



# Blockchain Technology for Business Applications

## Abstract

The study provides an overview of the transformative applications of blockchain technology in the global business landscape. With its decentralized and secure nature, blockchain is reshaping traditional business models by fostering transparency, enhancing security, and optimizing operational efficiency. The study explores the impact of blockchain technology on the key sectors of the businesses focusing on both financial services (banks, insurance, and capital markets) and non-financial sectors (retail, travel, healthcare, telecommunications, public sector). Delving into the transformative impact, it explores hurdles like awareness, cultural shifts, cost, regulation, and security, emphasizing how blockchain presents a paradigm shift from traditional practices. The findings contribute to a nuanced understanding of blockchain's potential in reshaping business landscapes while addressing key challenges for widespread adoption.

**Keywords:** Blockchain Technology, Financial and non-Financial Services and Challenges

Blockchain is a “distributed ledger technology that enables digital assets to be transacted and traded in real time. The record it keeps is permanent and irreversible”. Blockchain technology is predominately used for two major applications. i) Trading and managing Cryptocurrencies ii) Business blockchains - managing business transactions like financial tractions - receivables and payables and compliances. (Deloitte1, 2019). The Distributor Ledger Technology (DLT) properties and the transaction process in block chain technology explained in the table (1) and (2) respectively.

Table 1: Distributor Ledger Technology (DLT) Properties

Programmable	A blockchain is programmable ( smart contracts )
Distributed	All network participants have a copy of the leader for complete transparency
Immutable	Any validated records are irreversible and cannot be changed
Time Stamped	A transaction time stamp is recorded on a block
Unanimous	All network participants agree to the validity of each of the records
Anonymous	The identity of participants is either Anonymous or pseudonymous
Secure	All records are individually encrypted

Source: Euromoney Learning1. (2023)

Table 2: The Transaction in Block chain

A transaction is requested and authenticated	→	A block representing that transaction is created	→	The block is sent to every node (participants) in the network	→	Nodes validate the transaction ↓
The transaction is complete	←	The update is distributed across the network	←	The block id added to the existing blockchain	←	Nodes receive a reward for proof of work. Typically in cryptocurrency

Source: Euromoney Learning2. (2023)

Blockchain technology is transforming all segments of the business due to its potential to strengthen the security, efficiency and transparency of the business transactions. The global blockchain market is expected to increase to US\$265.01 billion by 2028 from US\$11.02 billion in 2022. The global demand for Blockchain technology is influenced by several factors like digitization of

business, adoption of Decentralized Applications, Diverse industries Adoption of blockchain solutions, continuous usage of Cryptocurrencies, growing awareness of data protection, governments are recognizing the potential of Blockchain solutions and taking Favourable Initiatives. Blockchain is classified as Public, private and Hybrid. Public blockchain is dominated the global market in the year 2022. It is known for security, transparency, open access and decentralized features. Private Blockchain is known for faster services and scalability. (Business wire, 2023).

Application of blockchain technology on business mainly classified as financial and non-financial services. Blockchain technology is transforming the financial services such as capital markets, Banking, and insurance industry. In capital markets the blockchain system used for faster trade settlement by transferring payments and securities with reducing trading cost and intermediaries. In insurance sectors blockchain technology is used for efficient underwing process to identify potential applications by evaluating the risk level. Smart contracts automate and expedite claim settlements, reducing fraud risks and enhancing efficiency in the insurance industry. Further, Blockchain applications in banking for trade finance enhance transparency and efficiency by providing a secure, decentralized ledger for real-time tracking of transactions and minimizing the intermediaries. Moreover, blockchain ensures regulatory reporting compliance through its immutable audit trail, facilitating accurate and transparent reporting which results reduce the reporting costs in banking industry. (Deloitte 3, 2017)

In banks, the implementation of block chain based distributed ledger system can reduce the processing time, compliance errors, eliminate duplicate works in KYC process and reduce overall compliance cost. Further this ledger system provides all the past record of all the transactions and compliance activities data of each client in real time basis. Banks can analyse these data to identify any irregularities or fraudulent activities in the system. (Deloitte 2). Blockchain technology is making a positive difference to stock market by eliminating less important intermediaries in operations process and reduce the overall cost. Some of the important applications of block chain in stock market such as i) reducing or removing less important intermediaries ii) introducing automated regulatory systems iii)

creating good platforms for security tokens iv) reducing trade settlement time v) automate divide payment system with more time and cost-efficient manner vi) quick fund raising vi) Tracking securities lending and investors leverage positions. Mohiuddin (2023)

Non-financial sectors such as retail, travel, healthcare, telecommunications, and the public sector are increasingly recognizing the potential of Blockchain technology, despite financial players being early adopters. These industries are actively exploring ways to capitalize on the opportunities presented by Distributed Ledger Technology. i) Retail – To store warranty receipts on the blockchain. It helps to enhance the relationship between retailer and customers. ii) Oil and Gas – Uses blockchain technology to track and manage entire supply chain (Digital supply chain). Iii) Healthcare and Life Sciences- Blockchain based record management system to manage claim processing, pharma supply chain and secure patients' records. iv) Telecommunications - uses blockchain based smart contracts to reduce roaming frauds. v) Public Sector- used in land registration process by reducing manual errors and secure the public documents (Deloitte 3, 2017). vi) Manufacturing - Manufacturing - Blockchain transforms manufacturing by enhancing transparency and trust across the entire value chain, addressing pain points like supply-chain monitoring, materials provenance, and counterfeit detection. It offers solutions for challenges in engineering design, identity management, asset tracking, quality assurance, and regulatory compliance, making it a pivotal technology for optimizing efficiency and accountability in the manufacturing process. (PricewaterhouseCoopers (n.d.))

The implementation of blockchain technologies faces several challenges: i) Awareness and Understanding: A hurdle lies in the limited awareness and understanding of blockchain technology potential, requiring educational efforts to bridge knowledge gaps and promote widespread adoption. This limiting the investment and further expansion. ii) Cultural Shift: The radical departure from traditional methods poses a cultural challenge, necessitating a shift in mindset and practices among stakeholders to fully embrace the transformative nature of blockchain technology. It has been estimated that the implementation of blockchain system is majority

change in business process rather than technology. iii.) Cost and Efficiency: Concerns related to the initial costs of blockchain implementation and uncertainties about its efficiency persist, demanding a thorough examination of the economic viability and operational advantages for organizations. While providing security and decentralization, contributes to the overall high implementation costs in terms of hardware, electricity, and computational resources. iv. Regulation and Governance: Regulation and governance in implementing blockchain applications are vital to ensure legal compliance, protect consumer interests, and enhance security and trust. Clear frameworks mitigate risks, foster interoperability, and address ethical considerations, promoting a responsible and globally adoptable environment. v. Security and Privacy: While blockchain is lauded for its security features, concerns about data privacy and potential vulnerabilities persist, necessitating ongoing efforts to enhance security protocols and address privacy considerations in blockchain implementations. (Deloitte<sup>4</sup>). As businesses and industries continue to grapple with these challenges, the promise of blockchain technology remains resilient, offering a paradigm shift that has the potential to redefine traditional business practices and shape a more secure, efficient, and transparent future.

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