A literature survey on public blockchain technology for Cryptocurrency

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ABSTRACT

Blockchain and cryptocurrencies have emerged as revolutionary technologies that have garnered substantial interest in the past few years. A blockchain functions as a distributed and transparent ledger, facilitating secure transactions without the requirement of intermediaries. Digital assets like Bitcoin and Ethereum are examples of cryptocurrencies, leveraging blockchain technology to enable secure and unrestricted transactions. These innovations have the potential to revolutionize industries such as finance, supply chain management, and healthcare. However, challenges such as regulatory concerns and scalability issues must be addressed for their widespread adoption. Overall, blockchain and cryptocurrencies offer new opportunities for innovation and financial inclusion.

Key words: Decentralized, transparent ledger, powers crypto currencies, scalability, comparative framework.

1. INTRODUCTION

A decentralized public ledger called blockchain, a revolutionary technology, securely maintains records over a network of connected computers [1]. Thanks to its ability to offer security, immutability, and transparency, blockchain has gained worldwide acceptance and acknowledgment [1]. By eliminating intermediaries and providing a tamper-resistant platform, blockchain fosters efficiency and trust across various industries. The rise of cryptocurrencies like Bitcoin, which seek to establish a decentralized environment where transactions and data are not under the jurisdiction of a single central authority, is evidence of their success [2]. The decentralized structure of blockchain has triggered a significant transformation in the perception of trust, paving the way for diverse applications beyond the realm of digital currency.

Blockchain technology's quick growth has been driven by its capacity to find workable solutions to persistent issues that were previously impractical [4]. The adoption of blockchain technology in international payments and financial transactions has revolutionized the way we engage in business. This innovative solution enables faster and more secure transactions, reduces costs, and enhances transparency [1]. Experts predict that blockchain's impact on the global economy will be remarkable, with an estimated commercial value of $176 billion by 2025 and an astonishing $3.1 trillion by 2030 [1]. The understanding that blockchain technology has the power to revolutionize businesses by simplifying procedures, boosting security, and encouraging dependence on a decentralized way is what is driving this rise.

The variety of blockchain implementations contributes to the ecosystem's expansion [3]. While Bitcoin remains the most renowned and extensively utilized blockchain, numerous other implementations exist to cater to various functions, handling strategies, and performance requirements [2],[3]. Constructing applications based on blockchain necessitates meticulous consideration of crucial technological features and configurations to ensure optimal system quality [4]. A framework has been established to assist decision-makers in choosing the best blockchain technology for their unique requirements by examining current industry products, technical forums, scientific literature, and real-world use cases [4]. This framework equips software architects, developers, tool selectors, and policymakers to decide on the best course of action after evaluating various blockchain solutions and their suitability for achieving desired results.

2. BACKGROUND

Blockchain technology is the foundational technology that powers cryptocurrencies. It offers a safe and open system for logging and verifying transactions. Each transaction is added to a block that is encrypted and connected to earlier blocks in a chain-like structure [1]. With the help of this distributed ledger technology, fraud and manipulation are prevented because everyone in the network has access to the same data. Blockchain is a decentralized technology, meaning no one organization has authority over the network, making it immune to censorship and hacker efforts.

Digital or virtual currencies that only exist in electronic form include Bitcoin, Ethereum, and Litecoin. Powerful computing systems execute complex calculations in a procedure referred to as mining, aiming to authenticate and incorporate transactions into the blockchain [5]. Cryptocurrencies offer various advantages compared to traditional currency, enabling fast and secure peer-to-peer transactions while eliminating the need for intermediaries such as financial institutions.