



ज्ञान-विज्ञान विमुक्तये



Infinitude: **Frontiers of Research in** **Mathematical and** **Computing Science**

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Chapter 19

Comparative Study on Blockchain and Traditional Databases

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1 Introduction

In recent times, Cryptocurrency has gained special attention both from industry and academia. The underlying technology that enables cryptocurrencies is called blockchain. Blockchain is a data structure containing transaction data. A Blockchain is a distributed public ledger of transactions. Technically it's a distributed database. Each verified transaction is accumulated in a block. The special feature that distinguishes it from existing technology is its immutability of the stored records. To achieve immutability, it uses consensus and cryptographic mechanism. The current trend on research reveal that focus on Bitcoin system is approximately 65 to 75% and less than 25% on other blockchain application. There were only few studies available in this area until last year providing very basic knowledge. Since (2017) there is tremendous increase in the research papers which are dealing with "Blockchain Applications".

A little doubt that the blockchain technology is still in the initial phase of Gartner's Hyper Cycle for Emerging Technology. Government and research organization pouring funding for blockchain related research. The International Journal Publishers like IEEE(Institute of Electrical and Electronics Engineers), Springer and Elsevier conducting many international conferences on Blockchain technology.

C. Mohan an IBM database researcher over 36 years, has quoted at the 34th IEEE International Conference on Data Engineering, "Because of the attention the world is paying to blockchain technologies, it is important for the database community to become more aware of the underlying technologies and other developments in this area. Then, the community could try to influence the approaches taken and, in particular, how database technologies could be better utilized or enhanced for blockchain. Since most of the blockchain efforts are still in a nascent state, the time is right for database researchers and practitioners to get more deeply involved!"

As many researchers and practitioners are joining the hype of blockchain, some of them are raising the question about the fundamental difference between blockchain and traditional database and its real value or potential. In this paper the first section comprises the blockchain overview based on Bitcoin and the second section is a comparative study of blockchain and traditional database. Section 4 concludes there are still many hurdles to be covered to bring this technology into practice.

2. The Basics of Blockchain based on Bitcoin