to prevent anyone being harmed. Of the previous block in each block there is a hash. So, one person does it If he wants to damage, he already is Change all the hashes of the modules, unreliable and unknown parties it also indicates that it can be run. Since anyone can submit data to block chain, all other operators are required to accept the submitted data.[2]it simplifies Transactions on a business network the process of registering and tracking assets. A property is patents, Copyright or branding can be as intangible as intellectual property. Help companies manage or reduce product recall this can be used to help Original Equipment Production with manufacturers Share records controllers. Anything worthwhile on the block chain network Track and trade, reduce risk and be involved Everyone can cut costs[3]Block chain technology, due to the properties and diagnostic possibilities of auditing, has been attracting scholars and organizations to create a chain of blocks

using the hash function, integrated with another previous module. Ideas beyond the structure of the tree are stored in the block chain enable data integrity and consistency. [4]According to Carmen, before the use of block chain technology Overcome six regulatory / legal challenges: The legitimacy of Block chain and Distributed ledgers; As a block chain Recognition unchanging, indestructible source; the Factors that may affect block chain acceptance should be taken into account. For the widespread implementation of block chain technology, considering the nature of block chain technology Laws need to be rewritten or amended. Also, such as data protection Problems are growing Important the title should be noted. Controllers must respond to decisions such as where the data is. [5] Block chain is ledger based is tamper proof technology a variety of applications in a wide range of applications. In general, BC continues to take into account growing factors and data samples collected Maintained and controlled Refers to the database. Key components of BC are transactions generated by the participant and Are the recorder modules of such transactions. Here, the transaction details are in the correct order The Recorder Block checks to see if it has been maintained. This will not allow any damage to the available data. If the recorded data is to be maintained in sequence, the need for a chain approach arises. This maintained transaction is shared with the network of stock nodes. Participate in Using Cryptography this is the transaction sharing process done by identifying each terminal Eliminates the need for a central server. This allows for secure authentication. [6]

3. Decentralized Application

Decentralization is a key component of block chain technology. Resistance to censorship and immutability is one of the most important aspects of devolution. It highlighted that one of its special features is that Protection of The assets or capital of an individual and does not depend on third parties for security. Also, customized ledger optimized for personal use cannot be sent by government or cyber terrorist, mainly of block chain technology Due to rounded and diffuse properties. The integrated work certificate feature allows the system to solve any complex mathematical problems. Furthermore, this is the present Millions of decentralized nodes Used to fix. Arbitrary liquidation is guaranteed, which promotes the security of assets. In block chain technology there are some key words that express the important characteristics of structured decentralization — for example, the nickname of members, the potential use of automation, the dismissal of data and the participation of peers in the development of 'diversity'. [7] The block chain technology one of the key characteristics is decentralization it is against censorship and makes sense of consistency. A block chain provides a site among its key features that does not require reliance on third parties centralized for the protection of one's property. Distributed in block chain and will be distributed Due to the nature, neither a government nor a hacker can penetrate a centralized ledger for personal use. Work Certificate, Computing Complex with the help of Power Mathematical Problems Solves. In addition, it synchronizes hundreds of thousands of decentralized nodes the source for the in use. As a result, the security of the property is guaranteed; and prevents arbitrary dilution in the cash supply. Some notable terms clearly describe the spread of block chain technology, For example, the nickname of the participants; possible use of automation; Colleagues 'participation in data redundancy and development' diversity. [8]A Smartphone application using block chain technology communicates with a cloud server, protecting patient data collected from laboratories and wearable equipment. The application runs on Hyper Ledger with the proposed site. The performance of a decentralized secure site and application depends on their operational capabilities, storage handling capabilities, Evaluated and verified during the implementation process based on security and transaction speed. To authorize access to medical data, The Smartphone application requires the user's ID and password. When sending information, ECC is used to encrypt the data. When another company requests data, provide the correct ID and password with the correct cryptographic keys and access the data. All IDs and passwords will be stored in the database in the patient's registry. A wood-based module and processing system, Uploaded by mobile app to provide scalable and performance reviews also included for handling large data sets.[9] Traditional concepts of Distributed applications, encrypted information Communication channels and autonomous companies live Internet regulation in the world to be reviewed to. Block chain technology is widespread If accepted, government agencies and large Centralized authorities such as multinational corporations by already having the functions of different persons Have the ability to control and design. Mechanisms may be lost. As a result, this new technology Thus alignment and formation of decentralized enterprises and there is a growing need to focus on how to format the rankings. [10]Centralized systems due to single point-failure issue are criticized for their vulnerability. In contrast, decentralized systems that operate in a distributed manner suffer from data synchronization problems; they are briefly described as the problem of the Byzantine generals. In other words, in a decentralized ledger system participants need to reach a consensus that each message will be broadcast to each other. "Loyal generals", honest colleagues in our environment, can achieve a common Byzantine error tolerance if there is the majority agree with their conclusions. However, by invading individuals represent multiple identities Sibyl can be attacked to control a significant portion of the general P2P system significant "dual cost" issue in block chain-enabled decentralized ledger. [11]

4. Block Chain Issues

Possibilities of block chain are defined by its current problems; they need to be addressed with possible improvements. Every major function of the block chain has many significant threats; they must be pre-evaluated they can be implemented. These risks are not always completely technical, because risks can arise from legal, economic and even cultural aspects. One of the block chain ideas, anyone can participate in the system in the process of creating block chain that joins its peer-to-peer distribution network. As of August, 2019, volume of Bit coin block chain has increased to over 220GB, including transactions without block titles and database codes. [12]The Ethereum community creates a solution to scaling problems called shorting, which group the Executes only specific group Network nodes in subgroups called "shorts" transactions with cross-piece communication capability. [13]There are a number of issues, such as the extent to which the proposed uniform law should go beyond licensing, and general compliance and enforcement issues with the regulatory framework of NYBR and State Bank supervisors; This consistent draft plan provides an excellent opportunity to reconcile differing views on this legal area, thereby providing some clarity and consistency to the uncertain legal environment for virtual currencies.[14]The public block chain

regarding privacy and scaling is criticized because none of the privileged users, But any participant can join the network, Access information available on Block chain and check for new transactions. Similarly, the amount of data in the block chain and there are scaling limits that indicate the processing rate of the transaction. There is a delay in data transfer. As information becomes available to all colleagues in the network Privacy and security issues Block chains are a major concern. [15]

5. IOT Block Chain

Internet of Things devices in unreliable transactions can participate and obligations pledged by the parties to the contract you can capture contracts in computing codes for automatic execution. The "smart deal" proposed by Nick Chaco in 1993 The concept of is now in the Ethereum module chain Is being implemented; A smart deal code Has functions and with other contracts Communicate, make decisions, share data Can save and send ether to others. Watson IOT, A cognitive system created by international business engines, Radio frequency identification and barcode scanned Events or device report data Includes block chain that processes information from devices. [16]

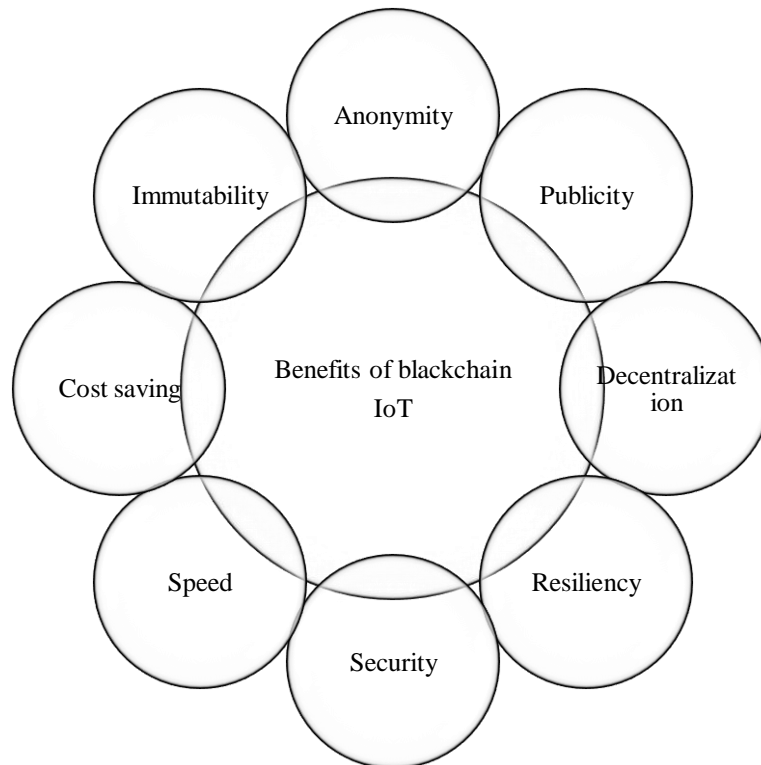


FIGURE 1. Benefits of black chain IOT

Internet of Things and security services, block chain-based applications, Such as currency, oil, gold, real estate deals, energy and intellectual property Use smart chains to store any record or transaction of tips. Block chain technology two has unique characteristics Anonymous and Distributed Consensus. Block chain transactions such as security, decentralization and instant transactions Offer many benefits. Because block chain technology is like agents or brokers Eliminates the need for intermediate points. Because data is an asset in the digital economy it is important to ensure that data in specific applications is not manipulated or corrupted. [17] IOT A is designed for IOT Another site that uses DAG (Directed Acyclic Graph). IOT A has no comment on the ward; instead any one of the previous two transactions will appear on a new transaction network. IOT A distributed ledger technology data transfer and values that cannot be exchanged between computers on the IOT A network. Recently, the IOT A announced the integration of the Tangle Hyper Leader fabric systems, which provide access settings with fluid data sharing and verification systems. Provides data reflected in the tank, taking advantage of all available features, including the IOT A Connector, encrypted transaction payload, tolls. Smart deal after completion, the execution of the smart contract Update and save results and make payments to IOT A wallet holders a demand is triggered for IOTA tanks. [18] The IOT chain is the decentralization of IOT devices is a new platform for working for the network. The IOT chain is not open to the public for development; However, IOT has shown its results, securities, consensus and other issues on the network. This includes IOTA, SLOCK, IT, IBM-ADEPT and compared the results with other Sims projects. As a block chain technology, it unanimously supports PBFT and DAG. Mostly in IOT the challenges are related to security and privacy concerns. Apart from these, some other challenges include mobility, non-compliance, Legal challenges regulatory issues Ownership issues Growing IOT Economic problems and other development Issues include [19]

6. Permission Block Chain Technology

Block chain is a distributed system, Refers to a network of data systems or modules set up in a listed format. There are two common types of block chains; one is general block chain and the second is allowed block chain. The former is publicly available, where any participant can join and exchange or become part of a consensus process for updating block chains; Thus the number of participants may be more than a thousand. These types of block chain attacks are more common. Popular attacks include the Sibyl attack, because participants are anonymous May have multiple identities affecting the consensus process. On the other hand, the allowed block chain is over, for example multi Cain and hyper electric fabric, Including Parity, Pixintype,

Interplanetary, Carda and Quorum. Modules within networks Contain transactions made by various partners. The blocks in the block chain are reconnected to the previous block by a chain; this is actually up to the previous volume is the hash representation of the transactions made. Ensures the integrity of chain transactions, thus not all transactions made in the past will be handled And attempting to control any of these or without a work certificate The transaction invalidates the chain of hashes. Thus, transparency and trusts are established in block chains, this forces many companies to implement block chain in their respective infrastructure. [20]Gartner on \$ 5 billion worth of brand name companies' products And that block chain technology will be available by 2023. He estimates that number will continue to rise over the next decade. Many brand name companies like Amazon, Wal-Mart and Alibaba Have started selling products through retailers, they rank the scalable protocol integrated with the approved block chain technology platform. Permitted block chain technology has the characteristics of both public and private block chain. For individuals who wish to join and participate in the activities of the private block chain network Provides access to public block chain, At the same time private block chain only allows verified participants to overwrite, edit or delete the required entries in the block chain. Permitted block chain technology is reading information in block chain, Provides participants with specific functions such as accessing and writing. For example, companies that manufacture a product, such as manufacturing, logistics and retail Approved block chain technology can be used to monitor supply chain operations. Process information based on production, logistics and retail, the distribution chain can be edited by members in approved block chain technology. Consumer supply chain information can be accessed through block chain technology. Therefore, licensed block chain technology is, Visible to consumers, suppliers, sellers and distributors in the supply chain the supply chain is designed for companies that want to provide information.[21] Permitted block chains usually involve a consortium of companies, where transactions are blocked together and verified by authorized gatekeepers instead of anonymous miners. By 2016, pilot trials of approved block chains had begun, but had not yet been implemented. Therefore, unlike unlicensed blockchains, licensed block chains were in the early stages of proliferation. The financial sector is at the forefront of allowed block chain developments as mentioned above. IBM has partnered with several major international banks to develop Block chain World Wire, a fast payment system using Stable coins. Therefore, the implementation of block chain allowed in the financial sector occurs, note. But overall, the growth of the block chain industry is periodic and it is unclear how the block chain will spread over the next few years. [22]

7. Conclusion

Threats are in the hands of third parties, which may continue to affect the integrity of personal sensitive data and other valuable resources. Resources are more likely to be misused. The best practices for implementing processes effectively are the most necessary and necessary to solve problems during the process. Block chain enjoys widespread acceptance and deployment in areas where users do not trust third parties and are always interested in data collection and its use. Similarly, laws and regulations are automated by programming and act as a legal source for processing computationally distorted source book data. This paper provides detailed information on the various application phenomena of block chains that can provide readers and researchers with insights into further exploration of the possibilities of working in various fields such as IoT security, health, business and vehicle monitoring - real estate - banking. With the implementation of Block chain in Healthcare, millions of health practitioners and professionals will be able to share and share a wealth of health data and find new ways to treat and prevent disease. Similarly, the use of block chain in IoT can significantly reduce cost and performance controls with greater robust security. By addressing security concerns, block chain can easily detect and prevent malicious processes, as opposed to the earlier solution that can be manipulated. Furthermore, block chain architectural designs solve problems such as single point failure and provide features that allow multiple systems to hold the same information.

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