


## Chapter 9

# Transformation of Asset Management Systems Through Blockchain

**Ankur Agrawal**

*Sharda University, India*

**Swati Bansal**

 <https://orcid.org/0000-0001-8557-0114>

*Sharda University, India*

**Monica Agarwal**

*Sharda University, India*

**Reema Agarwal**

*Lloyd Institute of Management and Technology, India*

**Mohammad Rumzi Tausif**

*Prince Sattam Bin Abdulaziz University, Saudi Arabia*

### **ABSTRACT**

*The concept of blockchain is prevalent globally in today's times. It has shown remarkable growth and has shown a lot of achievement by executing systems of peer-to-peer cryptocurrency. The cryptocurrency was introduced in 2009 but created hype about digital currency around the world in 2017. Blockchain works on the concept of a "distributed ledger/database." The transactions are recorded and replicated to all the participating parties chronologically. Blockchain has verified to be immutable and provides accountability, integrity, and quite a lot of confidentiality through a pair of private and public keys. Various sectors have started using blockchain due to its salient features. Asset management is also one of the areas where blockchain can reduce transaction costs, approval waiting time, and increase transparency. The complicated processes of asset management can be automated by unifying permissioned and permissionless blockchain. This chapter discusses how asset management firms can use blockchain opportunities to harness its benefits.*

DOI: 10.4018/978-1-7998-8697-6.ch009

## **INTRODUCTION**

A blockchain can be defined as a “distributed ledger/database” to record the transactions in a chronological manner without the intervention of any central authority. The blockchain concept was first introduced around 2008 and used in a cryptocurrency named Bitcoin in 2009. This Bitcoin created hype in the cryptocurrency market in 2017. Bitcoin and blockchain are used as synonyms in the cryptocurrency literature, but the earlier one is an application, whereas the latter is a concept or framework. Conceptually a blockchain is a sequential chain of blocks, and these blocks are analogous to pages in a manual ledger. As a transaction take place, it is transmitted to the entire blockchain network in the form of the coded language known as cryptography.

In a traditional transaction management system, a trusted third party is required to authenticate a transaction. At the same time, a blockchain work on a peer to a peer network system, no centralized or trusted third party is required to authenticate a transaction. Any specific party/ node in the network act as a miner. Miners act as transaction validating agents in a blockchain network. The only requirement is miner has to solve a highly coded puzzle attached with a transaction to ensure no double-spending and other parameters of an authentic transaction. Once the miner validates a transaction, it is updated to all the network nodes.

Although blockchain is synonyms to Bitcoin and crypto-currencies, the application of the concept is continuously increasing in other areas such as Global payment, Insurance Claim processing, Internet of Battle-Field Things (IoBT) and Internet of Things (IoT). The glaring features of Blockchain technology, like its anatomy, immutability, decentralization and integrity, are making it a feasible choice for financial services applications. With the help of this technology, financial transactions can occur without any financial institutions like banks or any other intermediaries.

From the application point of view, blockchain systems can be bifurcated as:

1. Permissionless blockchain systems are formulated mainly for cryptocurrency assets, like Bitcoin. This blockchain is public; that is why any node can be a party in maintaining a blockchain without the permission of any designated authority (Nakamoto,2008). Permissionless blockchains are used for cryptocurrency transactions among private identities. Through the mining process, new currency units are created.
2. Whereas a network of priory known parties is available, a permissioned blockchain network is maintained to manage the blockchain. A consensus protocol is used to a mutual agreement for validating a transaction among the trusted parties.

There are several challenges to assets like cars and houses on the blockchain. First, we have to check the physical existence of the asset, its registration and its actual owner. Second, it is also to ensure that the asset is not sold two or more times or two or more people simultaneously. Finally, it is also essential to know whether the transfer of the asset is allowed in the law of the land or not.

The main objective of this chapter is to discuss how assets management can be improved by the application of the blockchain mechanism. For this purpose combination of permissioned and permissionless blockchains is required. We will also discuss the complete concept and model for unifying the permissioned and permissionless blockchains with a suitable theoretical and feasible technical framework.

Before diving deeper into the topic, we need to understand the following essential components of blockchain:

16 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

[www.igi-global.com/chapter/transformation-of-asset-management-systems-through-blockchain/297163](http://www.igi-global.com/chapter/transformation-of-asset-management-systems-through-blockchain/297163)

## Related Content

---

### STEP-NC to Complete Product Development Chain

Xun W. Xu (2006). *Database Modeling for Industrial Data Management: Emerging Technologies and Applications* (pp. 148-184).

[www.irma-international.org/chapter/step-complete-product-development-chain/7891](http://www.irma-international.org/chapter/step-complete-product-development-chain/7891)

### A Case Study Evaluation of the Use of the Viable System Model in Information Systems Development

P. Kawalek and D.G. Wastell (1999). *Journal of Database Management* (pp. 24-32).

[www.irma-international.org/article/case-study-evaluation-use-viable/51224](http://www.irma-international.org/article/case-study-evaluation-use-viable/51224)

### Retrieval Optimization for Server-Based Repositories in Location-Based Mobile Commerce

James E. Wyse (2009). *Advanced Principles for Improving Database Design, Systems Modeling, and Software Development* (pp. 255-281).

[www.irma-international.org/chapter/retrieval-optimization-server-based-repositories/4302](http://www.irma-international.org/chapter/retrieval-optimization-server-based-repositories/4302)

### Countermeasures for Protecting Legally Sensitive Web-Powered Databases and Web Portals

Theodoros Evdroidis and Theodoros Tzouramanis (2009). *Database Technologies: Concepts, Methodologies, Tools, and Applications* (pp. 2079-2084).

[www.irma-international.org/chapter/countermeasures-protecting-legally-sensitive-web/8021](http://www.irma-international.org/chapter/countermeasures-protecting-legally-sensitive-web/8021)

### Query Relaxation and Result Ranking for Uncertain Spatiotemporal XML Data

Luyi Bai, Jinyao Wang, Chengyu Zhang and Xiangfu Meng (2022). *Journal of Database Management* (pp. 1-19).

[www.irma-international.org/article/query-relaxation-and-result-ranking-for-uncertain-spatiotemporal-xml-data/313970](http://www.irma-international.org/article/query-relaxation-and-result-ranking-for-uncertain-spatiotemporal-xml-data/313970)