

Application of Blockchain in the World of Finance & Business

Dipanjan Bhowmick¹

MBA (1st Year)

Institute of Engineering & Management (IEM), Kolkata, India

Prof. Prasenjit Kundu²

Assistant Professor, Department of Management

Institute of Engineering & Management (IEM), Kolkata, India

Abstract

The purpose of this research was to explore specific ways in which blockchain can be used in the world of finance and business. Blockchain can be used for global inclusion in the domain of finance. It can be used to remove multiple intermediaries in businesses and also make transactions much more secure and trustworthy. Distributed ledger technology can be used in negotiating value, insurance, reducing transaction costs, contracting for future trading, and setting up new business models. The following establishes the application of blockchain in these fields to improve its existing state. Blockchain can also make central banks reconsider their system. Using smart contracts and autonomous agents transactions can be made smooth and secure for all parties involved.

Keywords: Blockchain, Cryptoasset, Smart Contracts, Finance, Business, Distributed Ledger, Autonomous Agents

1. Introduction

We have been using the internet for decades for the flow of data. But, it has not changed the way of doing business and as an economic tool and that is because the internet was designed to transfer information and not move assets. Assets such as money cannot be transferred from one person to another without a bank being involved in the process, or with online payment applications which act as the middlemen in the entire transaction. [1] Now, these banks and applications ask for our private data to confirm our identity, what we own, and what we owe. They help us transfer assets, settle payments in return for a fee they charge. However, the problem lies that our data being stored in their databases makes it vulnerable to hackers. This is where blockchain is the way forward in the financial market. It is a platform for exchanging digital assets from one person to another without the involvement of my middlemen such as banks, payment applications, or even the government. Hence, the entire system would be decentralized. Blockchain can be termed as a type of distributed database which stores information electronically in digital format. What makes it different is its decentralized approach to storing this data. This makes the data impossible to change, manipulate or hack.

The blockchain lets people transfer assets directly without going to a bank. Blockchain is simply an open-source code that anyone can download for free, run it and develop tools to manage transactions online. Since it is open to all, it has huge potential and brings out a large number of possibilities.

In financial services, blockchain is used as a decentralized ledger distributed across computer networks on the blockchain. It is a protocol and not a product. Anyone can view it as it is within a

network and not inside a single institution. It is highly encrypted and can be only accessed with a public and private key. All transactions that are conducted via the bitcoin network are verified and cleared and the data is stored within a block. These blocks are linked with each other creating a chain, each block refers to each other to be valid. The blocks store the time and the amount of exchange which prevents anyone from altering the ledger. [3] Hence, if anyone wants to steal a bitcoin they have to rewrite the entire history of the entire coin on the blockchain, which makes theft practically impossible as millions of people are already on the network hence no one can do it without being detected. This system goes much beyond the concept of double-entry bookkeeping. Blockchains can be programmed to keep a record of practically anything of value. Beyond the financial market, it can be used to keep records of votes, insurance ingredients of food, art, etc. It can do anything that can be expressed in code. However, this platform where everything can be done needs a ledger to keep a record of everything.

When transactions are taking place through the government or the bank, one or more of these factors are never met. With blockchain, no third party has to assure anyone about a secure transaction, the trust comes from the network itself. In the blockchain, not just the parties in the transaction but all parties in the system come to an agreement. After the transaction, a block is added which becomes permanent proof of the transaction in the history of the blockchain. This is what builds trust. Companies can experience a rise in the share market as more people will invest as there is a much more secure mode of transaction. People will be able to know whether businesses have genuine records or are cooking the books. The transparency that blockchain provides will itself help rebuild trust in businesses.

2. Background

The ability to see all aspects of transactions is a critical part of establishing strong markets and financial services. Without transparency, corruption and fraudulence will grow. A good example of this would be the fall of Enron in 2001. Enron falsified its balance sheet which led to one of the largest bankruptcy filings in the entire world of \$74 billion and 85,000 jobs. The company was not transparent to its stakeholders.

Distributed ledger technology can prevent these kinds of fraudulence. Transactions on the blockchain are highly transparent for both public and permissionless or private hand permission networks. The blockchain forces us to consider the public knowledge of transactions and contracts.

The transparency of centralized registries needs to be compared to the distributed ledgers on the blockchain. Recording transactions to ensure who is the current owner of an asset is among one of the features of the blockchain. The protocol works in a way that only allows the addition of records without changing the existing records. On the other hand when compared with centralized registries, which also contain the record of ownership which can be accessed by highly trusted parties who can record and modify data in them. Hence, our assets in banks or stocks are in the hands of a third party who we have to trust with no option in hand. Let's say we invest our money in a Systemic Investment Plan, can we know where the banks are investing our money or what is the actual return of the investment? The data is not transparent to the investor. Moreover, we have to rely on unreliable sources to keep the right track of our assets, and all we get in return as a guarantee is a certificate.

However, the distributed ledger system excludes the requirement of any intermediaries. [2] It stores data in every location in the network. In a person invests in stocks or SIPs or bonds, the blockchain allows them to see what actually is being done with their investments. All this happens in real-time. In simple words, centralized ledgers lack transparency and distributed ledgers are transparent due to their design choice.

2.1 Cryptoasset

Cryptoasset is any kind of digital asset that is created, managed, and traded on a blockchain. It uses cryptography and public ledger for regulation of unit creation, verifying transactions, and transaction security. Any kind of asset such as stocks, bonds, currencies, properties can be converted into digital form making them tradable through a blockchain. [5] Cryptoassets have caught the eye of investors, developers, organizations, governments, banks, and the public in general. There are seven types of cryptoassets: a) Cryptocurrencies b) Protocol Tokens c) Utility Tokens d) Security Tokens e) Natural Asset Tokens f) Crypto-Collectibles g) Crypto-fiat Currencies. Cryptoasset is a huge accomplishment as the first time in history assets have been converted from analog to digital form.

2.2 Smart Contracts

Contracts are a set of mutually agreeable rules between parties for a business transaction. Every kind of business agreement we get into is done using a contract, even buying something from a store required a receipt as proof of purchase which is a contractual agreement.

Smart Contracts are both useful in law and finance. It is coded into the system to imitate the coherence of an agreement. It is used to automate a contract. It uses algorithms and logic to determine if the agreements of the contract have been met. What makes smart contracts unique is they cannot be seized or stopped, or do not rely

on anyone else to execute them. Once it is executed on a blockchain no centralized authority can revoke it. All this can happen without the internet. Any medium of digital communication is enough for a smart contract to run. [6]

2.3 Initial Coin Offerings (ICOs)

Initial Coin Offerings or ICO is the new way for companies to raise capital through cryptocurrency. Companies create a digital token and sell it to investors in exchange for cash or cryptocurrency. It is the same as Initial Public Offerings or IPOs but happens on a blockchain. Currently, Ethereum is the most successful ICO in the world. It had raised \$20 million in 2014 through ICOs. ICOs are moving forward towards a way of distributed virtual exchange system.

2.4 Autonomous Agents & Distributed Autonomous Enterprise

There are multiple new businesses that might open in the future with the help of distributed networks. These networks happen to be self-managed hence reducing the requirement of employees. Smart contracts can be taken a step further by the creation of autonomous agents, which are not only capable of execution of terms and asset control but also capable of taking decisions on the user's behalf. This is where blockchain combines with artificial intelligence. Hence, in simple words, AI will not be controlled by a central system anywhere in the world, which increases the chances of it going out of hand, but it will be distributed over the blockchain as autonomous agents. It is basically software capable of learning and adapting present on the blockchain with its own wallet. They can be handy in negotiating resources for both buying and selling.

In the future a bunch of autonomous agents to join hands to form what is called the Distributed Autonomous Enterprise (DAE). These autonomous agents will hence operate based on their own will on the blockchain, forming their own rules for the enterprise, planning, and creating services for humans and other autonomous agents. Hence, it is a company running without any employees. People can actually own shares of these enterprises. Hence, these are companies with shareholders, money, and software only. This also gives shareholders higher power over everything else.

3. Objective

The goal of this research paper is to explore the various domains in which blockchain can be applied to improve the existing financial market. It also focuses on how new business models can be created through the blockchain for the transaction of assets and other valuable information.

The process in which smart contracts, DApps, autonomous agents, and the power of distributed ledger technology can be used as a whole to improve businesses by changing financial management and transactions.

4. Methodology

Blockchain holds enough potential to completely change the current financial sector for good. Blockchain can be better for cost, risk management, innovation, and adaptability in the financial market and improve operations. It can handle the moving, storing, and exchange of value, and automate the process of funding and investing, at the same time making them far more transparent.

4.1 Functions of the Financial Blockchain

There are eight core functions of the financial blockchain: [4]
4.1.1 Authenticating Identity and Account Balances: In today's world, we trust intermediaries to verify the identities and capabilities of parties with whom we transact. These intermediaries have access to our bank accounts and other

monetary data. Blockchain removes the requirement of going to these intermediaries for most transactions. The protocol verifies the identity of the parties and the assets that they claim to own and they are willing to trade in exchange for these assets.

4.1.2 Moving Value: The financial market moves money across the world every day making sure the same money is not spent twice. In the real world, money cannot be spent twice but it can be faked. However, that is not possible on a blockchain due to its hash function. Hence money on a blockchain cannot be duplicated and spent twice. Blockchains can be used to move anything of value such as currencies, bonds, equity, and other assets. The movement of assets can also be quicker and risk-free on a blockchain.

4.1.3 Storing Value: Financial institutions store assets for literally everyone from common citizens to organizations to governments. For an average person, banks store value in a savings account, safety deposits, or current accounts. For large corporations, banks store value in money market funds or treasury bills for ready liquidity. But with a blockchain individuals do not need to rely on banks. Blockchains can store value much more efficiently including risk-free financial assets. A blockchain can do the job of retail banks, brokerages, asset managers, etc.

4.1.4 Lending Value: Financial institutions help in issuing credit. Lending businesses perform credit scores and credit ratings. On a blockchain, debts can be cleared peer-to-peer. Lending can be done using smart contracts even with the help of autonomous agents. This will reduce costs and risks and improve the efficiency of transitions. If debts can be cleared peer-to-peer then stakes are higher for credit providers and regulators of loans.

4.1.5 Exchanging Value: Numerous trades of financial assets take place every day in the form of investing, hedging, and price arbitrage. Since blockchain connects everyone despite them not having a bank account, unbanked people can participate in wealth creation.

4.1.6 Funding and Investing: Investing in assets, companies, bonds, etc. gives individuals the chance to earn interest, dividends, etc. Entrepreneurs and businesses require funding from these investors to grow their businesses. Third parties like investment bankers, venture capitalists, lawyers are needed to complete the funding and investing processes, but blockchain automates most of these functions. It introduces new models such as security token offerings or initial coin offerings to carry out funding and investment. Blockchain changes the rules of asset management, stock exchange, crowdfunding.

4.1.7 Ensuring Value and Managing Risk: Individuals and companies insure their homes, health, other assets to protect themselves against risks. Financial markets use derivatives and other financial instruments to manage risks. These models of insuring and managing risks can be done on a blockchain using smart contracts. Also since the results are more rigid, they can be easily calculated making decision-making easy and risks more manageable. The use of derivatives becomes more transparent on a blockchain.

4.1.8 Accounting and Auditing: The traditional auditing practices will not be enough for speedy and complex modern finances. A distributed ledger backed by cryptography, updating itself in real-time using multiple nodes will make financial reporting much more transparent and reliable. Auditing will not be a cycle of every month but can be done at any point of time needed. This will allow stakeholders to scrutinize a corporation's financial actions at any given time.

4.2 Negotiating Value

In a blockchain with a huge number of participants negotiating on any given exchange is a benefit for both. Even when a person with no knowledge of an existing market enters into a deal in that market, he can be backed by autonomous agents who can bargain the value. It makes sure parties are receiving what they are paying for.

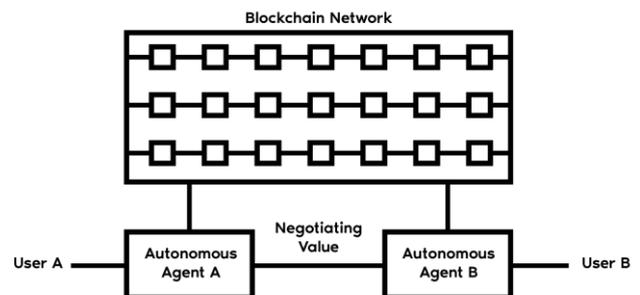
It can also be used to determine the value of the workforce, based on the experience and qualification of a person, which is stored on a blockchain, autonomous agents can calculate the amount that needs to be paid to a person for a given job. In such a case, people will not have the fear of getting underpaid, they will be paid for what their job is and their past experience in that domain of work. (Fig 4.1)

Fig. 4.1: Negotiating on a blockchain using autonomous agents by taking into consideration the entire population of data in the network.

4.3

Insurance

Insurance works in a way where companies take money from individuals and institutions in return for financial security in case of risks and reinvest the money just like banks do. But banks face less volatility in their deposits than insurers do in their premiums. Insurance is also important for lowering uncertainty between parties when conducting business. The blockchain world disrupts traditional insurance companies by eradicating most of their functions completely. An insurance company's claim processing system and insurance fraud detection can be taken over by a blockchain on a decentralized level reducing risks. Blockchain can be the specialized back-office business manager in any insurance company. Shifting from a centralized system to a decentralized system would prove beneficial for stakeholders. Firms can connect with each other with the help of APIs over the internet. Insurances will be conducted over a smart contract making the process much more efficient. Premium payments will be taken care of by smart



contracts as failure to pay them will cause the contract to terminate. So, both insurers and individuals or institutions being insured need to act according to the rules without fail. This makes decision-making easier with no room for error. Artificial Intelligence can be used to translate insurance policies into smart contract terms. The entire insurance industry can be transformed with the help of blockchain making it more reliable and risk-free for all parties.

Insurance dealings can also be done by autonomous agents of the two parties. Autonomous agents can negotiate the premium based on the sum assured to the insured party. The autonomous agents can look for data throughout the blockchain they are in to not just collect samples of data but the entire population of data and decide on the premium to be paid. The population of data is easy to access on a blockchain as it is systemically stored as timestamps in the history of the blockchain.

4.4 Transaction Costs and Structure of a Firm

The following economical transaction costs are reported already in the previous literature: [7]

4.4.1 Search Cost: The process of finding resources, information, and humans outside the company to execute something.

4.4.2 Cost of Coordination: The process of making these resources work together efficiently.

4.4.3 Contracting Cost: This is the process of trading, negotiating, and enforcing the agreements to make business happen. A firm would expand until and unless the cost of transaction inside the firm exceeded the cost of transaction outside the firm. The internet had exactly this type of an impact on firms initially. It dropped transaction costs in the open market. It dropped search costs through the process of browsing, coordination costs through emails, cloud computing, and social media, it also lowered the barriers of entering the market making contracts and contracting costs much lenient. Many companies outsourced customer servicing and accounting rather than doing it within the firm. The internet also made the supply chain much wider.

But right now, the internet is being used to collect user data to conduct business let alone incentivizing the user but also without taking their permission. The fate of this data is in the hands of corporations. The internet has in current times increased oligopolies and in some cases monopolies in the market. This has led to inefficient growth of firms and rising prices. Monopolies prove productive at an initial phase but become ineffective and inefficient in the long run.

The internal structure of a firm is based on a system of hierarchy. This means the top of the hierarchy has an extreme amount of power and is capable of taking away the power of ones lower to them in the hierarchy. This makes most information inside the firm less transparent. CEOs and high-order managers have enough power in their hands but add very little value compared to that. The people lower in the hierarchy however are stakeholders in a firm but are deprived of these stakes. It is not about equal stakes, but the percentage of stake that they deserve. The blockchain can completely change the hierarchy to a networked system guaranteeing everyone gets the stakes they deserve.

4.5 Blockchain on Search, Contracting & Coordinating

4.5.1 Search: Blockchain is a world wide ledger with a structured database and information. The only difference it has from the world wide web is that the data is reliable on the world wide ledger and this is because the data stored here has been verified and approved by nodes before being stored in a block. Transaction history, track records, and reputation scores are open and transparent to be viewed by all.

There are certain advantages of searching through a blockchain system, the first being privacy. The level of anonymity can be controlled by the user. Privacy can be protected by zero-knowledge proofs. Reputation systems can be used to assess the reliability of individuals or firms without disclosing too much about them. Queries can be used to learn about niche markets without giving up or invading the privacy of anyone. The second advantage is search can be multi-dimensional. The web generally provides searched data based on the time as an index for search. On the blockchain, data is searched based on sequence, that is, in the order, data was hashed. Hence, data is much more ordered. The third advantage is value. Blockchain search provides a more efficient search at a much lower cost. There is no cost of maintaining a central database, no cost of storing data, or no cost of managing data either.

Information on the internet is almost unlimited but unreliable, and information on the blockchain is scarce but reliable and untampered. On the blockchain data is permanent, it cannot be removed. It is a permanent stamp in the history of time. This gives data scientists permanent, untampered, and reliable data samples

to predict occurrences of the future. Market trends can be studied much more easily at the tip of the hand without doing extensive surveys. This will open more opportunities for research in a much shorter period of time.

4.5.2 Contracting: A contract is not a means of trading property or money or product or service, but a way of trading a promise. A contract not just determines an asset being traded but also conditions that come with it and also guarantees a smooth transfer of ownership. However, the process is not so smooth. Identifying breach of contracts and mechanisms to fulfill a contract are quite complex. There are times when force is also used as a means. Fraudulence or manipulation is also a possibility. Contracts are a means of laying out expectations in trade between parties but the execution of a contract is always difficult and sometimes flawed. Middlemen look into the legal framework of contracts to execute them among parties. This is an expensive and time-consuming process.

As we all know, this problem can be solved using smart contracts. If contracts are formed between two individuals or organizations directly, smart contracts can control the assets based on the terms of the contract. The movement of assets depends on the successful fulfillment of the contract from both ends. These contracts can be formed indirectly as well among autonomous agents or distributed autonomous enterprises, terms are set and executed through a smart contract. Blockchain also reduces contracting costs.

4.5.3 Coordination: There are two coordination systems, the first in the market is a system for decentralized allocation of resources. The second is a hierarchy, it is a system of principles for firms where centralized authority allocates resources.

Hierarchy systems have been criticized heavily in recent times due to their centralization of power, opaqueness, and scapegoating of employees by executives. Progressive and innovative managers are looking forward to building effective organizations and managerial structures. Decentralization and networking have led to higher employee satisfaction and retention. Companies are looking forward to collaborating with employees more rather than being a boss to them.

Agency costs have increased over time. It is the cost of making sure that everyone within a firm is acting in the interest of the firm. Agency costs at all levels of management can be reduced by smart contracts. It is clear that the blockchain can make people work together and collaborate within a firm without a hierarchy.

4.6 Blockchain for Share Market

Extensive trading takes place in the share market every day throughout the world. However, these trades are not fully secure and fast enough. They take time to settle as well.

4.6.1 Faster Settlement: Any trading that takes place in the share market generally takes T+2 days to settle. With blockchain, they can be settled within minutes after anyone buys or sells the stocks of a company. This can reduce a huge burden from brokers and brokerage firms.

4.6.2 Smart Contract for Future Trading: Blockchain can also be a great tool when it comes to future trading. Smart contracts can be used by the traders to ensure their return. As we know future traders have an obligation to go by the terms of the contract. However, it is possible for someone to violate the contract, if there is a possibility. This can be prevented by smart contracts. Smart contracts have access to the assets that are being traded, in case there is a violation of the contract, the assets can be automatically

dealt with by the smart contract. Hence, all parties in the trade can be assured of a secure transaction overall. (Fig 4.3)

Fig 4.3: Loans being given and the entire process can be viewed within the network through distributed ledgers and protected by smart contracts.

4.6.3 Valuation: Blockchain, as we know, keeps data transparent for all. When a company enters the stock market, be it to raise IPOs, in the case of a blockchain-based system, ICOs, the valuation of the company can be easily figured out using the blockchain. Auditing can be done by the blockchain in real-time, giving the investor an overview of the financial statements of the company at every minute.

4.7 Distributed Ledgers Over Central Banking

A central bank is an independent national financial authority that conducts and regulates monetary policies, banks, and provides other financial services. If a central bank is functioning properly, it can stabilize the currency, reduce unemployment, and lower inflation rates. Blockchain has forced central banks to reconsider their system.

Monetary policies are something that governments use to influence the economy and hold power over the people. Distributed ledgers however have an impact on this type of system. It can change the core principles on which a central bank works, and threaten its monopoly on money. The distributed ledger technology distributes the power to control the money in the hands of everyone who uses that money. Hence, one person's or a group's decisions cannot move monetary policies and anyone can opt-out of this system without affecting the entire network. However, this change needs

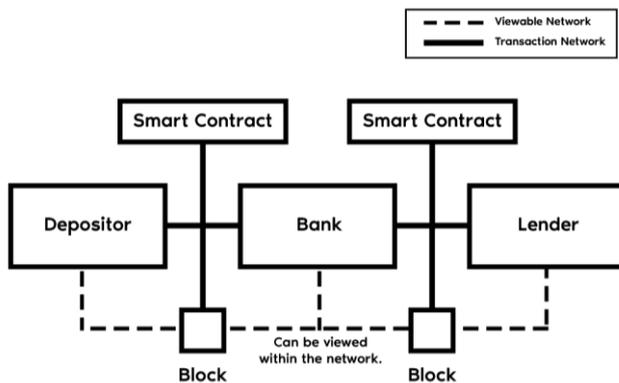
number of depositors decide to withdraw the money that can collapse the entire financial system. This can lead to a credit crunch in an economic crisis. It is extremely difficult to pull back the loans from the lenders. But, in a distributed ledger, money lent as a loan can be tracked by the owner of the money keeping the whole system transparent. Pulling back on money is also extremely simple as assets are controlled by a smart contract. (Fig 4.2)

Eventually, the world will adapt to fiat cryptocurrencies, and the governments who reject them will be far behind the countries whose governments accepted them. The governments who accept and embrace this technology will have an upper hand in the future in terms of economic and financial benefits.

Eventually, the world will adapt to fiat cryptocurrencies, and the governments who reject them will be far behind the countries whose governments accepted them. The governments who accept and embrace this technology will have an upper hand in the future in terms of economic and financial benefits.

4.8 Business-Models using Blockchain

4.8.1 Blockchain Cooperative: These are businesses that are formed when people come together to address common requirements. The best examples of such business are Uber. These are businesses that collaborate with car owners and drivers to serve the needs of their customers. They charge an amount which is then distributed by the company, the car owner, and the driver. More examples of such companies are Airbnb, Zipcar, etc. The

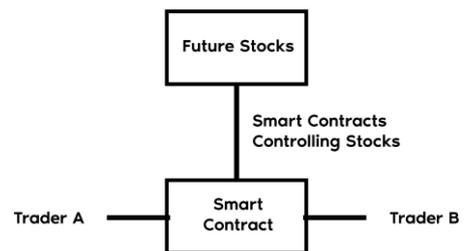


to be gradual or it can destabilize the entire system. It is a time taking and slow process.

However, there is a systemic risk involved on an individual level where people would decide to pull back on government-issued currency and opt for global corporate coins. This might not be a threat to developed countries where most people have a bank account but to developing countries where there are people who do not have a bank account. In these countries, people opting for cryptocurrencies can be seen as a threat to the government as it would mean less power in the hands of the center. People will opt for cryptocurrencies more as it is much easy to acquire than opening a bank account. Radical governments might take extreme measures to stop people from operating on a blockchain.

Fig 4.2: Smart contract controlling the stocks involved in a future trade.

It is estimated that banks lend out 10 times more money than they have deposits, which is good for economic growth, but if a large



entire network system that Uber or these companies form among its stakeholders can be completely replaced by blockchain. This helps build a true sharing economy between individuals and organizations by cooperating with each other.

4.8.2 Peer-To-Peer Production: These are to manage open source entities like Wikipedia. Blockchain can work on the efficiency of these entities and reward the peers who contribute through their incentive system and reputation building on the blockchain. It is the same way as Linux, no one owns it but it is the most important operating system in the world. Peer production may also take place on private platforms such as Reddit. The users create the content within the platform but do not own the site. These platforms can be managed by blockchain. Peers can share their value creation with corporates and get paid in return through smart contracts. Financial incentives can improve the quality of value creation without censorship or a centralized body.

4.8.3 Metering Economy: This type of business gives out excess recourses of a user in exchange for payment. Wifi hotspots, computer processing power, solar power, etc. can be used by other systems and become a source of income. This system will be managed by autonomous agents who will negotiate with other autonomous agents who need the resources and generate a fair value that benefits both parties. The entire transaction will take place through a blockchain making it secure.

4.8.4 Platform Builders: This type of marketplace where people drop their ideas and innovations to be used by others with proper consent and payment. The rights of the originators of the ideas will be protected by the smart contract. Hence, a platform where people can pitch their business ideas and ask for funding without having to worry about their idea being stolen.

4.8.5 Animating the Physical World: This implies creating a version of the physical world inside a blockchain which creates a virtual world based on the real world. The things that happen in the real world are replicated in the virtual world automatically using data received. This can be used as a real-time map for tracking supply chains when it comes to the delivery of goods and services. In fact, the origin of certain products can be tracked here through smart database management ensuring safety and quality.

4.8.6 Enterprise Collaborators: Softwares that help in collaboration with enterprises and individuals have been there for a long time. Best examples of this are Microsoft Outlook, IBM Connections, Salesforce Chatter, etc. Blockchain helps in doing the same but in a decentralized network. Blockchain can do the job of all these software through a digital ID and a wallet. The wallet holds valuables like professional data, money, and other assets and the user is in control of it, not a third party. The benefit of this open-source collaboration is you get paid for your information and not a third party. A good example of this is Facebook, which collects your data, sells it to enterprises who think of you as a potential customer, and uses this data to generate ads. But your data was sold yet you did not receive anything in return. With a blockchain, you decide whether you want to sell your data to generate ads and you get paid for it, not Facebook. Hence, you collaborate directly with the enterprise and not a middleman.

4.8.7 Payments, Attribution, and Licensing
Royalty payments of intellectual property can be passed to the creators and stakeholders timely using smart contracts. Royalty payments are hard to track and extremely difficult to collect. By monitoring the usage of intellectual property the royalty can be decided upon and collected on the blockchain within seconds. The existing checkers of royalty hence need to update their business models to keep up with the blockchain technology. They can act as auditors of metadata or tokenize the metadata. Copyrighting, registering, and licensing one's creation can be done on a global scale on a blockchain. When an artist creates a digital file, the blockchain generates a hash of that file making it unique on the blockchain. Hash is generally used for bitcoins to make them distinctive, in this case, they are being used to make the creations unique by giving them an identity. Hence, streaming content would mean directly paying artists. Intermediaries can only channel work for a small fee but never own the work of an artist, and even if they do, the artist will always have stakes of their work which will generate payments for every time someone uses their creation, creating a distribution of ownership.

5. Conclusion

Blockchain can change the way business is done. It can make financing of businesses much simpler and speed up the process. Cross-border collaboration can be much more simplified. Hubs of blockchain innovation are emerging from all over the world, changing business and transactions. ICOs and Security Token Offering can change the face of venture capitalism altogether. The blockchain supports and promotes:

a) An environment supportive of entrepreneurship.

- b) A community of partners and customers.
- c) A strong investment climate.
- d) Risk management.
- e) Fair regulatory environment.
- f) Protecting stakeholders' interests.

Blockchain is a game-changer in the field of finance. It can be used for asset management, asset transfer, speedy transactions, auditing, and the list goes on, and all this can be done both securely and in a transparent manner making blockchain a thing of the future. Blockchain can bank the unbanked as proximity is not an issue. People throughout the world can participate in a network that is not controlled by any intermediary or is stored in a single location making it the ultimate security option that is known till date.

6. References

- [1] Alex Tapscott and Don Tapscott (2016) *Blockchain Revolution: How the Technology Behind Bitcoin Is Changing Money, Business, and the World*. ISBN- 9780241237878, 0241237874
- [2] Dusko Knezevic (2018) *Impact of Blockchain Technology Platform in Changing the Financial Sector and Other Industries*. Vol. 14, No. 1, 109-120
- [3] Efthymios Chondrogiannis, Vassiliki Andronikou, Efstathios Karanastasis, Antonis Litke, Theodora Varvarigou (2022) *Using blockchain and semantic web technologies for the implementation of smart contracts between individuals and health insurance organizations*. Volume 3, Issue 2, June 2022, 100049
- [4] Jayanth Rama Varma (2019) *Blockchain in Finance*. VOLUME 44 • ISSUE 1 • JANUARY-MARCH 2019
- [5] Matt Hougan and David Lawant (2021) *Cryptoassets: The Guide to Bitcoin, Blockchain, and Cryptocurrency for Investment Professionals*. ISBN 978-1-952927-08-9
- [6] Khan, S.N., Loukil, F., Ghedira-Guegan, C. et al. *Blockchain smart contracts: Applications, challenges, and future trends*. Peer-to-Peer Netw. Appl. 14, 2901–2925 (2021).
- [7] Oliver E. Williamson, and Sidney G. Winter (1993) *The Nature of the Firm: Origins, Evolution, and Development*. Includes 1991 Nobel Lecture by R.H. Coase. Oxford University Press. ISBN- 9780195083569