

Blockchain in Enterprise Computing

James Ash

Wentworth Institute of Technology

Author Note

First paragraph: History of Blockchain

Second paragraph: Immutability and Its Significance

Third paragraph: Blockchain Application in Different Industries

Fourth paragraph: Blockchain Governance

Blockchain technology, which was first introduced as a core component of Bitcoin, has grown beyond its initial application and is now affecting many different industries. It is characterized by its decentralized nature which offers new and better ways of conducting trustless transactions and managing data in a secure method.

History of Blockchain

Blockchain technology was created in 2008 by a person or a group of people using the pseudonym Satoshi Nakamoto. Nakamoto's plan was to create a digital currency, Bitcoin, that would be based on the blockchain to validate the transactions without the need of central authorities such as banks (Nakamoto, 2008). The first transaction with Bitcoin took place in 2009 and by 2011, blockchain was no longer limited to cryptocurrency. The technology's potential was recognized by industries looking to use its secure and transparent principles to other areas such as supply chains, real estate, and more. Over the years, other blockchain platforms have also emerged including the Ethereum platform that enabled the creation of decentralized applications to expand its use.

Immutability and Its Significance

Immutability is the ability of not being able to change or delete the information that has been entered in the blockchain. This is a core feature of the blockchain technology, with its foundation on cryptographic hashing algorithms and the consensus mechanisms that are used in validating the transactions. Each time a transaction is made, it is included in a block and once the block is appended to the chain, altering that block would necessitate the recompute of all succeeding blocks which is practically impossible for large networks (Tapscott & Tapscott,

2017). The concept of immutability is important because it guarantees the accuracy and integrity of data and prevents fraud. For companies that require accurate and reliable records (for instance, banks, governments), immutability provides a high level of confidence in the information stored in the system.

Blockchain Application in Different Industries

Blockchain technology has found its application in almost every aspect of life. In finance, blockchain enables P2P transfers that do not involve third parties and are cheaper. For instance, Ripple's blockchain can facilitate cross-border payments in a matter of minutes and at low costs. In supply chain management, companies including IBM are using blockchain technology to assist in tracking the history of the goods, thus increasing the visibility and authenticity of the goods (IBM, 2023). In the healthcare sector, blockchain enhances the security of patient's information and thus ensures that different healthcare professionals have access to the information while protecting the patient's identity. These examples show how blockchain can be used in different fields and how it can become a significant game changer.

Blockchain in Enterprise Computing

Blockchain is important in enterprise computing and offers organizations a way to enhance data security, improve performance, and decrease costs. In enterprises, blockchain can improve activities like contract management, supply chain management and payment management. Its decentralized nature makes it robust and fail-proof owing to the absence of a single point of failure. Also, smart contracts that are self-executing, and their terms are written into the code, minimize the risks that come with human intervention. This is especially useful in the banking and insurance industries where time and accuracy are critical. The ability of the

technology to provide an unalterable and secure record is also crucial for other uses such as fighting fraud and regulatory compliance (Tapscott & Tapscott, 2017).

Blockchain Governance

Blockchain technology is controlled by a decentralized community based model. There is no central body that controls the development and execution of the technology, although many organizations work to improve it. The major actors include the Ethereum Foundation, the Hyperledger Project (a consortium of organizations aiming to create free software blockchain frameworks), and the International Blockchain Business Council. In most cases, governance of the blockchain is done through code, forums, and decision-making. Nevertheless, issues such as scalability, interoperability, and standard regulation are still present and need further cooperation from different representatives of the industry (Hyperledger, 2022).

References

Buterin, V. (2014). *Ethereum white paper*. Ethereum Foundation. Retrieved from <https://ethereum.org/en/whitepaper/>

Hyperledger. (2022). *Hyperledger projects*. Retrieved from <https://www.hyperledger.org/projects>

IBM. (2023). *IBM Blockchain for supply chain*. Retrieved from <https://www.ibm.com/blockchain/supply-chain>

Tapscott, D., & Tapscott, A. (2017). *Blockchain revolution: How the technology behind bitcoin and other cryptocurrencies is changing the world*. Penguin.

Nakamoto, S. (2008). *Bitcoin: A peer-to-peer electronic cash system*. Retrieved from <https://bitcoin.org/bitcoin.pdf>