

Block Chain and its Applications in the Field of Business

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Abstract: *Many people view blockchain to be a game-changing core technology. Despite the fact that many scholars have recognized the importance of blockchain, blockchain research is still in its infancy. As a result, this research examines current academic research on blockchain, particularly in the fields of business and economics. We investigate the most referenced publications, most prolific countries, and most prevalent keywords based on a comprehensive evaluation of the literature retrieved from the Web of Science service. We also perform a clustering analysis and discover five research themes: "economic advantage," "blockchain technology," "initial coin offerings," "fintech revolution," and "sharing economy." This study also includes recommendations for future research topics and practical applications.*

Keywords: Blockchain

I. INTRODUCTION

Blockchain technology is a cutting-edge computer protocol that allows for the digital recording and storage of data across numerous computers or nodes. The so-called "Ledger," which is comparable to a relational database Wal port, is one of the most significant aspects of Blockchain (2016). A block in a blockchain is a list of encrypted digital records or transactions. Then, in a linear, chronological order, each block is "chained" to the next block using a signature using cryptography The blocks each contain a duplicate of the since the last block was added, the most recent transactions Thus, all users who utilize their computers are linked to the shared block, or ledger. To authenticate or confirm transactions in a network without the use of a third party (Christakis, & Devetsikiotis, 2016; Porru, et. al., 2017).

In a novel and innovative approach, blockchain is utilized to protect and share data. The absence of a central instance in a distributed network necessitates a significant shift away from intermediary services and toward direct interactions amongst non-intermediaries (Tapscott & Tapscott 2016). As a result, Blockchain can only be updated by participants in the system reaching an agreement, and a transaction can never be changed or erased (Fanning & Centers 2016). Its distributed database, unlike a standard centralized database with a user-controlled access scheme, cannot be hacked, manipulated, or disturbed.

To put it another way, once data has been written to a Blockchain, no one, not even a system administrator, can change or remove anything from the ledger. Since each data block is time stamped and connected in chronological order using a cryptographic signature, Walport says (2016). Blockchain technology may be used in practically any form of value-based transaction, including money, products, property ownership, medical data, and even voting.

In a project, blockchain does not necessitate data transfer; all important transaction data is saved on the ledger, and status is then calculated from it. Because Blockchain is a distributed system with no central control point or authority (Glaser & Bezenberger 2015; Tapscott & Tapscott 2016), there is no single point of failure. As a result, in theory, an IT specialist would not be required to manage the security of a blockchain database in a company.

Despite these advantages, it's crucial to remember that Blockchain is still a very young technology. As a result, there are just a few cases when the technology has been used Aru (2017). Bitcoins, for example, are the most successful use of Blockchain Technology and have shown to be a viable option for establishing confidence in a trust-less environment without a central authority.

Data gathering and grounded theory were the major methodologies used in this work. Data gathering and ground theory were carried out in a variety of methods. For example, the study conducted a thorough search of all published publications discovered in the preceding.

The goal of this research is to provide an overview of Blockchain Technology and its current and future applications. As a result, we give a thorough literature study in the next part in order to identify current Blockchain uses and explore potential practical applications.

The following is how the rest of the paper is organised: Section II gives an overview of Blockchain Technology; Section III goes over the Applications of Blockchain Technology in Business in detail; Section IV goes over the Challenges and Barriers of Blockchain Technology; and Section V concludes with conclusions and recommendations.

II. THE CONCEPT OF BLOCK CHAIN TECHNOLOGY

Blockchain Technology is a constantly growing list of documents, known as blocks, that are linked and secured with encryption. Each block typically contains the previous block's cryptographic hash code, a timestamp, and transaction data (Bogart & Rice 2015), which is designed to be immutable. Depicts the Blockchain concept, which was created by Nakamoto (2008). Blockchain, also known as Distributed Ledger Technology (DLT), is a distributed ledger recording technology that stores information about transactions or events (Wal port 2016). It has the ability to keep track of transactions in a transparent and secure manner.

2.1 The Blockchain Technology Concept:

Bitcoin (2015) and Nakamoto were used as inspiration for this picture (2008)

As a result, Blockchain Technology has the following features: a distributed ledger, decentralized data management, data security, transparency and integrity, anti-tampering and anti-forgery, high efficiency, low cost, programmable features that increase flexibility and reliability, and no risk of a centralized database failure (Glaser & Bezenberger 2015; Tapscott & Tapscott 2016; Swan 2015).

Public Blockchain, Private Blockchain, and Consortium Blockchain (hybrid Blockchain) are three of the most common types of Blockchains. Each type has its own set of benefits and drawbacks, allowing it to satisfy the requirements of diverse applications (He et al., 2016; Buterin, 2016). (2015).

2.2 The Types of Blockchain Technology

Specifically, anyone can transact on the network transactions that are visible and anonymous using Public Blockchain. Bitcoin and other public blockchains are entirely decentralized. There is no central point of failure because the system is based on user consensus. Public Blockchain, on the other hand, is vulnerable to system attacks. For example, without being discovered by the participants, an attacker may reconstruct and properly chain all the blocks that had been edited; b) Private Blockchain, the transactions are secret, the data is not available for public inspection, but the members are known. A member in a private Blockchain network cannot read or write the Blockchain unless they have been granted permission or have been invited to join the network. Large corporations are the most common users of private blockchain. Consortium Blockchain is a hybrid model of both Public and Private Blockchain, giving it access to its many stakeholders such as consumers, staff, and suppliers. By opting for this strategy, businesses or institutions can create their own unique environment.

To share data among the consortium, a private Blockchain network was created. Taking part in (such as banks, institutions and other enterprises or firms). The following section discusses some of the practical uses of Blockchain Technology in various industries. The following groups of applications have been created: Smart Contracts, Government, and Finance are all terms that come to mind when thinking about smart contracts. Accounting and Business Process Management are two areas where industry and accounting intersect.

A. Smart Contracts

A Smart Contract, according to Szabo (1994), is a computerized process that fulfils the contract's terms. Simply said, a Smart Contract is a contract that isn't smart. It is, however, written as computer code for use in the Blockchain context. Gates of Heaven (2017). As a result, in the IT world, such agreements are regularly made.

Savelyev coined the term "Smart Contracts" (2017).

A Smart Contract is intended to guarantee to one party that the counterparty would keep his obligations. The Blockchain concept promises to eliminate the need for a third-party transaction mediator. Typically, this third-party is in charge of

preserving and executing contracts, and establishing confidence between any parties parties involved (Porru, et. al., 2017). As a result, Smart Contracts can be used to solve problems. Moral hazard issues, such as strategic default, can have a significant impact. Verification and enforcement costs will be reduced.

One of the most promising applications of Blockchain Technology is in the financial sector.is its application in the creation of completely automated Smart Contracts. Without the involvement of humans Smart Contracts make it possible to automate processes. For transactions that are repeated or have a high amount of uncertainty.

The contract conditions between agreed parties will be automatically verified, executed, and enforced via blockchain. Smart contracts are self-executing and self-enforcing Gates that can be partially or entirely self-executing and self-enforcing (2017).

The following are some Smart Contracts Blockchain Applications:

- Contract Management - Using Blockchain in Contracts Management provides a contract validation solution for businesses. Knowledge that could be extremely valuable to businesses and organizations businesses of various kinds, such as those in the technical industries as well as construction (Christidis & Devetsikiotis 2016). As a result, Organizations would be able to manage their operations using Blockchain Technology. Evaluate vendors and optimize the effectiveness of their supply chains increase the value of your product and reduce the time it takes to get it to market Morrison is a character in the film Morrison (2016).
- Entertainment - The use of blockchain in conjunction with smart contracts allows for the transparent transfer of royalties in real-time to all parties engaged in the music and film industries (Dair & Beaven 2017).
- Healthcare - The healthcare industry has already begun to adopt blockchain technology. Blockchain is a type of distributed ledger technology. Smart Contracts can be utilized in the medical field. Industries for keeping track of payers, providers, and drug manufacturers manufactures. Smart Contracts can be put up by healthcare professionals for any situation. This information is then saved in the payer's or supplier's digital records. Mettler (2016).
- Insurance is a new application area for Blockchain Technology. Fraud is expected to cost the sector more than \$2 billion each year.as well as compliance The usage of Blockchain Technology has a number of advantages. The insurance value chain as a whole has a lot of promise. Certain types of insurance may could be According to Gartner (2017), by 2020, there will be 20.4 billion IoT devices. With such a large number of devices expected to connect IoT hubs in the future, the system may be vulnerable in terms of network security, speed, and cost. The problems mentioned are addressed by blockchain technology, which strengthens the interconnectedness of IoT. By creating a network, it will enable devices to operate smoothly, securely, and autonomously.

B. Blockchain Technology for Implementing e-Government

Blockchain Technology's capacity to record transactions on distributed ledgers opens up new possibilities for governments to promote transparency, combat fraud, and build confidence in the public sector. By enhancing the delivery of public services and strengthening public sector confidence, blockchain has the potential to make government operations more efficient. Konashevych (2017). According to Ines, et al., (2017), Blockchain Technology provides many benefits for governments, including data integrity, improved transparency, enhanced security, fraud prevention, and the establishment of trust and privacy by recording transactions on distributed ledgers for the state management system. As a result, a distributed ledger is a one-of-a-kind instrument for increasing budgetary transparency and lowering corruption risks.

It is conceivable to create an e-Government using Blockchain Technology, bitcoin tools, and Smart Contracts. A number of mechanisms and procedures of interaction between citizens and the state could be implemented through Smart Contracts because a distributed ledger contains legally valid information. The source code removes the possibility of unauthorized alterations and guarantees the uniqueness of the contract algorithm's execution at any time and at any network node. State documentation, e-voting, auctions, public procurement, and company registration might all be made possible by Blockchain Technology, reducing fraud, increasing trust between citizens and the government, and improving public sector business performance

C. Blockchain Technology for Financial industry

Blockchain, according to Iansiti & Lakhani (2017), is a fundamental technology that has the ability to substantially lower transaction costs and change the economy. According to the Harvard Business Review, Blockchain Technology will do the internet did to the media, do to financial institutions (Joichi, et al., 2017).

Blockchain was created as the backbone for Bitcoin, the most popular decentralized digital money, according to Nakamoto (2008). Blockchain is especially useful for financial transactions and institutions, and it has the potential to solve a wide range of issues related to the exchange of data, information, and money (Tapscott & Tapscott 2016). Financial institutions and banks may use Blockchain to handle sensitive information and deliver safe, low-cost services that are decentralized and transparent. Forrester's (2016). Broby and Paul (2017) explored the value of Blockchain in financial settlements and in improving the accuracy of financial reporting.

Similarly, Brian (2017) argued that Blockchain as a technology can change economic sectors, resulting in cheaper transaction costs, as well as a number of other benefits. Hyper ledgers, an open-source industry collaboration founded by the Linux Foundation, and Ethereum, a custom-built platform released in 2013, are now the dominant platforms for Blockchain development in the finance industry. More than 1,500 cryptocurrencies have a market valuation of more than \$400 billion as of February 2018, with Bitcoin accounting for more than \$150 billion.

D. Blockchain Technology and Real Time Accounting

Accounting system digitization is still in its infancy compared to other businesses, some of which have been substantially affected by Blockchain Technology advancements. Auditors will raise the potential of the accounting profession by decreasing the cost of maintaining, providing a highly secure environment, and reconciling ledgers by using Blockchain, according to Swan (2015). Blockchain will provide traceable audit trails, automatic accounting and reconciliations, asset tracking, and transaction authentication.

Accounting may benefit from Blockchain Technology by putting the firm's transactions directly into a shared register, resulting in an interlocking system of long-lasting accounting records. Changing or erasing entries to conceal activities is essentially difficult because they are distributed and cryptographically locked. Because all entries are sent electronically and cryptographically stamped, this is akin to transactions that are validated by a notary.

Furthermore, all accounting data may be permanently stored with a time stamp utilizing Blockchain technology, preventing it from being tampered with. Customers, suppliers, and shareholders would all be able to see the whole joint register.

Swan is a bank creditor or any other interested party (2015). As a result, accounting at any time, transactions, balance sheets, or income statements could be accessed. Time, and there would be no need for anybody to rely on the company's quarterly reports. Financial statements, and improving the organization's business performance

E. Blockchain Technology and Business Process Management

Business Process Management (BPM) is concerned with the design, implementation, monitoring, and improvement of business processes in the classical sense. A business process is a sequence of actions carried out by a company in order to offer a product or service to clients (Dumas, et. al., 2013). As a result, BPM helps businesses improve their present business processes, business rules, general efficiency, and management. Intra-organizational and inter-organizational processes are the two types of business processes. Intra-organizational processes are those that occur within an organization, whereas inter-organizational processes occur outside of the organization's boundaries (Dumas, et. al., 2013). However, business processes such as interoperability, flexibility to adapt to changes, lacks of trust and security are not fully addressed in inter-organizational collaborations between mutually untrusted parties.

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