

WHAT IS TYPE OF BLOCKCHAIN? AND HOW TO RELEVANT IN PRIVATE SECTOR?

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ABSTRACT

A blockchain is a revolutionary system that connects computer networks in a decentralized and distributed manner. Blockchain allows the process of current transactions to be peer-to-peer (P2P) without relying on a single server. Once entered, information can never be erased. The blockchain contains a certain and verifiable record of every single transaction ever made. This study evaluated the development of research publications in the implementation process and future trend of Blockchain Technology. Private blockchains are often referred to as 'permissioned' blockchains. Unlike public blockchains, where anyone can download the software, form a node, view the ledger and interact with the blockchain, private blockchains are often run and operated by an entity (the "trusted intermediary"). As the trusted intermediary is in charge of the running of the blockchain it will control who can access the private blockchain and may also control the type of access rights each participant has. For example, some participants may be restricted to viewing (some or all of) the data on the ledger, whereas others may also have permission to submit new transactions for recording on the blockchain. The aim of this study is to analyze the characteristics of private blockchain.

Keywords: Blockchain, database, technology, private

1. Introduction

A private blockchain is one of the popular types of blockchain technology at the moment. Basically, there are four types of blockchain technology – Public, Private, Hybrid, and Consortium (Al-Sumaidae et al., 2023). Based on how each of their characteristics is, companies use them in their own solutions.. A major theoretical issue in blockchain is research concerns the dialectical relationship between the openness of a digital transaction and its purported anonymity. A framework for correctly addressing this relationship must provide a way to ensure the benefits of both without actually sacrificing the accuracy of either (Ghazal et al., 2022). How the public-private and its more general form of multisig encryption mechanisms could theoretically address this challenge is a research question of primary importance. A considerable amount of interest in IS research has already concentrated on issues of open source code, systems, as well as computational platforms. How the openness inherent in the digital cryptocurrency and its underlying blockchain technology is adapted to the domain of openness research in IS is a matter of high theoretical interest to IS researchers.

A related issue whose implications are not entirely clear at this time is the fundamental governance structure of the open-source software development communities that are responsible for implementing and enhancing the blockchain technology

(Lindman et al., 2017). This issue is popularly known as the “governance crisis problem.”

There are 4 (four) different types of blockchain technology :

a. Public Blockchain

The first type of blockchain technology is public blockchain. This is where cryptocurrency like Bitcoin originated and helped to popularize distributed ledger technology (DLT). It removes the problems that come with centralization, including less security and transparency. DLT doesn't store information in any one place, instead distributing it across a peer-to-peer network. Its decentralized nature requires some method for verifying the authenticity of data. That method is a consensus algorithm whereby participants in the blockchain reach agreement on the current state of the ledger. Proof of work (PoW) and proof of stake (PoS) are two common consensus methods.

b. Private Blockchain

A blockchain network that works in a restrictive environment like a closed network, or that is under the control of a single entity, is a private blockchain. While it operates like a public blockchain network in the sense that it uses peer-to-peer connections and decentralization, this type of blockchain is on a much smaller scale. Instead of just anyone being able to join and provide computing power, private blockchains typically are operated on a small network inside a company or organization. They're also known as permissioned blockchains or enterprise blockchains.

c. Hybrid Blockchain

A type of blockchain technology that combines elements of both private and public blockchain. It lets organizations set up a private, permission-based system alongside a public permissionless system, allowing them to control who can access specific data stored in the blockchain, and what data will be opened up publicly.

d. Consortium Blockchain

The fourth type of blockchain, consortium blockchain, also known as a federated blockchain, is similar to a hybrid blockchain in that it has private and public blockchain features. But it's different in that multiple organizational members collaborate on a decentralized network. Essentially, a consortium blockchain is a private blockchain with limited access to a particular group, eliminating the risks that come with just one entity controlling the network on a private blockchain.

In a consortium blockchain, the consensus procedures are controlled by preset nodes. It has a validator node that initiates, receives and validates transactions. Member nodes can receive or initiate transactions.

2. Literature Review

Sabry et al. (2019) did a research titled as The Road to the Blockchain Technology : Concept and Types concluded that blockchain is highly appraised for its decentralized infrastructure and P2P nature. However, many blockchain researchers have focused on Bitcoin only and have classified blockchain into private and public. However, blockchain could be applied to many fields beyond only cryptocurrency. Blockchain realizes trust and security by using software programs to verify and validate consensus in new infrastructure.

Alwi et al. (2020) concluded that blockchain specifications, the node specifications of the blockchain and the specification for authentication protocol for adding blocks.

From the planned design of the blockchain it is hoped that a baby step infrastructure blockchain can be made which can be directly used for various purposes. This generic infrastructure is intended for the development of the private blockchain and blockchain consortium. Some verification protocols are made different from blockchain in general which is public because it is not intended as a cryptocurrency infrastructure. But it is made more generic for a variety of versatile purposes for the implementation of blockchain technology on various problems.

Xu et al (2019) did research about a systematic review of blockchain concluded that blockchain will play a role in many fields. Therefore, the issues related to commercial applications of blockchain are critical for both academic and social practice. The first important research direction is understanding the mechanisms through which blockchain influences corporate and market efficiency. The second potential research direction is privacy protection and security issues. The third relates to how to manage digital currencies and how to regulate the cryptocurrency market. The fourth potential research direction is how to deeply integrate blockchain technology and fintech. If each industry has its own blockchain system, then researchers and developers must discover new ways to exchange data. This is the key to achieving the Internet of Value. Thus, cross-chain technology will become an increasingly important topic as time goes on. Businesses can benefit considerably from blockchain technology. Therefore, we suggest that the application of blockchain be taken into consideration when businesses have the following requirements: accounting settlement and crowdfunding, data storage and sharing, supply chain management, and smart trading.

3. Method

The study used parallel mediators of perceived usefulness (extrinsic motivation) and perceived ease of use (intrinsic motivation) to measure behavioral intention to use. There have more business projects in the world. Road Construction, building factories, and starting a new software company can get some examples for the public as well as private sector projects. This platform is consisting of three smart contracts that can handle crowdfunding without the need for a third entity.

- Project_Smartcontract: Include all terms and conditions to start the funding process. In here defined the period to invest money.
- Voting_Smart contract: In the voting smart contract determine all rules and conditions as well as data in the voting process. Each member can vote. The vote is weighted based on the invested money of members.
- Profit_Smart contract: Project Smart Contract includes all conditions for profit sharing among the people.

4. Results and Discussion

The results reveal that partial mediation exists between blockchain-based collaboration (private and public) and behavioral intention to use. For perceived usefulness, a stronger mediating effect was found between private blockchain-based collaboration and behavioral intention to use. For perceived ease of use, a stronger mediating effect was found between public blockchain-based collaboration and behavioral intention to use.

Below is an analysis of the characteristics of blockchain based on the primary and secondary research undertaken:

<p style="text-align: center;">STRENGTHS</p> <p>Data immutability & encryption Decentralized control - Has applications in distributed governance No hidden transaction charges like in current legal tenders Worldwide accessibility Transparency and selective visibility No SPOF (Single Point of Failure) Trust - Non reputability Privacy and security</p>	<p style="text-align: center;">WEAKNESSES</p> <p>Compliance issues Data backup stored at different locations since it is decentralized No possibility of linking between 2 block chains currently</p>
<p style="text-align: center;">OPPORTUNITIES</p> <p>Irreversibility of blockchain can be overcome by programming the business layer to create reversibility or by keeping data backup in RDBMS</p>	<p style="text-align: center;">THREATS</p> <p>Government regulations and policies Quantum computing could be a potential replacement as it can Data governance - blockchain will ensure authenticity of the data fed in Scalability is currently an issue which is being resolved with every upgrade. Bitcoin transaction takes up to 30mins and Ethereum up to 10-15mins currently. process transactions faster IOTA Tangle which uses DAG (Direct Acyclic Graph) instead of blockchain There is a mass adoption of blockchain by everyone</p>

5. Conclusion

There are some advantages of private blockchain such as, the controlling organization sets permission levels, security, authorizations and accessibility. For example, an organization setting up a private blockchain network can determine which nodes can view, add or change data. It can also prevent third parties from accessing certain information. "You can think of private blockchains as being the intranet, while the public blockchains are more like the internet," Godefroy said. Because they're limited in size, private blockchains can be very fast and can process transactions much more quickly than public blockchains. Disadvantages. The disadvantages of private blockchains include the controversial claim that they aren't true blockchains, since the core philosophy of blockchain is decentralization. It's also more difficult to fully achieve trust in the information, since centralized nodes determine what is valid. The small number of nodes can also mean less security. If a few nodes go rogue, the consensus method can be compromised. Additionally, the source code from private blockchains is often proprietary and closed. Users can't independently audit or confirm it, which can lead to less security. There is no anonymity on a private blockchain, either. Use cases. The speed of private blockchains makes them ideal for cases where the blockchain needs to be cryptographically secure but the controlling entity doesn't want the information to be accessed by the public. James Godefroy photo James Godefroy "For example, companies may choose to take advantage of blockchain technology while not giving up their competitive

advantage to third parties. They can use private blockchains for trade secret management, for auditing," Godefroy said. Other use cases for private blockchain include supply chain management, asset ownership and internal voting.

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