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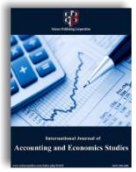

Blockchain Technology in Managerial Accounting: Transforming Cost Management Strategies

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Abstract

Accounting is the study of recording, categorizing, summarizing, and interpreting financial data regarding an organization's operations to make informed decisions about the organization. The information required to meet management goals is built on processes, which include information collection, measurement, storage, analysis, reporting, and management. Additionally, manufacturing, commerce, service, and nonprofit companies also use this kind of information; therefore, its demand is not just restricted to industrial organizations. Using a mixed-methods research approach, primary data is collected through surveys and interviews with finance professionals, blockchain experts, and business executives, while secondary data is analyzed from industry reports and financial statements of companies implementing blockchain. The study includes organizations across industries such as manufacturing, retail, and logistics that utilize blockchain for cost optimization. Key inclusion criteria focus on firms actively using blockchain in accounting, while businesses without blockchain adoption and outdated studies are excluded. Findings are analyzed using qualitative thematic analysis and quantitative statistical methods to assess cost reduction and efficiency improvements. This research highlights blockchain's role in reshaping managerial accounting and provides insights into its challenges, such as regulatory concerns and technological adoption barriers. The study contributes to the evolving discussion on digital transformation in financial management, offering recommendations for businesses seeking to leverage blockchain for cost efficiency and strategic decision-making.

Keywords: *Blockchain Technology; Managerial Accounting; Management Strategies; Commerce; Business; Thematic Analysis.*

1. Introduction

These days, information security and privacy are guaranteed by converting it to a secure format. The field of distributed computing has seen substantial changes because of the requirement for a novel and promising technology. The ultimate objectives were to achieve transparency and enforce safe circulation of digital assets via decentralized networks. Significant factors contributing to the increased use of blockchain-based technology include the possible rise in the use of digital currencies, the quick increase in cybercrimes and attacks, and the high level of computer power available online (Yli-Huumo et al., 2016; Movahedi&Mirzahoseini, 2016). The increased popularity of Blockchains is due to their use in Bitcoin and other virtual currencies employing cryptographic techniques. The digital transactions that required transparency, distribution, accountability, and security unequivocally needed a technology that could assure the above factors(Jung, 2022). Blockchain is one of the pioneering and groundbreaking discoveries of this decade. It is founded on Distributed Ledger Technology, which has decentralization and cryptography as its two main tenets. It is in charge of ensuring that a transaction is visible, accountable, and impenetrable. Haber and Stornetta first proposed the idea of blockchain in 1990 to allow users to exchange important information in a distributed, safe environment without worrying about hacking. A key known as a hash code connects each block in the chain to the one before it. A hash code that is unique throughout the chain is created when a block is formed and utilized to build the subsequent block. In this manner, altering a single block renders the rest of the chain unavailable (Yaga et al., 2019; Deihim et al., 2014). In essence, a blockchain is a chain composed of cryptographically secured information chunks(Tharinie&Pandiyaraj, 2016). Digital data is represented by each

block.Blockchain therefore shows the series of these blocks. Blockchain in Accounting Presents Three Key Aspects of How Blockchain Technology Impacts Accounting shown in Fig. 1.

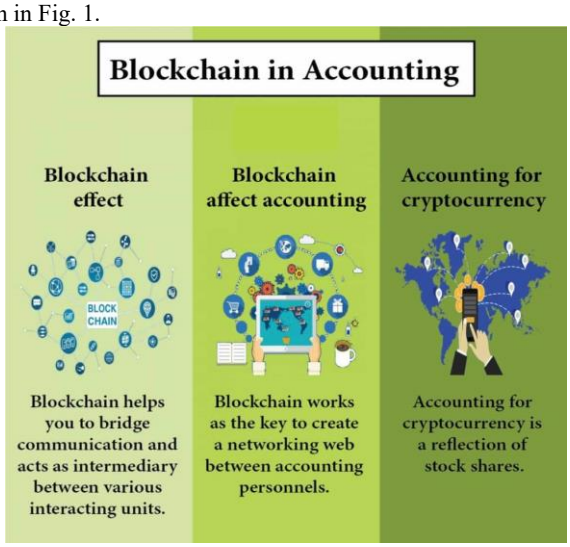

Fig. 1: Blockchain in AccountingPresents Three Key Aspects of How Blockchain Technology Impacts Accounting

2. Background of Study

Data, the fundamental building unit of information recorded as blocks in a database known as a chain, is one of the primary components of a block. A digital signature that uniquely identifies the user taking part in a transaction is created at random when the block is created. Distinguishing Hash, which is created using cryptographic algorithms to identify it from other blocks, and acts as a pointer to previous blocks. Along with inter chaining of Blockchains within a network, different types of Blockchains can also form a network, but the following categories are followed mostly in many applications: Public Blockchain, Private Blockchain, Consortium-based Blockchain, Hybrid Blockchain. Public blockchains are an openly available source which allows any person to participate in the form of a developer, user, miner, or member. The transactions happening in the Blockchain is completely transparent and open to all its members (Zheng et al., 2017). This is a completely decentralized environment where the entire transaction details are examined without having to bother about a central authority recording the transactions or the order in which they must be stored in the Blockchain. Tokens are awarded to the participating users for the purpose of motivation. The examples of public blockchains are Ethereum and Bitcoin. It is a closed network that allows the users to participate based on permission. The participating entities are granted some access and rights based on discretion. It follows a centralized network scheme. The specifics of a certain transaction are only visible to the parties who have given their consent. There is just one entity in charge of overseeing the entire network. Hyperledger ledgers Ripple are examples of private blockchain (Park & Li, 2021). Consortium-based basedBlockchain: This type of blockchain can also be considered as a subcategory of private blockchain. The sole distinction between a consortium-based blockchain and a private blockchain is that the former has a group in charge of the network, whilst the latter has a single person in charge. It combines the merits of both private and consortium-based techniques. Quorum and Corda are examples of this type (Schmitz &Leoni, 2019; Demirkan et al., 2020; Faccia&Mosteanu, 2019). Making a Decision: Choosing one alternative from a variety of conflicting options is the process of making a decision. Planning and controlling are interwoven with this managerial role. Planning is impossible for a management without decision-making(Hamed et al., 2023; Baggyalakshmiet al., 2024). Managers must decide between conflicting goals and strategies to achieve the goals they have selected (Janmohammadi&Babazade, 2015). There are several competing plans from which only one can be selected. Similar remarks about the control function can be made. The partner must select only one bid to present to the potential client out of the several that are conceivable. The partner asked for details on the anticipated hourly rate for each kind of legal service (Sokcevic et al., 2024). The partner's ability to choose a bid price should be enhanced by this cost information, as well as their understanding of the competitive environment. Imagine being forced to make a bid without knowing how much the legal services will cost.

1.1 Objectives

- To study the conceptual framework of blockchain technology in managerial accounting
- To examine existing blockchain technology transforming cost strategies
- To investigate the potential for deploying a managerial accounting system based on blockchain technology.

1.2 Research Question

- How does blockchain technology influence cost management strategies in managerial accounting?
- What are the main advantages and difficulties of using blockchain technology in financial reporting and cost accounting?

Representation of the Types of Blockchain Technology shown on Fig. 2.

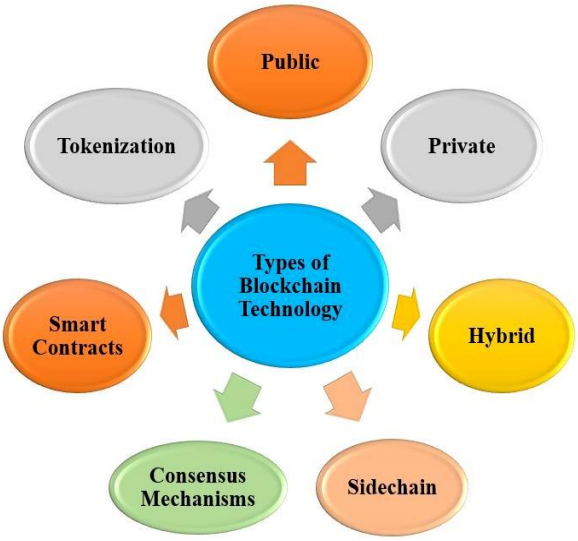

Fig. 2: Representation of the Types of Blockchain Technology

3. Benefits of Blockchain Technology

Several studies discovered benefits that may be obtained by using BT. Potential benefits include strategic (such as transparency, preventing fraud and manipulation, and decreasing corruption), organizationalTransparency: As a distributed ledger, blockchain technology increases the transparency of transaction history. A precise copy of the ledger is owned by each network participant. The only way to update this ledger is by consensus, which requires everyone's agreement. Modifying one transaction necessitates changing all records that follow, as well as the cooperation of the entire network. Information provided through processes that mostly rely on paper is therefore less visible, dependable, and consistent than information maintained on a blockchain(Sharma, 2024). Because BT is unchangeable and uncorruptible, it is immune to hacking and false information. Because it is decentralized, it also has the special ability to be "trustless," which means that parties can conduct business securely without relying on one another(Han et al., 2023).
Strategic cost management is the deliberate choice to align the organization's cost structure with its strategy and optimize its execution. Accurate price decisions are made possible by cost accounting, which helps allocate expenses to goods or services. Businesses determine the actual expenses of each service by allocating direct and indirect costs to each one. With this information, they may set prices that cover costs and produce the required profit margins. Strategic Cost Management Process in a Flowchart Format shown in Fig. 3.

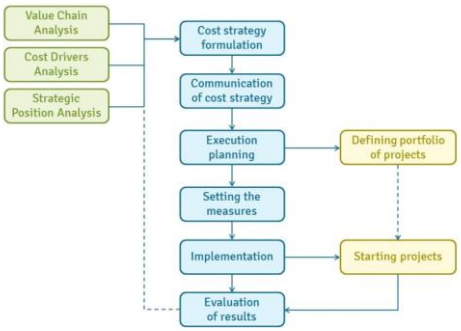

Fig. 3: Strategic Cost Management Process in a Flowchart Format

Providing information to the major stakeholders has always been the core goal of accounting. The operations of commercial entities or the economy influenced the development and transformation of accounting systems. Blockchain is Good / Not shown in Fig. 4.

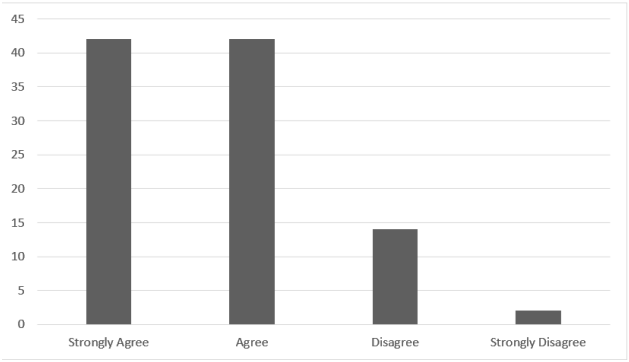

Fig.4: Blockchain is Good/ Not (Source: Prepared by author)

Economic development, such as the advent of the internet and information technology, led to changes and improvements in the accounting system. Cloud accounting and other contemporary accounting ideas therefore surfaced. Regression Analysis shown in Fig. 5.

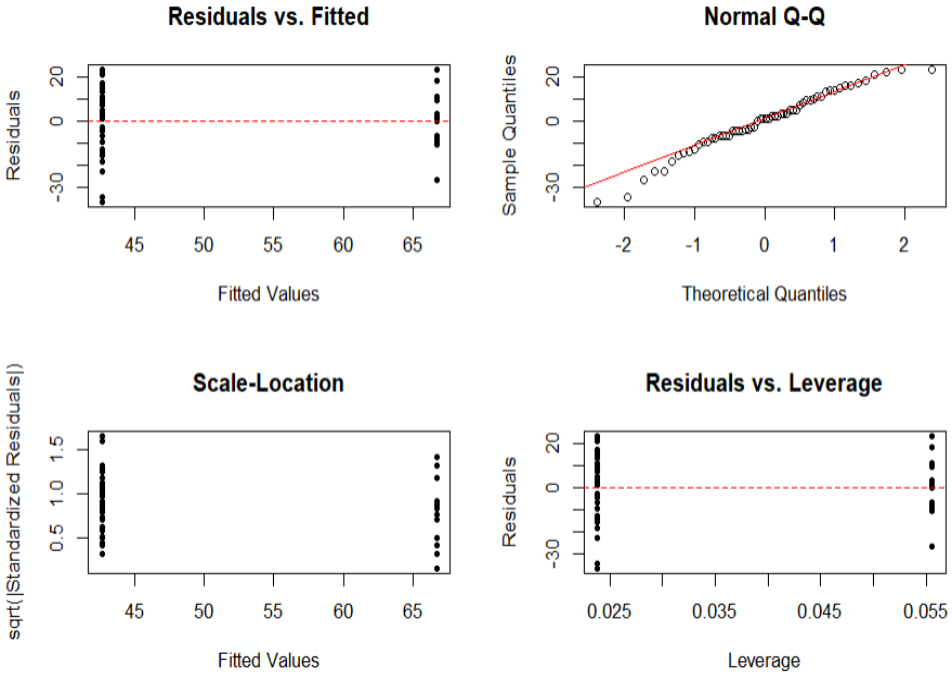

Fig.5: Regression Analysis (Source: Prepared by author)

This section of the literature review examines triple-entry accounting, blockchain technology's application in accounting, and the possible advantages, difficulties, and opportunities it presents for the accounting industry. Because blockchain technology can safely record and store digital assets and offer tools for monitoring financial flows and account settlement, it is perfect for accounting.

4. Conclusion

One of the most ancient accounting ideas, the triple-entry bookkeeping system, was revitalized by the advent of blockchain technology. Triple-entry accounting is a novel and promising accounting method that has developed in the current period of disruptive technology revolution employing blockchain, despite double-entry accounting having been practiced for more than 600 years. It sets it apart from conventional accounting systems, which are susceptible to fraud because of human involvement. Technology helps to guarantee that all accounting data is stored in an unchangeable and transparent way on a blockchain network. It also enables accountants and CA/CPAs to expedite their auditing processes while ensuring the accuracy and integrity of the data. As a result, blockchain technology has been adopted and invested in by numerous well-known businesses, IT specialists, and end users, including global accounting organizations. This section provides a summary of the possible socioeconomic effects of blockchain technology based on a review of the research. Among these are "improve governance and transparency," "improve the integrity of accounting records," "Socio-economic impacts," and others. socioeconomic repercussions.

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