

# A Sophisticated Analysis of the Blockchain Technology and its Applications Domain

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**Abstract-** Two researchers "Stuart Haber and W. Scott Stornetta" who aimed to advance a system where document timestamps might not be manipulated with, initially projected blockchain technology in 1991. After twenty years later, blockchain have become start in real world usage with the introduction of Bitcoin in January of 2009. Originally it was considered as a mechanism to empower the trust-less Bitcoin cryptocurrency, since then as an increasing number of businesses and stakeholders began to see blockchain as an appealing solution to solving current business challenges and unsettled mature deals, the technology's initial purpose was broadened. This research insights into literature evaluation of the blockchain technology, comparing its usage to that of related technologies like crypto-currencies and Bitcoin. This article found that the blockchain's unique qualities, such as anonymity, immutability, decentralisation, privacy and security, help a number of different types of fields and topics. Blockchain mining is a process to verify and secure every step in the transactions during operating cryptocurrencies.

**Keywords:** Blockchain, Bitcoin, Distribution, Decentralisation, Peer to Peer network, Mining, Mining Strategy.

## I. INTRODUCTION

All sectors appear to have been smarted by blockchain, which has generated a urge looking for potential for improved business operations and trust building. However, other businesses, like as the banking industry, may regard it as a disruptive technology that must be redesigned. To put it another way, Blockchain is a decentralised transaction and data management system that first proved popular in 2008 with the introduction of Bitcoin, a blockchain-based digital currency. Table 1 shows the suggested solutions in relation to the primary sectors of blockchain applications [1].

Table 1: (Blockchain application solution research)

Field of application	Suggested solutions
Internet of Things	Security, Device Management, Smart contract provisions.
Energy	Controlling the electricity market among machine, Smoothing energy

Finance	trade, Security in energy grid. Fast transaction, Security, Automation of financial contract
Healthcare	Easier access to medical record
Government	eGovernment, eVoting, Digitalized Identification.
Education	Easier access to student data without third party like university.

[2] There are three distinct blockchain evolutions: Blockchain 1.0, 2.0, and 3.0. Bitcoin and cryptocurrencies are closely associated with Blockchain 1.0. More than 600 cryptocurrencies have been launched since Bitcoin's inception (here generally there is an act of exchanging tokens for blockchain applications). If Blockchain 1.0 evolution based on development of cryptocurrency i.e., bitcoin means it is all about money, Blockchain 2.0 evolution based on development of smart contract that is all about registering, verifying, and transferring smart contracts or assets. The blockchain has a wide range of applications, from serving as a decentralised replica of local databases (particularly for public documents and attestations) to more complex ones. The integration of smart contracts with Blockchain 2.0 is the most important aspect. (Originally it was developed only by Ethereum and but today it is under development for Bitcoin). The application field of Blockchain 3.0 is no longer constrained to financial and products transactions, but also includes sectors such as health, government, science, education, and more.

## II. BLOCKCHAIN RESEARCH DOMAIN

[3] This article provided a comprehensive overview of blockchain-based AI applications. Data or information used by AI system in order to study, conclude, and make final choices. When data is attained through a dependable, secure, trusted, and credible data repository or platform, machine learning algorithms execute better. The data on the blockchain is extremely secure and reliable, and it