Cadernos de Pós-Graduação em Direito Político e Econômico
Published by: Centro de Estudos Acadêmicos Press
ISSN: 1678-2127
Volume 26 *Issue 1,* 2026
Website: https://ceapress.org

Analysis of Blockchain Adoption Across Industries: Evidence From Enterprise, Government and Financial Institutions

Priya Choudhary[1] and Dr. Ghazala Abidin[2]

[1]Phd Student, Manav Rachna University, Faridabad, Haryana, India
Email: priyachoudhary.pc27@gmail.com/jain.priya1710@gmail.com, ORCID Id: 0009-0000-5819-3413

[2]Associate Professor, School of Law, Manav Rachna University, Faridabad, Haryana, India
Email: ghazalaabidin.law@mru.edu.in/advghazalabidin@gmail.com,
ORCID Id: 0000-0001-8831-8459

Submission: 24.02.2026. Accepted: 02.05.2026. Publication: 26.06.2026

ABSTRACT

Blockchain is a transformative technology which has emerged across various sectors in a short span of time. It works on the concept of distributed ledger system and its most important factor is that it is decentralized. It is a revolutionary technology which can transform the industry's way of working. Blockchain is a framework for storing data in a way that's almost impossible for it to be changed, falsified, or duplicated. It was originally conceptualized for the transactions concerning crypto currency but since its evolution, people have seeked to apply it in various other sectors including finance, healthcare, supply chain management, political systems (voting), etc. This article explores the versatile use of this technology in the above-mentioned sectors. Additionally, the article examines practical application and real-world case studies to better understand this technology. Through this paper the author aims to provide a bridge between the theory and practice of usage of this technology. Also, the author aims to fill this gap by leveraging the case studies to understand the nature of Blockchain technology. By analysing these examples, the major aim is to uncover best practices and lessons that can be learnt and which can act as a guide for the future adoption and implementation. This paper further will provide another perspective to the users regarding the Blockchain technology apart from its traditional use in crypto currency and further inspire paper and innovation in this area to revolutionize traditional systems.

KEYWORDS Blockchain, Supply Chain Management, Healthcare, Crypto currency, Miners

INTRODUCTION

It is a revolutionary technology which can transform the industry's way of working. Blockchain is a framework for storing data in a way that's almost impossible for it to be changed, falsified, or duplicated. Blockchain technology is simply a group of computer systems worldwide that reproduces and distributes a virtual record of transactions throughout the whole network. Blockchain is a distributed ledger technology that allows for secure,

Cadernos de Pós-Graduação em Direito Político e Econômico
Published by: Centro de Estudos Acadêmicos Press
ISSN: 1678-2127
Volume 26 *Issue 1,* 2026
Website: https://ceapress.org

transparent, and tamper-proof recording of transactions across a network of computers (S.Nakamoto, 2008).Originally developed as the underlying technology for the cryptocurrency- Bitcoin, Blockchain has since evolved to find applications beyond financial transactions. Its decentralized nature, immutability, and cryptographic security make it suitable for various use cases, such as supply chain management, identity verification, and smart contracts (Tapscott, 2016).With the help of this technology, transactions can now be recorded across many computers such that making it completely transparent secure and immutable. This technology is mainly associated with cryptocurrency but what we can do with this is much more than that for example we can use this in supply chain management voting systems and identity verification.

Blockchain and its types

1. Public Blockchain
   As the name suggests, it is open to everyone. (E.g Bitcoin)
2. Private Blockchain
   It has a restrictive access and is open to certain organizations only.
3. Consortium blockchain
   This is operated and controlled by a group of organizations which balance the transparency and privacy.

Objectives

1. What is Blockchain Technology?
2. How is this technology being applied by the various industries such as healthcare, airline etc?
3. What are the economic benefits and risks associated to the real-time operational application of this technology?
4. What lessons can be learnt from the Companies that have incorporated this technology?

Scope and Methodology

The Blockchain technology was initially developed as a foundation for crypto currencies, but now has great recognition as a very transformative innovation with applications across various industries, including finance, supply chain, governance, healthcare, et cetera. Its operational efficiency and security has made it a very sort of solution for various businesses. However, it's adoption and implementation have proven to be very complex and the result are very mixed. The existing research on this technology basically emphasises on its technical attributes. Its specific use in any particular industry which has provided valuable insights, but they fall short of addressing the most basic challenges that have been faced by this organisation in real world scenario.

This research uses mixed methods to comprehensively analyse the various companies that have incorporated the above mentioned technology in their company. We will study the company dynamics and alongwith that we will also take a look into their issues and this technology has paved a way to resolve those issues. Secondary data from different platforms have been used to reflect the evolving nature of this technology.

Cadernos de Pós-Graduação em Direito Político e Econômico
Published by: Centro de Estudos Acadêmicos Press
ISSN: 1678-2127
Volume 26 *Issue 1,* 2026
Website: https://ceapress.org

Through this research, we aim to fill this gap by leveraging the case studies to understand the nature of Blockchain technology. By analysing these examples, we aim to uncover best practices and lessons that can be learnt and which can act as a guide for the future adoption and implementation. This research aims to provide a bridge between the theory and practice of usage of this technology.

Literature Review

In Literature review, we studied the application of Blockchain Technology in various sectors of the economy. Three major applications of this technology have been discussed in the form of case studies. Through these case studies we come to know of the issues faced by these companies and also the solution that the technology provides to them. We will first talk about the companies that have introduced this technology in their supply chain management systems. Proceeding further we will talk about application of this technology in cryptocurrencies. And, lastly, we will discuss a case study regarding application of this technology in the medical sector.

1. SUPPLY CHAIN MANAGEMENT

Supply chain management (SCM) is the coordination of a business' entire production flow, from sourcing raw materials to delivering a finished item.[1] By managing the supply chain, companies can cut excess costs and needless steps and deliver products to the consumer faster.[2] Supply chain managers are tasked with managing suppliers and handling common issues that arise with suppliers, such as late deliveries from suppliers, negotiating and building relationships with suppliers and more.[3] Below image depicts the major components of supply chain management.

Source: https://6river.com/wp-content/uploads/2019/04/stockfresh_3973098_supply-chain-management-word-circles-concept_sizeXS-min.webp

Cadernos de Pós-Graduação em Direito Político e Econômico
Published by: Centro de Estudos Acadêmicos Press
ISSN: 1678-2127
Volume 26 *Issue 1,* 2026
Website: https://ceapress.org

CASE STUDIES

1.1 WALMART

Introduction: Walmart is an American based company and owns multiple department stores. It has presence in 24 countries and operates under various names. In this we will majorly talk about the pilot project taken up by Walmart Canada to curb its issues. Walmart Canada delivers more than 500,000 shipments annually to distribution centres or stores in Canada using third party carriers or its own trucks. The movement of such massive goods across borders with different policies, time zones, climatic conditions was a huge operational challenge. More than 200 entry points needed to be considered
in invoices. And at least 70% of them required reconciliation efforts which were done manually and were time consuming.[4]

Issue: Since decades walmart faced problems regarding transportation of goods. Huge data discrepancies in invoice and payment process were a major issue as this resulted in reconciliation efforts which again were very time consuming and caused payment delays.[5]

Solution: The higher ups came up with a solution to inculcate the block chain technology in its invoices and management of third party carriers. They automated the invoice and payment process by capturing and synchronizing it in real time and which is visible only to the parties involved.

1.2 BRITISH AIRWAYS

Introduction: British Airways is one of the largest international Airways and hence having an efficient way to process compensation claims was very crucial for it. In case of any flight cancellation or delay in flight, getting compensation timely was very important for all the passengers. The government also introduced stringent penalties for airways who delayed passenger compensation process.

Issue: The process of handling compensation claims from customers was a very manual process for British Airways. For each compensation claim an employee had to manually review the flight details of the passenger, it's records, the delay length etc and then they would decide on the basis of company policy whether the passenger should be given the claim or not.[6] With so many claims, this manual process was extremely slow. So and on an average it took approximately 15 business days for an employee to just review a new claim after it was submitted. So naturally a claim for lost baggage or delays would take another two to three weeks to finally process. This lack of automation or the delay opened new doors for human errors. The employees would make mistakes while reviewing claims or accidentally approving a claim which should not be approved.

---

[1] https://www.ibm.com/topics/supply-chain-management, last visited on 20-11-2024
[2] https://www.investopedia.com/terms/s/scm.asp, last visited on 20-11-2024
[3] https://6river.com/what-is-supply-chain-management/, last visited on 21-11-2024

Cadernos de Pós-Graduação em Direito Político e Econômico
Published by: Centro de Estudos Acadêmicos Press
ISSN: 1678-2127
Volume 26 *Issue 1,* 2026
Website: https://ceapress.org

Solution: And hence the Airways thought it prudent to overhaul the outdated compensation process by bringing in new technologies that would automate the work. The Airlines started using new technologies namely[7]:-

1 Automated claims processing system
2 Artificial intelligence and machine learning
3 Blockchain technology.

Impact: The system was automated and each claim would take approximately two to three business days to get approved or rejected will stop this also prevents fraud since no one can modify the claims once submitted. This further saved costs of manual labour and increased the efficiency of the compensation claims adding to the savings of the airline.

1.3 TRADELENS

Introduction: It is a blockchain based platform which was designed and developed in a collaboration between IBM and Maersk in the year 2018. The major aim to design this was to facilitate the document an information exchange throughout the supply chain. The shipping industry is responsible for transporting goods all around the world hence as this industry evolved the technological advancements had become unnecessary ingredient for enhancing the supply chain efficiency. The architecture of trade lands was such that it consisted of a permissive blockchain network which secured and controlled data sharing among parties. It further utilised smart contracts to automate and enforce agreement between parties which thereby reduced the manual intervention and minimised the risk of disputes. The ecosystem connected all the stakeholders in the supply chain including the cargo owners, freight forwarders, in land transportation such as rail and trucking, ports and terminals, ocean carriers customs and other government authorities. It facilitated a seamless and real time sharing of cargo details, trade documents and achieved shipping milestones which ensured that critical information was secure, immutable and auditable through blockchain technology.

Issue: Trade was developed to address the inefficiencies and improve the transparency in the shipping industry. The supply chain of the industry stakeholders was scattered which involved a huge manual labour which indirectly induced huge costs to this industry. The usage of manual labour indirectly implies that there will be some errors also which cannot be negated.

---

[4] How Walmart Canada Uses Blockchain to Solve Supply-Chain Challenges by Kate Vitasek, John Bayliss, Loudon Owen, and Neeraj Srivastava

[5] https://hbr.org/2022/01/how-walmart-canada-uses-blockchain-to-solve-supply-chain-challenges, last visited on 05-05-2024

[6] https://hathor.network/blockchain-british-airways/, last visited on 23-06-2024

[7] https://www.dlapiperintelligence.com/investmentrules/blog/articles/2021/airliner-use-of-blockchain-technology.html , last visited on 23-06-2024

Cadernos de Pós-Graduação em Direito Político e Econômico
Published by: Centro de Estudos Acadêmicos Press
ISSN: 1678-2127
Volume 26 *Issue 1,* 2026
Website: https://ceapress.org

Solution: IBM in collaboration with maersk in 2018 created this to cater to all the needs of this shipping industry. It promoted a structured and digital documentation.

Impact: It decreased the trade costs, increase the visibility, improved the operational efficiency, insured data security Ann prevented fraudulent behaviour.

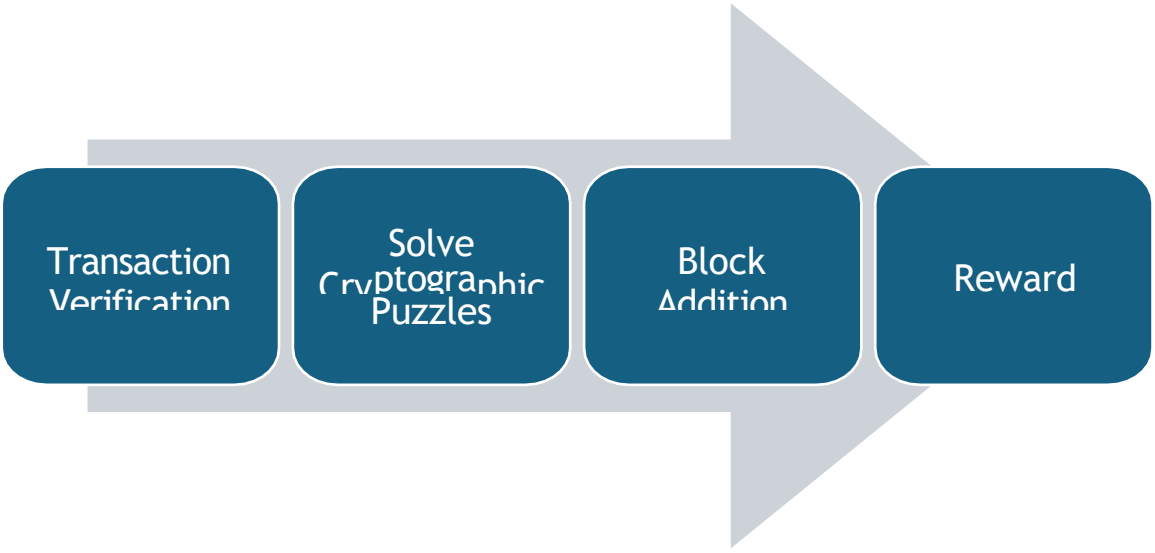
2 Cryptocurrency

In cryptocurrency transactions funds are sent between digital wallet addresses. Such transactions are then recorded into a sequence of numbers also referred to as a block. Hence this technology of sending funds does not record real names or physical addresses as the transfer is between digital wallets only. This aspect gives the advantage of anonymity to the

users. Users can now send funds for illegal activity such as drugs, act of corruption, wage war against country etc.

Concept of miners in cryptocurrency

The concept of miners has been explained below via figure below:



- Transaction Verification- Verify transactions to ensure they are valid.
- Solve Cryptographic Puzzles- They solve complex mathematical problems to add a new block for some this requires huge amount of electricity and advanced computers.
- Block Addition- Once puzzle is solved the broadcaster solution and other miners verify it and if it is correct new block are added to the block chain.
- Reward- Miner with correct solution gets rewarded with newly created cryptocurrency also that can be referred as transactional fees.

Cons of cryptocurrency

- Price volatility
- Impact of social media
- Security vulnerable to hacking and fraud as everything is online
- Security environmental impact mining involves use of lots of power or electricity

Cadernos de Pós-Graduação em Direito Político e Econômico
Published by: Centro de Estudos Acadêmicos Press
ISSN: 1678-2127
Volume 26 *Issue 1,* 2026
Website: https://ceapress.org

which raises environmental concerns

- Complexity
- regulatory uncertainty

3 Healthcare

The healthcare sector can be really revolutionised by adopting to this technology to address some of the most pressing challenges in the healthcare system.

- Data Security and Privacy- Healthcare services are extremely sensitive and valuable which makes it a prime target for cyberattacks. With the help of this technology each data entry is encrypted and linked to the previous data blocks making it impossible for unauthorised parties to access it and alter it without being noticed. This level of security ensures each patient data is confidential and therefore improves the trust in healthcare system.
- Accessibility and Interoperability- One of the major challenges in this industry is the distribution of data across different systems. This technology can facilitate the creation of a unified data so that different healthcare providers can access and update the patient data and all parties have accurate and up-to-date information. This can lead to more informed decision making reduced medical errors and improve patient care.
- Streamline Admin Processes- A lot of process is involved in administration such as handling of insurance claims, maintaining patient records etc which add to the dillion cost of healthcare. Such can be avoided by process of smart contracts- these are contracts that are self executing and written into codes. When predetermined conditions are met they are automatically executed.
- Improve Drug Supply Chain Management- we always face issue with the counterfeiting drugs and frauds. This technology can provide a traceable and transparent supply chain by recording every movement of products thereby verifying the authenticity of these drugs. Hence can ensure the patients receive safe and effective medications.

Case Study

3.1 Estonia[8]

Introduction: Estonia is considered as one of the country which has transformed its healthcare system leveraging blockchain. It has become a pioneer in blockchain application which will likely inspire many more countries to adopt similar solutions. One of the most significant application of blockchain technology by Estonia's healthcare system is the management of electronic health records. Electronic health records are stored in the form of centralised databases which cannot be vulnerable to unauthorised access. One of the advantages of this technology is that once data has been entered no one can change it without authorised access, hence making it immutable.

[8] https://investinestonia.com/business-opportunities/e-health/case-studies, last visited on 10-05-2024

Cadernos de Pós-Graduação em Direito Político e Econômico
Published by: Centro de Estudos Acadêmicos Press
ISSN: 1678-2127
Volume 26 *Issue 1,* 2026
Website: https://ceapress.org

Issue: Estonia's healthcare system was disintegrated with patient information spread across various platforms. Further the paper records were subject to loss or theft, hence the need was to create E-medical.
Solution: Using the Block chain technology and developing the medical data of its citizens. Give patients more control of their medical data.
Impact: 1. Improve data efficiency 2. Improve data security 3. Give patients control of their medical data 4. Improved Interoperability in healthcare system
This technology further improves the interoperability of the healthcare system. The various health providers, pharmacies and research institutions in Estonia use a block chain network to access and update patient data records seamlessly. This further makes it easier for different entities to collaborate and provide a more comprehensive care. It reduces human error and streamlines the patient complete information improving the decision making and the time spent on the admin tasks.

Result and Discussion

From the above case studies we can conclude that if this technology is applied and experimented further it has a lot to contribute to the various sectors. The most promising factors of this technology has been listed below:

- Transparent- It provides a decentralised Ledger and hence allows all the participants to view and verify the status and history of the products.
- Traceability- Since each process is recorded hence it helps in authenticity of the product and thereby can be verified by eliminating fraud.
- Security- The immutability of this technology ensures that it cannot be altered or tampered with.
- Cost Reduction- The cost of documentation, dispute resolution etc is reduced or eliminated entirely as there is no reliance on such intermediaries.
- Real Time Tracking- It fosters real time tracking of goods by providing up-to-date information on location status of the products.
- Efficiency- It automates and streamlines through smart contracts. These automatically triggered contracts or actions such as recording or payments are done immediately when predetermined conditions are met.

Limitation and Research Gaps

From the above case studies, we can deduce that though this technology is a big breakthrough in all the sectors above but there are certain Limitation that still need to be addressed. Some are mentioned below:

- Industry collaboration: Blockchain technology if used wisely can provide an end to end visibility and trace ability. Each transaction is recorded on movement of goods is also recorded to do which the stakeholders can gain real time information as to the location

Cadernos de Pós-Graduação em Direito Político e Econômico
Published by: Centro de Estudos Acadêmicos Press
ISSN: 1678-2127
Volume 26 *Issue 1,* 2026
Website: https://ceapress.org

and status of the shipments. But to further develop a critical mass of industry participants need to create value for its users.

- Establish standards and interoperability: Due to lack of Industry standards being set there is
- Cost effectiveness
- Lack of skilled professionals: Not everyone knows how to use this technology as this is new. It requires trained and skilled professionals to access and understand this technology.
- Raises concerns regarding liability and accountability: Since no set guidelines have been framed hence the liability and accountability of any fraud cannot be ascertained.
- Lack of compatibility between different blockchain platforms
- Huge energy concerns-Raises environmental concerns

The major research is done on the application of Blockchain technology in cryptocurrencies. The application of this technology in various other sectors has not been explored much. Moreover, the articles don't discuss the companies that have applied it in their day-to-day routine and hence the shortcomings also have not been discussed much.

Conclusion

Blockchain technology offers businesses numerous chances to modify and develop new company models. The future of this technology is extremely promising if explored more. By changing the conventional framework, blockchain innovation leads to the development of new methods for developing company models (Taherdoost & Madanchian, Electronics 2023). As this technology matures and evolves, the adoption of this will be widely done. It is going to bring significant changes to this industry. A lot of research needs to be done in this area regarding its applications.

References

- Bansal, A., & Gupta, A. (2020). Blockchain technology in supply chain management: A systematic literature review. *Journal of Business Research*, 123, 124-135.
- Behnke, K., & Janssen, M. (2020). The role of blockchain technology in enhancing supply chain transparency. *International Journal of Information Management*, 54, 102186.
- Bumblauskas, D., et al. (2020). Blockchain technology: Applications in supply chain management. *Supply Chain Management Review*, 24(3), 18-25.
- Cachin, C. (2016). Architecture of the Hyperledger blockchain fabric. *In 2016 IEEE 9th International Conference on Cloud Computing (CLOUD)* (pp. 102-109).
- Christidis, K., & Devetsikiotis, M. (2016). Blockchains and smart contracts for the internet of things. *IEEE Access*, 4, 2292-2303.
- Deloitte. (2020). Blockchain for supply chain: A guide for business leaders. Retrieved from [Deloitte website].
- Helo, P., & Hao, Y. (2020). The role of blockchain technology in supply chain transparency. *International Journal of Production Economics*, 221, 107489.

Cadernos de Pós-Graduação em Direito Político e Econômico
Published by: Centro de Estudos Acadêmicos Press
ISSN: 1678-2127
Volume 26 *Issue 1,* 2026
Website: https://ceapress.org

- Kamble, S. S., Gunasekaran, A., & Sharma, R. (2019). A study on the application of blockchain technology in supply chain management. *International Journal of Production Economics*, 211, 220-230.
- Kshetri, N. (2018). 1 Blockchain's roles in meeting key supply chain management objectives. *International Journal of Information Management*, 39, 80-89.
- Kumar, A., et al. (2020). Blockchain technology for supply chain management: A review of the literature. *International Journal of Information Management*, 51, 102034.
- Nakamoto, S. (2008). Bitcoin: A Peer-to-Peer Electronic Cash System. Retrieved from [Bitcoin.org].
- O'Connor, S., et al. (2021). The use of blockchain for the wine industry: An analysis of Everledger's approach. *Journal of Business Research*, 128, 221-228.
- Saberi, S., et al. (2019). Blockchain technology in supply chain management: A review of the literature. *International Journal of Production Research*, 57(7), 2021-2040.
- Tian, F. (2017). An agri-food supply chain traceability system for China based on RFID & blockchain technology. *Service Systems and Service Management (ICSSSM)*, 1-6.
- Wang, Y., et al. (2019). A blockchain-based framework for food supply chain traceability. *Computers and Electronics in Agriculture*, 162, 1-10.
- Yli-Huumo, J., et al. (2016). Where does all the hype come from? A systematic review of blockchain technology. *Proceedings of the 50th Hawaii International Conference on System Sciences*.