

# An Empirical Study on Use of Blockchain Technology as a Support Tool in Economic & Financial Processes

**Dr. Vishal Chavan**

Associate Professor, Sanjivani College of Engineering,  
Department of MBA, Kopergaon, Maharashtra

**Dr. Anju Gupta**

Principal & Professor, Khandelwal Vaish Girls Institute of Technology, Jaipur , Rajasthan

**Mr. Aman Gupta**

Assistant Professor, Khandelwal Vaish Girls Institute of Technology, Jaipur , Rajasthan

**Dr. Esha Jain**

Associate Professor, University Institute of Tourism and Hospitality management Chandigarh University, Mohali, Punjab

**Mr. Dillip Narayan Sahu**

Lecturer, Department of MCA, School of Computer Science, Gangadhar Meher University  
(GMU), Sambalpur, Odisha

## Abstract

Technology has provided various advantages in terms of developing new techniques. For commercial solutions, blockchain technology ensures transparency and a safe system. It also works on the energy sector and the status of the economy by reviewing current business viewpoints, as well as cases and literature. In bitcoin, the miner enters transaction data into blocks that are mined, and the transaction is completed. On the contrary, it is critical to design a proper bitcoin procedure, which is a time-consuming technique. Cryptography is gaining popularity in the gaming sector, and it offers a huge opportunity to collaborate on research and analysis with systems like KYC to frame the process.

**Keywords:** Blockchains, KYC process, cryptocurrency, financial and economic process.

## Introduction

The findings presented in this article are intended to demonstrate the benefits that may be acquired by incorporating and utilizing blockchain technology in various initiatives related to a territory's economic sectors, or even that can positively affect a business. In addition to the foregoing, a classification of the blockchain as a study object was developed, allowing for the theoretical foundation in the comprehension of how to use this new technology. Similarly, based on the analysis of the documentary results found through the database engine's search for

information, it has been proposed as an initiative to carry out a simulation project that will allow the validation of the information generated, which will be useful for both internal and external management to a specific economic sector or organization. The above-mentioned research and simulation method arose as a study opportunity since firms today suffer from a lack of transparency in the management of business processes that entail economic and financial qualities, making them auditable (Tseng and Shang 2021). As a result, it has been determined that blockchain technology offers a timely

and reliable solution to the problem because it has a decentralized structure, which, in turn, from the standpoint of efficiency and transparency in processes, is presented as a secure tool that cryptographically contributes to the generation of competitive advantages for an organization or sector in comparison to others. Furthermore, this

technology prohibits information from being changed once it has been recorded in a blockchain, a feature that fosters confidence and helps to enhance the collaborative networks that may be formed at an economic and commercial level in a specific environment.

DIMENSIONS	VALUE DRIVERS
<b>IMPROVING QUALITY AND PRODUCTIVITY THROUGH AUTOMATION, CONTROL, SECURITY AND TRACEABILITY.</b>	<ul style="list-style-type: none"> <li>• Auditability</li> <li>• Compliance</li> <li>• Data management</li> <li>• Data security</li> <li>• Process automation</li> <li>• Reconciliation</li> <li>• Standardization (data &amp; processes)</li> </ul>
<b>INCREASING TRANSPARENCY AMONG PARTIES BY GIVING ALL A HOLISTIC VIEW OF DATA AND TRANSACTIONS.</b>	<ul style="list-style-type: none"> <li>• Data sharing</li> <li>• Resilience</li> <li>• Transparency</li> <li>• Trust</li> </ul>
<b>REINVENTING PRODUCTS AND PROCESSES THROUGH DECENTRALIZATION, TOKENIZATION AND DIGITAL IDENTITY.</b>	<ul style="list-style-type: none"> <li>• Authentication</li> <li>• Identity management</li> <li>• Marketplace creation</li> <li>• New products and services</li> <li>• New or enhanced business partnerships</li> </ul>

**Table 1: Dimensions and value drivers of blockchain**

(Source: Cucari 2022, p.148)

Blockchain technology was developed to allow people to share electronic transactions without the requirement of a centralized network of trust mechanisms. This type of technology "creates an immutable distributed database based on a growing series of blocks," with the public blocks generating trust, transparency, and solidity in the data of each transaction. In this regard, and to encourage the use of this technology, it is advocated that the global innovation ecosystem be implemented "as a

tool for innovation, and therefore recognize which entities and specialists to ally with and for what purpose." Because it delivers resilience, security, transparency, and scalability to big and resilient data systems, this study may be able to improve all procedures associated with electronic transactions. The technological underpinnings of blockchain, which underpin the Blockchain concept, are discussed here, including block structure, transaction structure, nodes, and security.

<b>Hyperledger expands projects and members:</b>  4 top level frameworks including EVM code, 130 members, PoCs in finance, and working groups in healthcare	<b>Enterprise Ethereum Alliance is born:</b>  EEA launches with major membership list, focused on permissioned Ethereum with interoperability with public blockchains
<b>Corporates expand staffing, R&amp;D labs:</b>  Enterprises, consortia, and working groups continue launching pilots, PoCs and tests	<b>Ripple expands to Japan, completes pilot:</b>  Mitsubishi joins board, 47 bank consortia implements cloud-based payment pilot
<b>R3 continues diverse tests:</b>  Demos Ethereum applications, and commercial paper programs	<b>DTCC (Depository Trust &amp; Clearing Corporation) expands DLT settlement trials:</b>  Eying REPO market, working with startups including Digital Asset and R3

**Table 2: Impact of blockchain on financial transactions**

(Source: Author)

Making a final decision can help to sustain the Bitcoin digital currency. Bitcoin is a distributed and agile currency that operates according to predetermined rules. Over the years, this has aided interest enthusiast participants (Yildizbasi 2021). At the moment, there are a lot of Bitcoin users. It has elevated any disparity among Bitcoin developers' second tiers in terms of the kind of principal applications that should develop. This disparity has a negative impact, as an organization appears to have released a new release of primary programs on its own, fearing that the city would secede and the value of Bitcoin will be lost. There are two groups of people that disagree over how Bitcoin's block size can be used to manage the approach.

### Research Methodology

This piece of research is based on secondary data available on different websites. It's a quantitative research design

by nature. Graph analysis is used to analyze the blockchain technology works as a support tool of economic & financial analysis. Various literature has been used to find final conclusion.

### Objective of the Study

- To find whether blockchain technology working as a support tool in economic & financial processes

### Hypothesis

**H1:** Use of Blockchain technology works as a support tool in economic & financial processes

**H0:** Use of Blockchain technology does not work as a support tool in economic & financial processes

### Literature review

#### Components of Blockchain technology

The four elements of blockchain technology are also covered in this

research. The consensus is one, the ledger is another, cryptography is the third, and the smart contract is the fourth. The consensus is utilized to generate proof of work and to verify network activity. The ledger is used to generate all of the information about the transactions that take place on the network figure 1 depicts a few key components of cutting-edge blockchain technology, including ledgers, smart contracts, peer networks, membership, certificate authorities, and wallets, system management, events, and more. These components help to keep innovation in blockchain technology alive (Mukherjee et al. 2021).

DLT is a type of digital data that is consented to be shared, reproduced, and synthesized, and it is well-known for its numerous geographical dispersions across various organizations, locations, and countries. Microtransactions are little financial transactions made through digital apps and processes. According to Kołodziej (2021), creating distributed ledger technology for microtransactions can give distributed systems greater opportunities to overcome limits imposed by other distributed systems. It is important to recognize that distributed ledger technology has divergent effects in terms of performance, security, and cost. Because distributed ledgers can establish public 'witnesses,' they have become a prerequisite for most of the changes. It's also

advantageous because it makes different types of cyber-attacks more difficult.

A distributed ledger, like a traditional ledger, can be updated whenever a transaction is possible. As a result, rather than overwriting previous records, transaction information is transmitted between nodes and added to the process. Individual participants' computers are referred to as nodes, which contain a collection of transaction records (Nor et al. 2021). The nodes are involved in both the development and maintenance of the distributed ledger. A local copy of the ledger, on the other hand, can be preserved and developed in the nodes.

### **Microtransaction using blockchain technology**

Microtransaction is a business model that makes its users purchase virtual goods within the process. The processes that are usually free to download often have microtransaction which provides a source of revenue for the process developers. They first gained popularity in 2006. They mostly dominate the mobile app market, but nowadays other software for PC, as well as console, are seeing the rise of microtransactions too. There is no exact definition of microtransactions, which can perfectly represent the term, but it is represented as anything that the users pay extra for in an application outside of the initial purchase (Raja Santhi and Muthuswamy 2022).

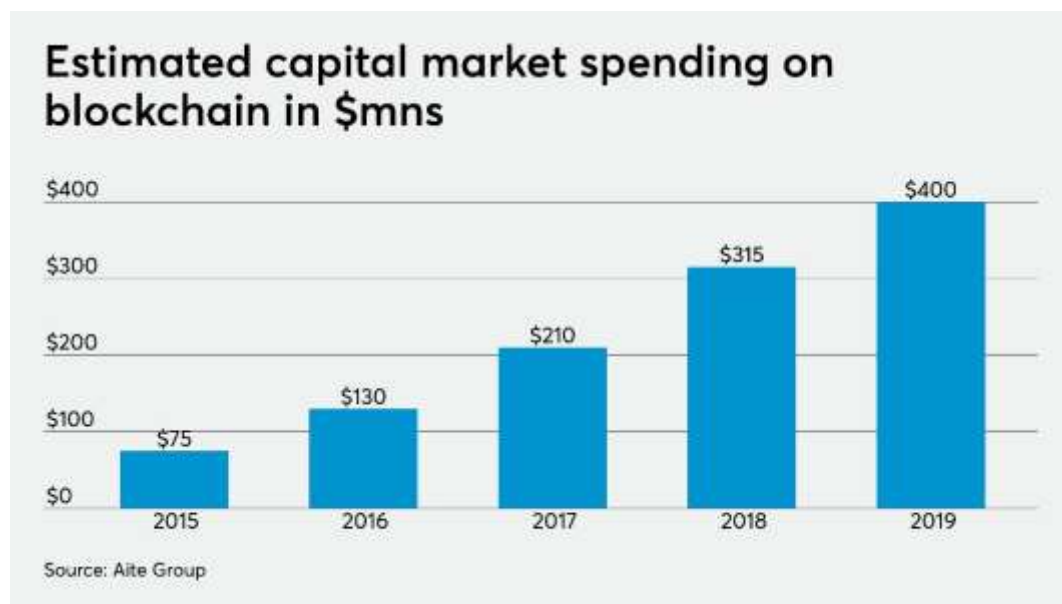


Figure 1: Use of blockchain technology in capital market  
(Source: Mora et al. 2021, p.134)

Microtransaction is also referred to as a modern cheat code for gaming. Before the microtransactions arrived in the video processes it always required a certain amount of time and skill to finish the processes but nowadays due to microtransactions players can buy certain virtual goods that give them a vital edge over the other players. The idea behind the microtransactions is that if the player can pay enough money then he/she can acquire weapons and upgrade that would create an advantage on the playing field. This is a point of criticism by many users. Epic's new Battle Royale process Fortnite was one of the most popular processes in the last year (Hernández-Nieves et al. 2021). The process was free to download but it had a

lot of microtransaction so that players could spend money on different items such as emotes, and skins to change the look of the character inside the process but none of which had any effect on the process. There are no physical boxes to sell their microtransactions they use platforms like Sony, Microsoft, Google, and others. Ledgers are an essential part of commerce since ancient times they are used to record things like assets such as money and property. People have used clay tablets to papyrus and vellum for paper however as this new generation of technology-influenced industries has come to rise it has changed the ledger system too. It made the process more computerized from paper to bytes.

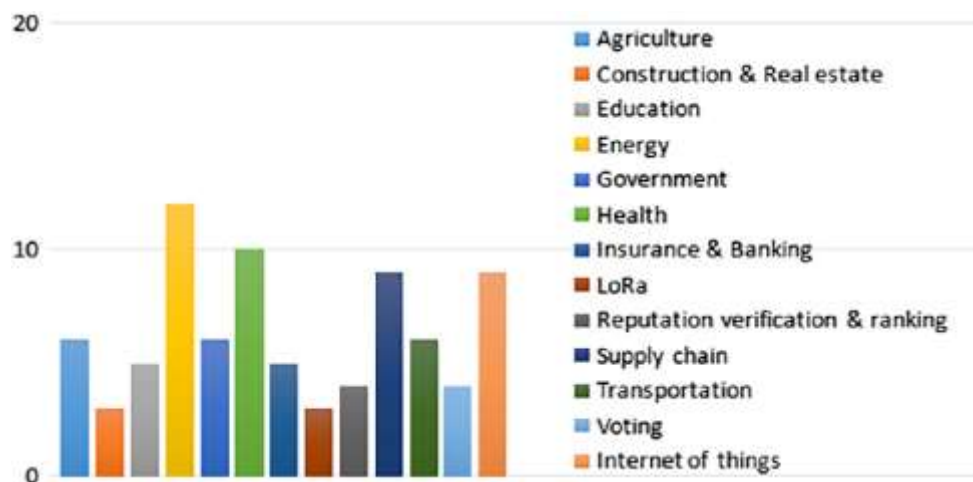


Figure 2: Use of blockchain technology in different fields  
(Source: Tušek et al. 2021, p.148)

To update a distributed ledger an arrangement typically uses several protocols for communicating between nodes and facilitating consensus among them about the state of the ledger. Cryptographic tools, such as public-key cryptography and public key infrastructure have a major role in DLT they identify and authenticate approved participants. Participants wanting to make a change to the ledger need to authenticate themselves by providing a cryptographic digital signature (Khan et al. 2021). This process typically relies on cryptographic tools. Nodes in the network play different kinds of technical roles such as.

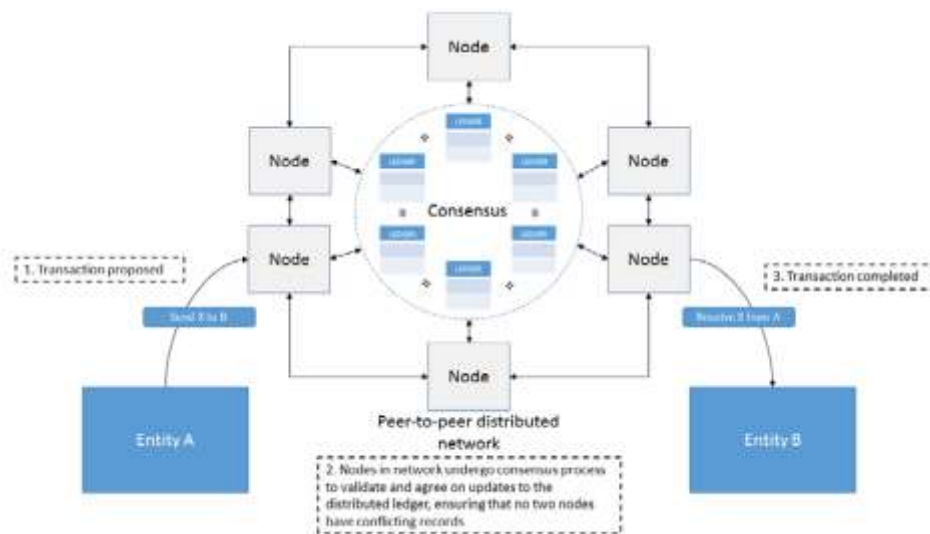
- Asset issuer- they are the nodes that have the permission to issue new assets.
- Proposer- the nodes that have the permission to propose updates to the ledger.
- Validator- the nodes that have the permission to confirm the validity of any proposed state changes.

- Auditor- the nodes that have the permission to view the ledger but cannot make any updates

### Methods

DLT arrangements that are currently rising through their production stage, maybe have some market implications as the financial system contains numerous interlinks like multiple payment systems and others.

The security needs multiple systems to manage the payment system for the transfer value and separate securities for transfer securities and the financial industry has different payments methods across different jurisdictions. Industries are experimenting with different DLT arrangements and multiple DLTs are going to emerge that can provide similar and complementary functions. They have a possible effect on the framework of financial sectors as the DLT can be seen as an upgrade to the current system of ledge arrangement (Siddik et al. 2021).



**Figure 3: Process flow of a DLT system)**

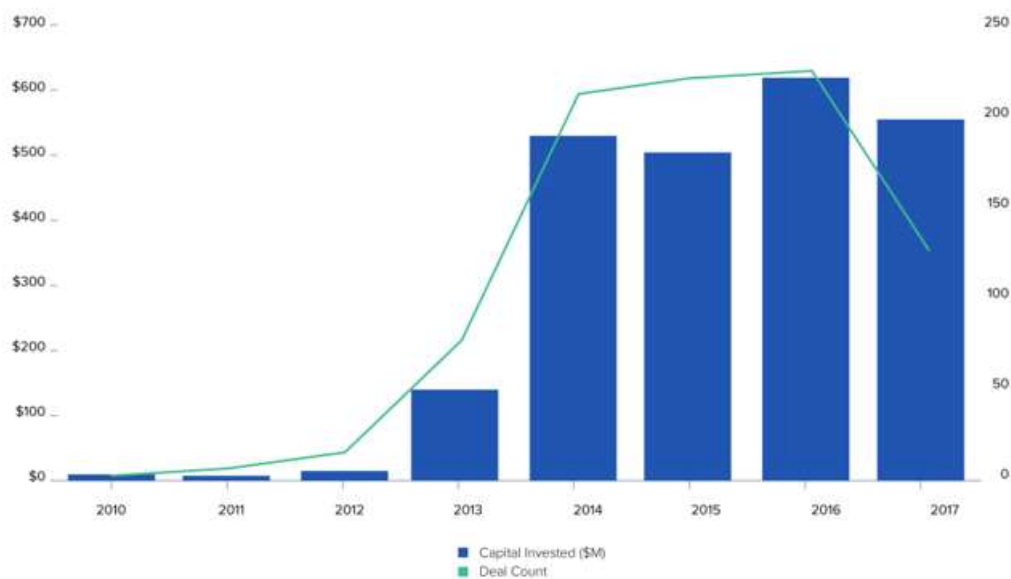
(Source: Petroni and Pfitzner 2021, p.154)

It might make certain business practices feel that the DLT arrangement can change their current business activities. DLT can also have complications from broader financial market risks. In the future, the configuration with other automated contract tools and macroeconomics conditions could automatically trigger margin calls across FMI which can lead to severe liquidity demand in the financial system. The advantages of DLT would be for the government as the processing of DLT is real-time, which is near to tamper-proof. Their transparency and traceability will allow the government to understand how aid money is spent and used (Safiullin et al. 2021).

The best way to develop this technology is to use it in practice many experts have argued and supported the development of the DLT. The main scope of DLT would be it can protect critical infrastructure against cyber attacks. DLT will also reduce the operational costs of the businesses and provide tracking eligibility while offering

greater financial inclusion. It will reduce tax frauds around the nation and even help the public sector to be transparent so that the people could know how their tax money is being spent. The fundamental use of the ledgers is to record and maintain the assets of an organization. The major advantage of DLT is for record-keeping so that the records are structured and maintained in such a manner that any legitimate individuals can verify the relevant history of the records the DLT arrangement will also allow traceability so the data are not subjected to being lost, damaged and tampering. The traceability will also provide an advantage for anti-money laundering occurrence however, it is against privacy and the information would be kept confidential. The possible benefit of DLT would be is the immutability of data recorded in the ledger, which means the data recorded in the ledger cannot be unilaterally changed once recorded (Hoffmann 2021).





**Figure 4: Investment in blockchain technology**  
(Source: Hoffmann 2021, p.181)

### Developing distributed ledger technology microtransactions

The most important requirements for implementing DLT Technology are data confidentiality and data authenticity. The major evidence reveals that the DLT ledger contains a huge quantity of transaction data and blocks. Following the storage of transaction data in a ledger, both the data and the blocks are immutable and cannot be changed in the future. The usage of has Technology at the micro-level of transactions is primarily utilized to detect if any tampering with the original data is possible. The hash value will change at the same time that the data is changed. Using a hash function has certain advantages. It is impossible to decide the hash value in advance, but after the data is created, the predetermined hash value can be recorded.

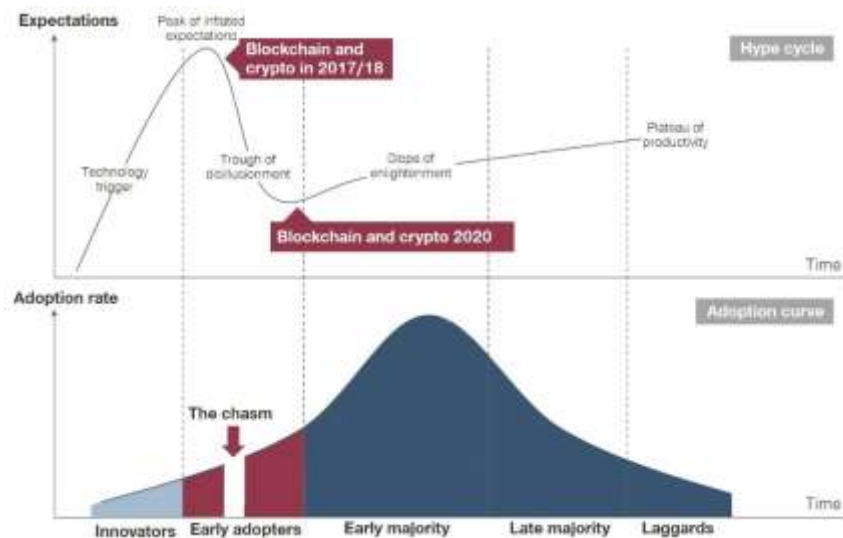
Detecting data changes and summarizing data aid in the DLT platform's novel application (Petroni and Pfitzner 2021).

### Result and discussion

#### Result

The challenges associated with establishing a mining procedure might be beneficial in ensuring the process and activity. On the other hand, it is necessary to establish actions that will ensure that the procedure is effective. The organization must keep up with the practice of employing effective tools that allow people to participate in the process. On the other side, the organization must be able to confirm the procedure (Siddik et al. 2021). The validation method, which employs computational incentive mining, is a significant advantage of permission ledgers over the technique.

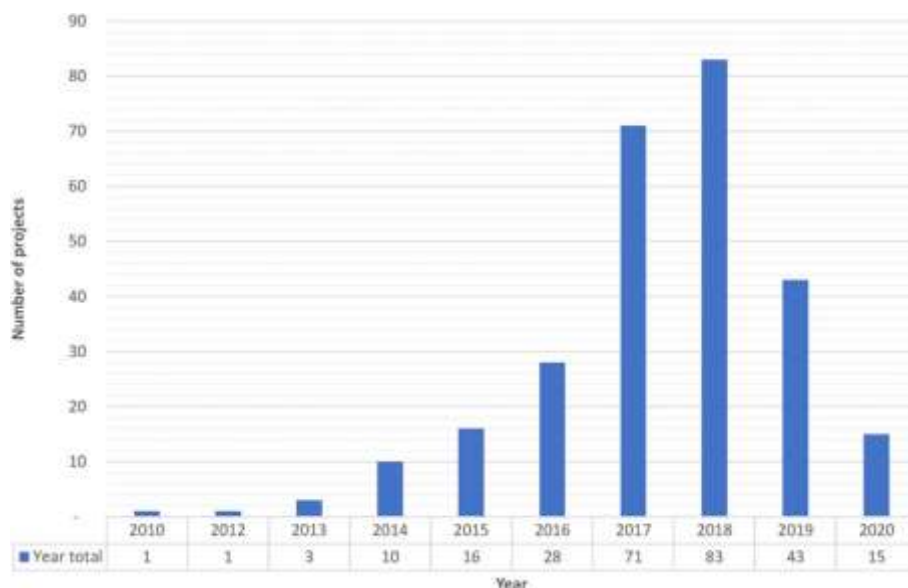




**Figure 5: Impact of blockchain on business**  
(Source: Siddik et al. 2021, p.183)

The distributed ledger system is deemed transparent in transactions and begins with the system being logged in. The history is saved as part of the process of making the transactions irreversible and active. For managing the process, there is a high level of openness as well as reliability. On the other hand, as technology becomes more involved in the process and generates successful smart contracts, DLT becomes more versatile. Participants are permitted to enter self-drafted agreements that can help DLT become more versatile. Furthermore, the analysis can identify multiple possible techniques, allowing DLT to carry out the process. As a result, a DLT system has the potential to reduce the distributed system's ability to create trust. Furthermore, the system's efficiency in the banking and payment industries is often built on a

distributed system, which improves system efficiency (Nor et al. 2021). The transformation has been brought about by the process of transforming the way people work in various corporate sectors, institutions, and government agencies using distributed ledger technology. The development of high-quality services for passport issuance, tax collection, license records, land registrations, and voting procedures helped governments. According to Patel et al. (2020), the distributed ledger's high-quality security mechanism has aided numerous banks in payment. It has also been shown to be reliable for online payments, with numerous institutions endorsing its utility. The application of distributed ledger technology in financial transactions and blockchain has piqued the interest of various businesses.



**Figure 6: blockchain adaption in business**

(Source: Nor et al. 2021, p.181)

However, the use of distributed technology has applications outside of the financial sector. Bitcoin, which debuted in 2008, is one of the most well-known distributed ledger applications. Blockchain algorithms were used in the development of peer-to-peer digital cash. Bitcoin is the online equivalent of traditional currency. Bitcoin's strongest feature is its ability to change the ledger. This technology aids in the secure and accurate recording of anonymous transaction records.

The distributed ledger's blockchain technology has ushered in a new era for DLT platforms. These platforms have a combination of features that can be used to create a variety of applications. Permissioned and uncommissioned platforms are the two basic types of these platforms. The majority of uncommissioned platforms sustain collaborative action and are used as a public network that anybody can access (Nor et al. 2021). The permissioned platform, on the other hand, is recognized for its limited participation, with only authorized roles

having access. Aside from that, the permissions platform is notable for its established privacy, first transaction validation, and low energy consumption. Platforms are divided into many categories based on their distinguishing characteristics. For example, some platforms are designed for general use while others are better suited to specific applications.

For starters, the transaction can take place between two parties without the involvement of a third party. Second, there is no way to double spend. Finally, the transactions are non-reversible and conducted using Bitcoin. The user must create a wallet by supplying a unique address that may be unlocked using a set of cryptographic keys to use this site. For transitions, however, this approach involves signing and confirming. Only the user's wallet address is available in this procedure, which keeps track of all transitions. The use of mining nodes aids in the collection of various transactions that

are then verified to create new blocks (Mora et al. 2021).

As DLT seems amazing it is yet to be established in the financial sector. It is still struggling to make real-world connections. There has been little concern about this technology. As the DLT needs, a lot of computer systems to run this needs the energy to run the process un-developed countries with few sources of energy would be able to pose this system. The fragmented framework of the blockchain has failed to produce the international standards for the technology. A greater amount of interoperability is needed to make sure DLT can be compactable and be practiced internationally. Privacy will not be available in this system as it is inherently shared publicly between everybody on the system. If any illegal data is processed in the blockchain will make the entire ledger illegal (Mora et al. 2021). It doesn't have any intrinsic value that yet has been established as money it doesn't have any use-value it only has any value because the government maintains it or the parties are willing to exchange it. Fiat comes from a Latin word that says, "Let it be done" and these currencies are somewhat similar to the meaning of the word. The paper money was usually just a receipt of gold an individual has deposited in the bank. When the government declared that paper money would not be converted to gold anymore it led to the creation of fiat money (Tseng and Shang 2021).

A cryptocurrency is a digital asset designed as a means to exchange and uses storing cryptography. It is also referred to as a modern form of currency as the 21<sup>st</sup> century has seen technological changes in every major industry sector. The cryptocurrency

emerged as a side project of another invention. Satoshi Nakamoto, the inventor of Bitcoin, is the first cryptocurrency. The inventor of Bitcoin was trying to develop a peer-to-peer electronic cash system instead invented the first cryptocurrency. A cryptocurrency is just a limited entry in the database that cannot be changed without fulfilling specific conditions. Point of sale (POS) is a transaction that takes place between a merchant and a customer exchanging funds to purchase a product or service. It also means an individual presented their credit card or debit card to the clerk manually or submitted the details of the card online for a transaction to occur (Baarman, *et al.*, 2015) Whereas an Automatic teller machine (ATM) is a machine that provides cash withdrawal and another service which can be made by an individual's credit card or debit card. ATMs are also the front-line contact that banks and other savings organizations have with their customers.

## Conclusion

Bitcoins are a form of cryptocurrency units it is also known as digital currency or a form of electronic cash. Nowadays it is being used as an investment as the rates of Bitcoin increase compared to other currencies. Multi-chain is an open-source platform for users to create their Blockchains than can be used by different organizations for performing financial transactions. Off-chain is a transaction that occurs on a cryptocurrency, which moves the value outside of the blockchain. It modifies the blockchain and depends upon the blockchain to determine its validity. The transaction is usually a change from cryptocurrency units to another form of

currency units. A sidechain transaction is a separate blockchain that is attached to its initial blockchain using a two-way peg, which enables the interchangeability of assets at a pre-determined rate between the initial blockchain and the side chain. Sidechains are responsible for their security.

Because it necessitates a large number of resources, mining is one of the most significant aspects of the validation process. A condition for establishing distributed consensus is thought to exist in one of the open types of distributed ledgers. It is an important approach that requires a big amount of processing resources to finish calculations. As a result, participants must be persuaded to put money into the process. Concentration on the calculations is also critical. As a result, appropriate mining activity is needed. Bitcoin is supposed to be a reward for the first node to solve algorithmic problems and add new transactions to a new block.

The challenges associated with establishing a mining procedure might be beneficial in ensuring the process and activity. On the other hand, it is necessary to establish actions that will ensure that the procedure is effective. The organization must keep up with the practice of employing effective tools that allow people to participate in the process. On the other side, the organization must be able to confirm the procedure.

### **Future scope**

According to the findings of this study, Blockchain technology plays a role in the evolution of the economic and financial processes. Encrypting and decrypting data are made easier with the use of systematic key encryption. Using this technology, one

individual can encrypt personal data and prevent others from seeing it. This technique, on the other hand, aids in the encryption of plain text before it is turned into ciphertext. The benefit of this text is that data will be sent via a public channel securely. The internet or other public networks can be used as a public channel. The advanced encryption standard, on the other hand, is a well-known example of systematic key cryptography. This example is frequently used in communication and online commerce. This aids in the protection of data confidentiality during the work process. An outsider will be unable to comprehend the largest key length, employing this approach for secure online bank transactions is extremely safe and dependable.

### **References**

- [1]. Cucari, N., Lagasio, V., Lia, G. and Torriero, C., 2022. The impact of blockchain in banking processes: the Interbank Spunta case study. *Technology Analysis & Strategic Management*, 34(2), pp.138-150.
- [2]. Hernández-Nieves, E., García-Coria, J.A., Rodríguez-González, S. and Gil-González, A.B., 2021, April. Distributed Decision Blockchain-Secured Support System to Enhance Stock Market Investment Process. In *Sustainable Smart Cities and Territories International Conference* (pp. 48-60). Springer, Cham.
- [3]. Hoffmann, C.H., 2021. Blockchain Use Cases Revisited: Micro-Lending Solutions for Retail Banking and Financial Inclusion. *Journal of Systems Science and Information*, 9(1), pp.1-15.

- [4]. Khan, S.A.R., Godil, D.I., Jabbour, C.J.C., Shujaat, S., Razzaq, A. and Yu, Z., 2021. Green data analytics, blockchain technology for sustainable development, and sustainable supply chain practices: evidence from small and medium enterprises. *Annals of Operations Research*, pp.1-25.
- [5]. Kołodziej, M., 2021. Development Factors of Blockchain Technology Within Banking Sector. In *Contemporary Trends and Challenges in Finance* (pp. 125-138). Springer, Cham.
- [6]. Mora, H., Mendoza-Tello, J.C., Varela-Guzmán, E.G. and Szymanski, J., 2021. Blockchain technologies to address smart city and society challenges. *Computers in Human Behavior*, 122, p.106854.
- [7]. Mukherjee, A.A., Singh, R.K., Mishra, R. and Bag, S., 2021. Application of blockchain technology for sustainability development in agricultural supply chain: justification framework. *Operations Management Research*, pp.1-16.
- [8]. Nor, S.M., Abdul-Majid, M. and Esrati, S.N., 2021. The role of blockchain technology in enhancing Islamic social finance: the case of Zakah management in Malaysia. *foresight*.
- [9]. Petroni, B.C.A. and Pfitzner, M.S., 2021. A Framework of Blockchain Technology for Public Management in Brazil. In *Blockchain and the Public Sector* (pp. 151-174). Springer, Cham.
- [10]. Raja Santhi, A. and Muthuswamy, P., 2022. Influence of blockchain technology in manufacturing supply chain and logistics. *Logistics*, 6(1), p.15.
- [11]. Safiullin, M., Elshin, L. and Abdukaeva, A., 2021. Formalized assessment of the sensitivity of economic sectors to the use of blockchain technologies (on the example of the Russian Federation). In *E3S Web of Conferences* (Vol. 295, p. 01048). EDP Sciences.
- [12]. Siddik, M.N.A., Kabiraj, S., Hosen, M.E. and Miah, M.F., 2021. Blockchain technology and facilitation of international trade: An empirical analysis. *FIIB Business Review*, 10(3), pp.232-241.
- [13]. Tseng, C.T. and Shang, S.S., 2021. Exploring the sustainability of the intermediary role in blockchain. *Sustainability*, 13(4), p.1936.
- [14]. Tušek, B., Ježovita, A. and Halar, P., 2021. The importance and differences of analytical procedures' application for auditing blockchain technology between external and internal auditors in Croatia. *Economic Research-Ekonomska Istraživanja*, 34(1), pp.1385-1408.
- [15]. Yildizbasi, A., 2021. Blockchain and renewable energy: Integration challenges in circular economy era. *Renewable Energy*, 176, pp.183-197.