| RESEARCH ARTICLE

Impact of Blockchain and Big data on Global Economy

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| ABSTRACT

Blockchain technology is making a huge difference in the global technology system where it proves better security than traditional system, gaining trust among users for transparency and solving many problems which the current economy is facing. Transaction being done via decentralized network has gasps attractions of many industries including shipping, healthcare and supply chain with less time and accuracy. The decentralized Finance system is solving problems including traditional banking accessibility in remote regions where banks are not available for transactions, Decentralized Finance (DeFi) which reduces cost of infrastructure and mankind by providing direct access to their asset and trade via internet. Although there are governments policies and regulations that are still not clear amongst many countries, even technology is for good but not able to use it due to limited knowledge and guidance. This paper explores how the global economy can be put in such a situation where new technology can not only help government bodies to tackle traditional finance challenges but also mitigate risks, tackle cybercrimes and increase transparency so that everyone across globe can feel secure about innovation in blockchain. This paper will also do analysis of how big data is making a difference in global economy and how government policies are affecting big data and blockchain technology.

1. Introduction

Blockchain is next generation internet, it is a decentralized network, where transactions are stored in blocks and cannot be changed. The logical components of blockchain consist of virtual machines, Distributed ledgers, assets, nodes, and algorithms (Geroni, 2023).

Node: Node is internet connected application that is connected to the blockchain network. Once users download the blockchain application and connect network they can participate in the blockchain network.

1.1 Distributed Ledger

Second main component of blockchain is distributed ledger. A ledger is considered any transaction or files that the user use to perform a transaction. Once the user performs any form of transaction distributed ledger is available on the network. It is also considered a shared database where everyone can see it on the blockchain. The most interesting thing about distributed ledger is decentralization. It provided more transparency to users on the blockchain. If anyone wants to change the transaction, that block of transaction needs to update on an entire distributed network. If everyone on the network agrees to change then only it can be changed otherwise it is impossible to change as it comes with a timestamp and cryptographic signature.

1.2 Consensus Algorithm

the algorithm is the main character in identifying and verifying transactions on the blockchain network. Different types of blockchain have different algorithm deployed to verify transaction e.g., Ethereum has a Proof of Work algorithm where the algorithm deployed by miners verify the transaction and approve it for adding it to the blockchain database.

Virtual Machine: the last component of the blockchain network is the Virtual machine. The Virtual machine is where all node applications can be downloaded and once connected to the internet it is available to perform transactions and become part of the blockchain ecosystem.

2. How Blockchain is affecting the global economy

Blockchain is becoming a disruptive industry, and it will change everything from banking, security, identity, and the way central entity controls. Blockchain is providing users with borderless transactions without going through complex procedures. From an economic standpoint, it helps in reducing the verification process for any transaction and operations for using middleware applications. This cost reduction can be seen as decentralized node operations and algorithms helping users achieve more transparency and trust as there is no central entity controlling you. While there is a great benefit of blockchain technologies but there are some disadvantages as well, e.g., people can use this technology to fund terrorist organizations or do money laundering (Catalini, 2018). One of the great advantages of blockchain over the global economy is users can have full control of their assets. Multiple industries have started using blockchain technology. The shipping industry has implemented better tracking of shipments, and it provides accurate details about package information. With the use of IOT devices now, companies are tracking fresh meat and vegetable details from farm to table, this IOT device are integrated with blockchain to track at what temperature it was loaded into a truck and what was the temperature during traveling to destination. Blockchain is not limited to just the banking industry, but it will also impact the way the healthcare industry works globally. It will also impact how ownership of lands was used to track using hard copies, but now can be transferred into blockchain so that no one can claim falsely. Biometric and personal data can be stored in blockchain, and users can own that using a unique key. Creators across the world can use blockchain to own the content they have created so no one can claim that and use it without permission. Many countries have started adopting blockchain to revolutionize their economy. Countries are working together to form regulations based on blockchain transactions and making it legal to use it. Many banking industries have started direct payment methods for employees to use blockchain for salary.

2.1 Future of Blockchain

Looking at the current market, I could only get positive feelings about the future of blockchain. Recently Ripple has won a case against SEC and Ripple is the most banking-friendly cryptography for cross-border transactions. Many fintech companies have started ETF-based retirement funds and companies have shown interest in it. Artists are utilizing blockchain for creating content to own and this makes a big shift in the entertainment industry. Governments around the world must come together to make it legal with regulations and monitoring for any kind of unusual activities.

3. Big Data

Big Data is considered a huge amount of dataset with different formats e.g., structured, unstructured, or semi-structured data, and these datasets are fed into different tools for transforming into meaningful business use cases (Schroer, 2022)

3.1 Demand for Big data

At FedEx, we have an ample amount of shipping and customer data. These data are stored in either a structural database or an unstructured database. Before the existence of unstructured databases, most of the industry were rely on structural databases and so, historical data are stored in a database system with table format. In recent years uses of unstructured database systems have been increased. Most companies are using cloud-based technology to store unstructured data e.g., at FedEx, we are using storage account blob to store different types of data. once the Data is stored it needs to feed for transformation. There are thousands of services available on the cloud, where you can link the source database and use ETL tools for the transformation of the dataset. As the datasets are increasing it becomes challenging for data engineers to transform them. Sometimes the challenge occurs when datatypes are not compatible or unknown to users and tools, they need to convert it to meaningful format to transform. Big data unless transformed into meaningful information and knowledge related to business is of no use. The organization has to extract valuable information from bid data using analytical tools. This will help the organization in my ways in identifying the business failure parameters and improving them. Big data can also help in identifying any business risks related to its services and how to improve that. The most organization has streamlined process on how to store data and extract it using automation. Data architecture plays an important role in laying out big data resources and their store procedures, how to retrieve them, and analyzing them for further business-driven decisions. Data Engineers need to work on algorithms that improve the ETL/ELT process that can help make the intelligent output of it (*Big Data: What It Is and Why It Matters*, n.d.)

3.2 How Big Data Affects a Global Economy

The global economy is considered as an organization operating in multiple countries and its impact in respective countries which makes the global economy. According to CA Technology research big data is helping drive economic growth. 90 percent believe that it helps drive business more effectively at a global scale. While encountering challenges along with big data use, they are getting help from consulting firms or third parties who have experience in utilizing big data technologies. "A report from McKinsey Global Institute estimates that Big Data could generate an additional $3 trillion in value every year in just seven industries. Of this, $1.3 trillion would benefit the United States" (Kennedy, n.d.). Advertising industries are utilizing maximum big data technologies to drive their business product and influence it for buying those by using social media platforms. Big data is a great help to identify global warming problems and carbon emission results. Lots of research and findings have been made using different data sets to identify global warming issues and the government has started considering the serious outcome of big data analysis. Overall Big data has made a great impact on all sorts of industries from farming, healthcare, government, weather, global warming, and many more.

4. Government and Policies

The organization drives the local economy and as it grows internationally it drives the global economy. To operate locally, the organization needs to adhere to government policies and regulations. The organization needs to make sure they comply with the regulations to operate with full integrity and trust. Government and organization should work hand in hand to successfully drive the economy. Different models are used to perform policy audits on organizations. The US government has a huge set of policies that widely make an impact on driving small to large businesses. Fiscal and monetary policy in the USA is a driving factor in economic growth. The Role of the government is to make unbiased decisions for any organization for better growth of technology and industry. The economy is considered an influential character in choosing government (Gaubert et al., 2021)

4.1 Monetary Policy

Monetary policies help government track the economic growth and funding for startups or research projects. Sometimes reducing the interest rest for loan help new startup to survive and do business. Monetary policy also helps the Federal reserve to buy and sell government security for funds. When the Federal government buys funds from the bank, the money supply increases, and that money can be used for economic growth.

4.2 Fiscal Policy

Government has the right to change tax propositions to collect more funds from organizations. "Government identifies whether or not it wants to spend more money than it anticipates collecting" (Team, 2023).
When one operating entity starts operating in multiple countries, they are legally starting trade between two countries and so the company should keep in mind about local policies where they operate. International trade and policies are complex when it comes to import and export. US policy and lawmakers have restricted trade with certain countries including Iran, Iraq, and China. Keeping in mind if a company wants to operate, it should comply with US policies. Unfair practices of operating a business may get security from the government, and it may result in penalties and jail. All countries have started considering data privacy and so it is good to have governance policies in place for any companies operating outside of their respective country. The study has revealed that due to bad practice, $48 billion have been theft from businesses and users. "The U.S. Government has been a failure in consistently ensuring that trade agreements with nations like China have been "fair" as well as "free." As the government keeps changing in certain years, it is good to have certain policies to revisit and make it strict for businesses to decrease the theft of intellectual property.

5. Conclusion

This research paper focuses on the impact of new technologies on the global economy. Government plays a crucial role in protecting the country with the highest policy implementation but at the same time new technology evolves and government needs to study those technology and its practice to make it legal for economic growth. Big data is considered an important asset for the organization as well as the country's growth. Big data drives the economy in the right direction but at the same time, big data needs to comply with policies to operate smoothly. While one technology is stabilized and gets confidence from the government to operate, another technology emerges, and it keeps going. Blockchain technology has started revolutionizing the way data are shared on the internet, looking at the current research and implementation, blockchain looks promising for providing data protection for the government but at the same time, there are risks associated with it. Blockchain is a public network and so any transaction made by anyone can is not restricted and so the risk associated with it has increased. Recently US government have started auditing all blockchain-operating companies and their trade system to make sure they operate

within government rules and regulation. Overall, this research paper briefs about how government and organizations can work together to form better economic growth and provide their people benefits it.

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