Chapter 4
Blockchain Implications and Utility for Higher Education

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ABSTRACT

Blockchain has emerged as an important concept at the interface of ICT and higher education. Blockchain is perceived as a revolutionary technology offering a considerable impact of vast magnitude on various sectors since it enables the creation of decentralized applications programmed to run on networks and records sets of data that can be shared securely without third-party mediation. The Blockchain's emphasis on variety in terms of applications may be due to its capacity to build a trusted and decentralized contract environment. The higher education sector is, therefore, a potential user of blockchain technology due to its capacity in allowing stakeholders to validate learning records and identity management. On the other hand, higher education may be understood as a system that includes, among others, two major stakeholders, higher education institutions, (HEIs) and students. Adopting a systematic literature review and thematic content analysis, this chapter aims to understand the blockchain implications and utility in higher education.

INTRODUCTION

Blockchain is defined as a ledger of decentralized data that is securely shared. Blockchain technology enables a collective group of select participants to share data. With blockchain cloud services, transactional data from multiple sources can

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be easily collected, integrated, and shared. Data is broken up into shared blocks that are chained together with unique identifiers in the form of cryptographic hashes. Blockchain provides data integrity with a single source of truth, eliminating data duplication and increasing security. In a blockchain system, fraud and data tampering are prevented because data can't be altered without the permission of a quorum of the parties. A blockchain ledger can be shared, but not altered. If someone tries to alter data, all participants will be alerted and will know who make the attempt.

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LITERATURE REVIEW

Blockchain technology is an advanced database mechanism that allows transparent information sharing within a business network. A blockchain database stores data in blocks that are linked together in a chain. Blockchain technology is also known as distributed ledger technology. It allows participants to secure the settlement of transactions, achieve the transaction, and transfer of assets at a low-cost (Tschorsch and Scheuermann 2016). Blockchain is not only a new type of internet infrastructure based on distributed applications but also a new type of supply chain network. Essentially, blockchain is a distributed network of computers (nodes) used to maintain the source of information sharing. A blockchain is a decentralized, distributed and public digital ledger that is used to record transactions across many computers so that the record cannot be altered retroactively without the alteration of all subsequent blocks and the consensus of the network. To study more about blockchain, its underlying technology, here are some important definitions.