

# Blockchain Technology Trends in Different Sectors: A Review

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**Abstract: Purpose:** Currency transactions between companies or people are often controlled and characterized by third-party organizations. To make any such transaction or set up any digital payment transaction, a credit card company or bank acts as a middleman who helps to complete the transaction. The service provider charges a fee for this. Such transaction systems tend to be centralized, as the information involved in the process is managed and controlled by a third party, not the transacting parties. Blockchain technology innovates upon the transaction mechanism because it helps decentralize the environment by eliminating the third party in the transaction process. This study focuses on the trend shift characterized by the adoption of blockchain technology and the revolution it brought to different sectors.

**Methodology:** A systematic literature review was used in this study. A systematic literature review (SLR) identifies, selects, and critically appraises research in order to answer a clearly formulated question.

**Findings:** Blockchain technology results in the decentralization of the transaction system by securing the transaction mechanism. It has also impacted the healthcare, aviation, and e-commerce sectors heavily. Systematic reviews clarify what blockchain offers as a supportive technological environment in four areas: creating the industrial ecosystem, technology usable for business, constructing the system, and regulatory concerns.

**Originality:** This study determined blockchain has the potential to improve processes and policies in different sectors. Additionally, data were collected via systematic review through case-based analysis for each sector.

**Keywords:** blockchain, technology, industries, transaction, cryptocurrency, sector, aviation, healthcare, e-commerce.

## 1 Introduction

People have been taking advantage of the Internet to share information and documents through email and social media. Then came the technological revolution, brought about by the advancement of secure information exchange through blockchain technology in the past 20 years. The adoption of blockchain took connectivity to the next level, and it built value for its users through the internet [1].

By 2026, the market size of blockchain technology is expected to reach \$72 billion, which would reflect a growth of 51.8% compound annual growth rate (CAGR) for the period. Internet connectivity via cryptography helps in listing the records in the form of blocks so that information remains protected between the two parties. Businesses across different segments and industries are now focusing on investing in blockchain technology to strengthen their businesses [2].

According to a survey conducted by PwC in 2017, 86% of nearly 600 executives belonging to 15 different territories reported that they are involved in blockchain technologies. Knowing the significance of blockchain technology, businesses are focusing on adopting technology to keep their business competency alive [3]. A similar report was published by Deloitte, in which global data were obtained and analyzed for the adoption of blockchain technology. The survey found that companies mainly use blockchain technology for five major purposes: digital currency, sharing and data accessibility, identity protection, payments, and data reconciliation [4]. However, there tends to be potential barriers for industries while adopting blockchain technology, which include adaptation within the existing legacy system, security threats, and oversensitivity towards proprietary information. Blockchain is renowned for zeroing in on circulated ledger inventions, in which dates are documented over common frameworks in a secure manner [5] It targets high-value products such as Bitcoin, which is one of the world's most valuable cryptocurrencies [6]. A shared database guarantees that, due to the encoding relationship, no third parties are involved in transactions or have access to shared information, facilitating a high degree of privacy for such transactions [7, 8, 5]. Due to its particular characteristics of being logical and sensible, blockchain is now being used to address corporate problems. Cryptography, the internet, computing, open source, and protocols are properties of blockchain. [9, 10, 11, 12]. They have high server privacy and security requirements because of the constant transfers between various servers. [13, 14]. Subsequently, it has expanded with blockchain guidance and properties, not just for cryptocurrency but also for sectors such as schooling, wellness, industrial technology, and computer technology, in addition to developments beyond the financial domain [15, 16]. Subsequently, the development of blockchain in different areas may well be

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connoted as a radical innovation with varied applications. It can contribute to fields such as big data, man-made reasoning, distributed computing, and so on [7]. Hence, the adoption of blockchain technology requires extensive research to understand the right approach toward its implementation. Knowing the industrial outlook toward blockchain technology adoption is an effective way to maximize the efficacy of the technology [17, 18, 19]. This paper presents a comprehensive and insightful analysis of the adoption of technological blockchain trends in different industries. The present review shares a compilation of existing literature on blockchain technology. The synthesis of the literature presented in this research is considered valuable for policymakers as well as academics. With the help of the literature, an understanding of the adoption of blockchain technology helps in seeking an industrial-based narrative for its application. In the next section of the paper, a discussion on various theoretical assumptions is presented, which leads to a concrete argument. In Section 3, the methods of gathering findings are presented to help the reader understand the specific approach for data gathering, the industrial outlook, and the case analysis. The final section concludes with a clear future direction that is specific to the findings. Limitations have also been defined in the present body of literature.

## 2. Theoretical Mechanism

### 2.1 Pervasiveness of Blockchain Technology

It was originally applied in the monetary area by the expansion of cryptocurrency, such as Bitcoin [5]. It was utilized to keep away from any outsider investment throughout the exchanges and with no principal power. The hubs are PCs that permit association between peers in private or public organizations, and they comprise codes that are moved inside those PCs during any exchanges, yet with a similar sort of blockchain organization [20]. As blockchain is known for zeroing in on dispersed records, every hub has similar sorts of shared records, and they are put away in the organization to evade any fruitless exchanges between the companions [21]. Furthermore, all transactions are secured and digitally signed through the construction of a blockchain and the extension of historical ledger documents. One distinctive aspect of blockchain is that it is impossible to change, alter, or erase finalized data that is stored [22].

The platform and network of blockchain focus on transparency, as it plays a vital role due to its target characteristics, which are data protection and stability. It helps to remove any errors that might lead to extensive problems or ineffectively composed code [7, 9]. Consequently, irrespective of its chronological transfers, the immutable property of blockchain technologies demonstrates precision [23]. When it is checked, it is very difficult to destroy or erase all data or transaction records from the network. This makes it impossible for anyone to attack the device because of the replication of thousands of copies that contain the same data and information in the network [24].

The adoption of blockchain technology and applications revolutionized industrial development and provided a platform beyond publicizing cryptocurrencies such as Bitcoin. The common application of blockchain ranges from the process of financial transactions to the proprietary network [25]. However, for the development of blockchain technology, there have been three generations to date, but each generation has its own application based on industrial needs. Blockchain 1.0 is referred to as a digital currency used for buying of cryptocurrency. Blockchain 2.0 is for the digital economy, while blockchain 3.0 is mainly focused on the digital society [26].

**Blockchain 1.0** – This is the first-generation technology that mainly refers to the technological platforms usually involved in public ledger, mining, and hashing, as well as the overlaying protocol (that includes software used for transactions) and the buying and selling of cryptocurrency (such as Bitcoin and digital tokens) [27]. The appeal of blockchain 1.0 is that cryptocurrency offers a larger possibility of reducing transaction fees for making online purchases. It also helps to ensure anonymity, unlike credit cards. The information shared through credit cards is linked to a third party, resulting in reduced anonymity [28]. [29] claimed that the accounts of bitcoin users tended to be pseudonymous, and new account numbers for transactions were used for each transaction. Furthermore, decentralization supports the protection of digital currencies against inflation.

**Blockchain 2.0** – Refers to the digital economy, and the concept was incepted 20 years ago, whereas today it has received the logical platform of technology [26]. It involves an assortment of financial and economic applications that exist beyond the traditional methods of transfers, payments, and other modes of transaction [30]. [31] found that the clearing system of payment and information of banks tends to be the appropriate scenario for blockchain applications. [32] mentioned that during 2015, DocuSign and Visa demonstrated their smart contracts to lease cards that do not require the filling of forms. [33] found that the Ethereum blockchain is a well-known platform for supporting the running of smart contracts.

**Blockchain 3.0** – Refers to a digital society where there tends to be a wide array of different applications that do not involve commerce, economic activity, currency, financial markets, or money [26]. However, such applications are associated with public goods, education, healthcare, art, governance, science, and other aspects associated with

communication and culture [27]. [34] found that the key promise of blockchain technology involves smart cities that include cumulative elements such as smart living, smart mobility, smart citizens, smart use of different natural resources, a smart economy, and smart governance. Further, the emerging platform of e-business is the Internet of Things (IoT), which enables P2P trading based on connecting smart property to paid data [35, 36]. Within cyberspace, the reputation system tends to be effective, as it allows people to evaluate the trust of the potential seller. However, the reputation system followed in cyberspace today is vulnerable because of fraud, and detection of different fraud raters is relatively difficult because they camouflage themselves in the digital environment. Thus, blockchain technology provides new opportunities for the reputation system [37].

**2.2 Blockchain Technology and the Changing Industrial Outlook**

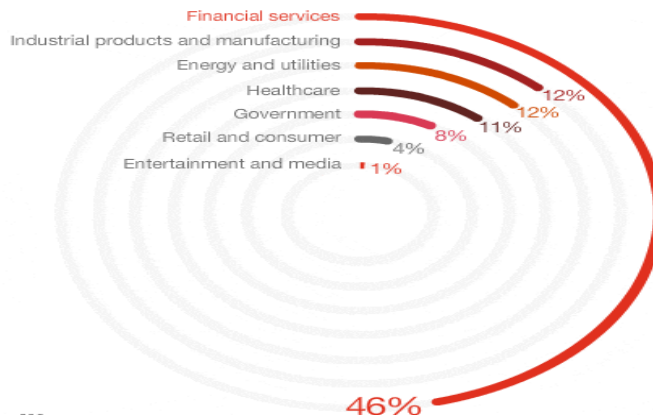
The adoption of blockchain technology is based on the strategic mechanism of operating the systems together with common standards. It emphasizes four major areas: building the industrial ecosystem, making the blockchain technology applicable for the business, deliberately designing the system, and navigating regulatory uncertainties to enable a supportive technological environment [3]. Ensuring strategic clarity helps to ensure that the blockchain initiatives taken by businesses align with the participants. However, there tends to be several indicators that blockchain alters the business landscape [38]. Based on this, the indicators are discussed below:

**Initial Coin Offerings (ICOs)** – in which a company within the industry sells its predefined digital tokens to the public, filling up billions of dollars within the blockchain technology platform [39]. It is increasingly considered an alternative to the capital funding and classic debt provided by private equity companies, venture capital, and banks [40]. During the first five months of 2018, ICOs increased by \$13.7 billion. To date, the largest ICOs include EOS, which is focused on the blockchain infrastructure; Hdac, the IoT platform; and Huobi Token, a coin mainly belonging to the South Korean cryptocurrency exchange [3].

**Tokenization** – this refers to the virtual or real assets found on the blockchain that spread to finished goods, membership rights, raw materials, securities that produce income, and much more. A business may represent everything on blockchain technology [41, 3].

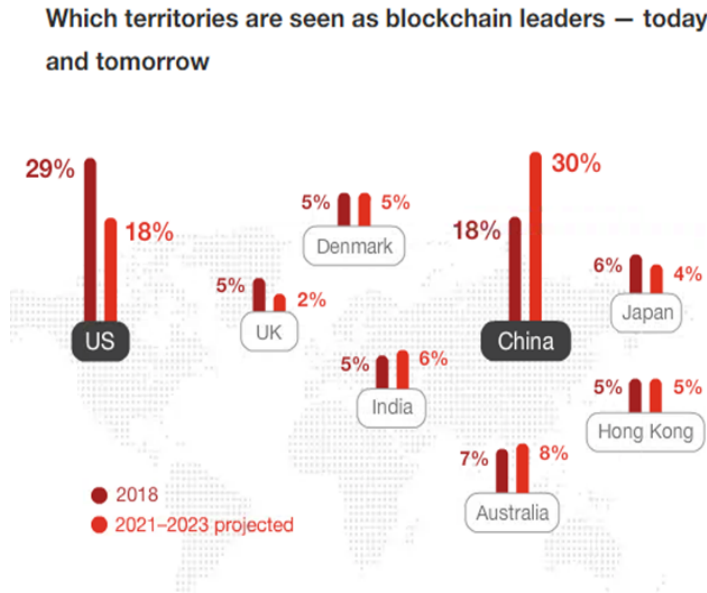
**Enterprise Software Platforms (ESP)** – are considered the engine of the operations of any business that includes human resources, customer relationship management, and finance, which integrate with the blockchain. For instance, Oracle, Salesforce, SAP, and Microsoft announced blockchain initiatives [42]. The future of businesses and industries across the board will operate based on an operating mechanism known as blockchain-based technological systems. The adoption of blockchain technology along with ERP platforms enables businesses to streamline their processes as it improves data integrity and facilitates data sharing [3].

**Territory and industry leaders** – with the advancement seen in the use of blockchain technology, new industries are emerging. Gartner's survey found that 82% of financial services in 2017 used blockchain technology; however, in 2018, the portion dropped to approximately 46%. It is further predicted that financial institutions and services tend to be future leaders in using blockchain, but there is also an increase seen in other industries, such as healthcare, utility, production, and energy, as shown in Figure 1 [3]



**Fig. 1: Blockchain and new industries**  
Source: (PwC, 2017)

There are also certain territories that are becoming the leaders of blockchain technology (as shown in Figure 2), among which the US is reported as the most advanced leader, whereas China is also competing with the US in the adoption of blockchain technology [3].



**Fig. 2:** Blockchain leaders  
Source: (PwC, 2017)

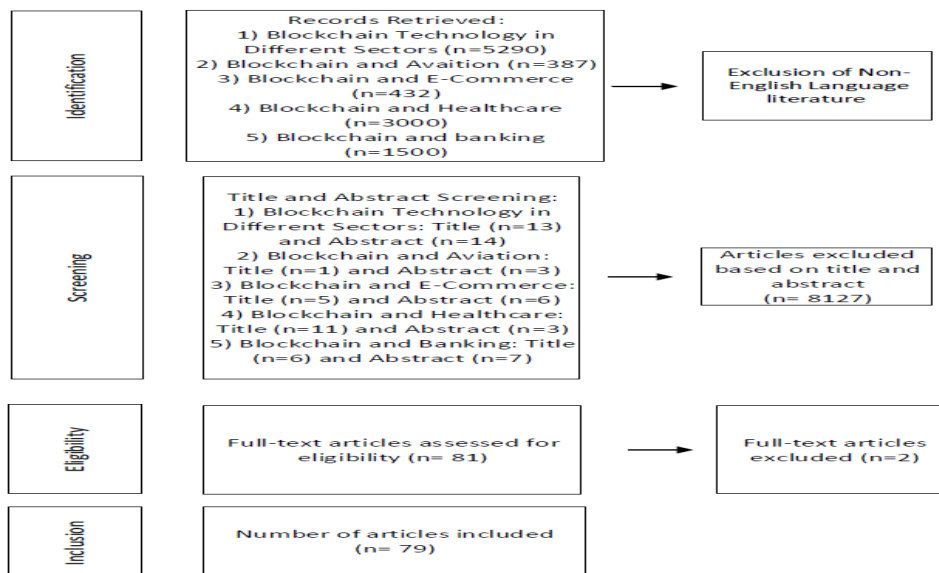
### 3. Methodology

Methodology: A systematic literature review was used in this study. A systematic literature review (SLR) identifies, selects, and critically appraises research in order to answer a clearly formulated question [43]. Using systematic literature reviews helps researchers focus on the most important topics and conduct critical assessments of the sources they use [44]. To undertake this systematic literature review, the process proposed by [45, 46] have been incorporated to provide a scientific literature evaluation of blockchain technology in sectors that have seen a dramatic improvement in their performance after using it, including the financial and banking sector, aviation, healthcare, and e-commerce, as shown in Table 1. The following steps make up the overall methodological approach: information gathering, collection of relevant aspects, data analysis, and proposing solutions to the specific issue.

**Table 1: The Systematic Literature Review protocol for this study**  
Source: The Author (Bugawa, 2022)

Protocol elements	Translation to this study
Sources searched	Scopus, Google Scholar, Elsevier, and Science Direct
Search terms OR Keywords	Blockchain technology, Aviation, Financial, banking, E commerce, Healthcare
Search strategy	Peer-reviewed journals and conference papers; theoretical and empirical studies and reports; publication date limit ( 2018-2021), search terms contained in articles' title, abstract and keywords
Inclusion criteria	Blockchain technology, aviation sectors, financial sector, ecommerce sector, healthcare sector
Exclusion criteria	<ul style="list-style-type: none"> <li>a. Articles using "Blockchain technical" generic usage</li> <li>b. Articles without full access</li> <li>c. Non English Language literature</li> </ul>

*Gathering information:* A comprehensive literature search was conducted 2018 to 2021 address our core research topic. Scopus was utilized as the main scientific database, and all paper titles were searched for the terms "blockchain technology and financial and banking sector", "blockchain technology and Aviation sector", "blockchain technology and healthcare sector" and "blockchain technology and ecommerce sector" during the search, different phrases for "blockchain" and "technology" were tried. Additional grey literature was discovered by searching the reference lists in numerous reports, public sector institutions/organizations. Figure 3 shows a flowchart of the technique that was used. In addition, various Scopus refining capabilities were heavily utilized (several refinements of findings following the initial refinement).



**Fig. 3: Systematic Literature Review protocol**  
Source: The Author (Bugawa, 2022)

*Collecting the relevant studies:* The authors independently assessed the collected literature's eligibility using a set of established exclusion and inclusion criteria such as (language, subject area, document type restrictions and year) as shown in Table 1. Initially, all research articles that met one of the exclusion criteria were removed from the study and classified by reason for removal. Following that, a full-text review was conducted, and several further papers were omitted from the study, with the reasons for their exclusion documented. Any disagreements on the relevancy of the items under review were resolved through discussion until a consensus was established. Several researches were omitted because they were primarily focused on the technical aspects as shown in Table 2.

**Table 2: Searching Queries**  
Source: The Author (Bugawa, 2022)

Main Searching String	Include and Exclusion Criteria	Results
Blockchain AND "Aviation"	In Title	8127
	Limit to Full Text	81

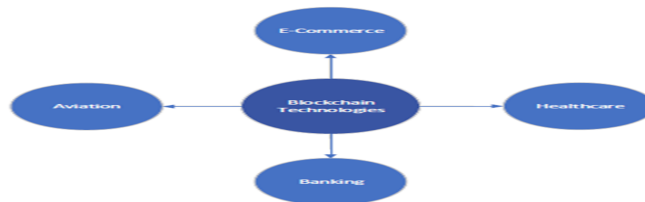
OR Blockchain AND "Healthcare" Blockchain AND "E-Commerce"	Include only the relevant full text paper	79
OR Blockchain AND "Banking"		

*Analysis:* Qualitative studies emphasize the quality of information that holds an exploratory perspective. This means that, with the help of a qualitative study, the subjectivity involved in any issue is analyzed. However, subjectivity is present in a primary or secondary approach. Based on this, the applicable approach to the study is the adoption of a qualitative method that exclusively emphasizes the quality of information. With the help of a qualitative method, the focus of the investigation is mainly to gather specific data that is relevant to the discussed theoretical mechanism [47]. Obtaining secondary data, however, helps in specifically presenting findings on the key domain of the study, that is, blockchain technology trends in different industries.

The goal of this paper is to integrate the theoretical domain to present information by investigating the available literature published from 2018 to 2021. During the defined period, the focus be to analyze the industrial acceptability of blockchain technology. It focuses on presenting *statistical evidence* extracted from different industries to understand the change in the trends of blockchain technology. However, knowing that industrial leaders are considerably in number, specific industries have been analyzed, including the financial and banking sector, aviation, healthcare, and e-commerce. *The focus has been driven towards these sectors because the changing role of technology and the adoption of different blockchain generations in these sectors have brought about a revolution in their performances.* Efficiency and productivity increased, whereas the challenges are also parallel to the benefits that these industries receive from the adoption of blockchain technology. Hence, an extended review helped in conducting the systematic analysis where numerous sources have been approached for data collection, including Google Scholar, Science Direct, IEEEExplore, EBSCO, and multiple industrial data websites.

#### 4. Findings

The analysis is carried out by providing an outlook of various industries based on the blockchain technology trends followed to build efficiency and competitiveness. Based on this, a qualitative analysis of secondary data sources is presented below as shown in Figure 4.

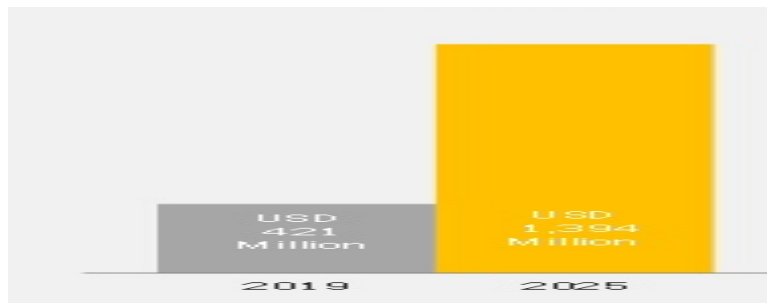


**Fig. 4:** Blockchain technologies outlook of various industries for this study  
Source: the Author (Bugawa, 2022)

##### 4.1 Aviation Sector

In the digital era, aviation has been recognized as one of this century's fastest-growing industries. Within the industry, since the emergence of blockchain technology, new technological innovation has been reported, which has opened a new sphere of ensuring transparency along with maintenance. The adoption of blockchain 3.0 also helped to manage passenger information and flight data security to avoid any uncertain events [48]. According to [49], during 2019, aviation blockchain technology had grown to US\$ 421 billion, and it is projected that by the year 2025, it will reach

\$1,349 billion at a CAGR of approximately 22.1%, as shown in Figure 5. Additionally, traceability and transparency also increased, which resulted in the improved experience for customers as one of the major factors driving industrial growth.



**Fig. 5:** Aviation blockchain technology growth  
Source: (Markets and Markets, 2021)

This trend helped to build opportunities for blockchain technology for the industry to focus on digitalized business processes to fuel advancement in the global aviation market. For industry, there are potential uses of blockchain technology trends [50]. IT allows the immutable and reliable tracking of the status and location of baggage and cargo because these assets tend to change custody since they are deposited. Furthermore, it also helps to enhance visibility and transparency while locating the luggage across the defined value chain. Through blockchain, it has become relatively easier to track passengers’ identities. Aircraft maintenance is also effectively managed using blockchain technology by means of track and trace for faulty units as shown in Figure 6 [51].



**Fig. 6:** Blockchain and airlines, aircraft, and suppliers  
Source: (Gheorghe and Badea, 2020)

#### 4.2 Financial Sector

The financial sector, such as crowdfunding, international money transactions, borrowing and lending money, foreign exchange trade, bond market, insurance and digital will transfers, will benefit from the introduction of blockchain in finance [52]. The financial field was the subject of blockchain at the beginning. In this field, there are several reports on blockchain that present the advantages and achievements of its implementation [53, 54, 55].

**Transaction details** – Money transactions are not the only way for banking to be revolutionized by blockchain. Blockchain is a perfect way to trace transactions and to ensure reliable, secure records. For customers and financial institutions, the movement of capital to other countries poses numerous issues and obstacles. Every year, people transfer billions of dollars abroad, and the procedure is typically costly, laborious, and vulnerable to mistake. [56, 57]. Blockchain will render all the shift. Many global banks have implemented blockchain technologies for foreign

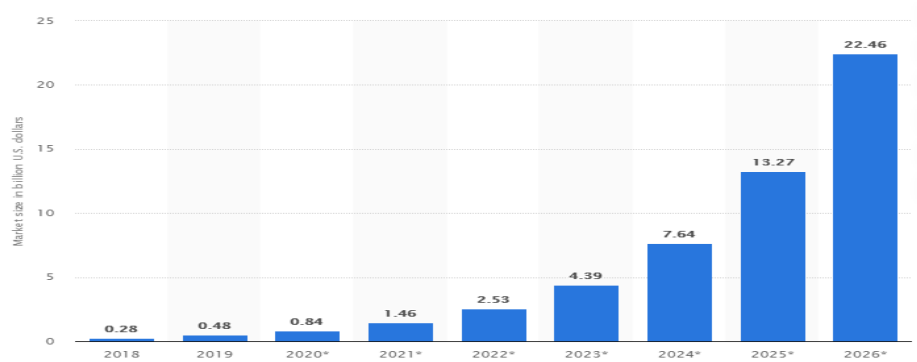
payment networks, which saves time and resources. Blockchain money transfers can now be used by customers to complete mobile electronic transfers, eliminating the tedious procedure of entering a money transfer center, waiting in line, and paying transaction fees [9, 53].

**Financial inclusion** – The low cost of blockchain offers entrepreneurs an incentive to negotiate with big banks, facilitating financial inclusion. Because of constraints including minimum balance requirements, low access, and banking costs, many individuals are searching for an alternative to banks. Free from the inconvenience of conventional banks, blockchain will offer an option that uses digital identity and mobile devices [58, 53].

**Reduced fraud** – In a ledger of transaction data within each block, blockchain stores data, along with a special hash that corresponds to the previous block. Any person receives a copy of the transactions inside the network as well. The blockchain platform is immune to decentralized denial-of-service attacks, hackers, and other forms of fraud because of these features. The risk of doing business is minimized without the possibility of cyber threats, making those interested parties save money and tension [22].

**Inexpensive, direct payments** – Many funds, such as banks or credit card payment centers, flow through financial institutions. Each of these measures introduces, along with fees that can become expensive, a layer of difficulty, thereby reducing rates and withdrawal of inadequate funds [59].

Digitalization seen in the financial instrument comprises smart contracts, digital assets, and programmable use of money, taking the benefits of the technology by forging unprecedented levels of programmability and connectivity for assets, products, holdings, and other services. [60] found that blockchain technology has been considered a remarkable revolution in cryptocurrencies such as Ethereum and Bitcoin, as it gained huge interest in the financial markets. The industry's focus on blockchain is mainly based on the immutability of cryptocurrency, improved privacy control, and increased decentralization. In particular, banking systems as well as financial institutions have utilized the benefit of blockchain technology, where the market size increased with an estimation of \$0.28 billion in 2018. It is projected that the application of the technology within the financial sector is likely to increase to approximately \$22.5 billion by 2026, as shown in Figure 7 [61].



**Fig. 7: Blockchain and financial sector**  
Source: (Statista Research Department, 2021)

However, in 2017, the CEO of JP Morgan, Jame Dimon, found that some think that tends to move at 20% speed is not likely to be considered as currency, but it is a vehicle of perpetrating fraud. However, in the same article, it was found that the technology involves a high degree of decentralization and has a higher opportunity to disrupt the \$5 trillion of the global banking industry by disintermediating key financial services provided by the bank. With the help of blockchain technology, payments can be made faster at a relatively lower fee than banks are charging. Hence, there are considerable benefits of technology for the industry, as the potential for growth is high [62].

For the banking industry, blockchain 1.0 has been adopted, which ensures automatic payment transactions based on smart contracts between exporters and importers, as shown in Figure 8. The payment takes place based on a tokenized form that is contingent upon the receipts of the goods delivery. The automatic payments thus help in cutting the possibility of lapsed, repeated, and missed mortgaged shipments. In particular, for financial trading, blockchain technology provides greater trust to trading parties by means of keeping their information hidden and ensuring trading secrets [62].





**Fig. 8:** Blockchain and banking sector  
Source: [62] (Cbinsights, 2021)

#### 4.3 E-commerce Sector

It took several decades to transform the Internet network, where it was initially used for educational institutions and the military to provide a technological platform to host commercial applications. Since the evolution seen on the Internet and the launch of commercial websites, the exponential growth seen in the World Wide Web, and due to this, the e-commerce industry soared with sales amounting to \$4.89 trillion by 2021. Further, during 2024, it is projected that this is likely to reach \$6.39 trillion. Comparatively, the market capitalization of cryptocurrencies was \$566 billion in 2017, whereas in 2018, it reached \$237 billion, and in the last year it was \$758 billion [63].

In order to help in data collection, *cloud computing* is typically adopted in military and industrial contexts. The heterogeneous cloud computing environments are distributed with separate hardware and software modules purchased from manufacturers, which may bring incompatibility and vulnerabilities as described by [64], such as:

- “Cryptography Technique (CT)”
- “Data Deduplication Scheme (DDS)”
- “Data Integrity Checking Technique (DIC)”
- “Storage Efficiency Technique (SET)”
- “Bitcoin Technology (BT)”
- “Blockchain-based Cloud Storage (BCS)” [64]

Each of these enable people to transfer their data in encrypted format, transmit the content of information to cloud hubs, and ensure the information is accessible using cryptographic protocols to store consumer records on the cloud [10]. For each individual, the token generator creates the token [5].

Verification of corrupted data stored in the cloud, processing of information before it is sent to the cloud, access management mechanism for cloud storage and payment system for the cloud ensure that the encrypted deletion strategy can achieve public approval without the use of blockchain by any third party [65].

Inside the cryptographic ties, the *virtual currency* is moved and created. The type of administration intervention or the creation of a global safety standard that can have cross-cutting constraints on reliability has yet to be solved. To characterize how companies can use cloud storage, specific gauges will be given [66, 10, 5].

Uniting the data deduplication arrangement with the blockchain method will accomplish the *confidentiality*, security of device secrecy and data integrity [64, 65]. It is also well-suited for distributed storage networks. The CSP and data owner could access the blockchain network as a node for similar services. After the client transmits the information, the deduplication process is operated on the side of the receiver, and it also rejects the additional data. The deduplication process is performed by the storage system without affecting the client's service [67, 7, 65].

There tend to be considerable benefits for blockchain in e-commerce, which includes cost reduction, because the blockchain helps in conveniently combining the payment process, product descriptions, and inventory management. However, it tends to be less expense when maintaining systems. Furthermore, to avoid cyber threats, blockchain technology tends to provide solutions to overcome the challenges faced by online retailers, as the technology offers security at the highest level based on the distributed ledgers through the database management system [68].

#### 4.4 Healthcare Sector

In the healthcare sector, interoperability is a major concern. In fact, for quite some time now, increased healthcare interoperability has been a top priority for providers, politicians, and patients. However, when it comes to ineffectual interoperability, what are the two main areas affected? These are the challenges of understanding patients and blocking records [69, 70].

**Information Blocking** – The fact that there has been no widely accepted patient identifier is one of the most shocking things we found when studying for this guide. While organizations such as HIMSS and CHIME have been pressing for its growth for nearly two decades, this has not yet been seen, this is very surprising when you think that a unique patient identifier would be able to quickly solve the issue of incompatible patient electronic health records (EHRs) that have contributed to many patient-care mistakes in the past and increased the probability of harm [71].

**Disadvantage** – According to the researchers, one of the following approaches will curtail information blocking: by increasing transparency such that any step taken by the participants can be accounted for. A good financial opportunity should be given so that the participants would continue to exchange knowledge with each other. A cooperative collaboration between health IT firms, hospitals and HIEs could further curb the blocking of information [71, 70, 72].

**Advantage** – Having a private chain is possible as these are not available to anyone, unlike public blockchains. As a consequence, to be part of this network, individuals who wish to engage in the private chain must seek approval. This is why “permitted blockchains” are often called private chains. Because of this, there are limits on the form of persons that will join in the consensus. Access to new participants may be offered by the following: current ecosystem participants, a controlled body, or a coalition. These private chains are uniquely developed for corporate purposes and deliver a range of features, such as fast transfers, confidentiality, and high security [73, 74, 70, 75, 76, 77, 78].

The blockchain will also assist in developing a marketplace for patient knowledge sharing. In this way, it would be possible to promote knowledge exchange between the various institutes in order to avoid some sort of blocking of information. However, what if we do have some bad actors who want to block or tamper with data? In any case, two of the most relevant aspects of the blockchain would step up to cope with this situation:

First, a Blockchain is a transparent medium. The blockchain can be inspected by everyone who is aware of the network to see how each exchange takes place and whether all the right information is passed along with it [71].

Second, we provide anti-tampering activities. If someone attempts to block the figures, it will dramatically alter the hash through the snowball effect. With a hash pointer, the blocks in the blockchain are connected to each other [74, 5]. The hash of the data that is contained in the previous block stores each block in the blockchain. If the data shifts within each of the chains, a chain reaction is started that might freeze the whole blockchain. Although this is a technical impossibility, any details inside the blockchain should not be tampered with [79, 80].

**Advantages that blockchain can bring to the medical healthcare institute** – The blockchain is traceable and immutable. Without the risk of data corruption or tampering, patients may conveniently submit information to anybody. Likewise, a medical record that has been created and applied to the blockchain would be entirely secure. [69].

The patient may have some discretion over how the institutions use and share their medical records. Any party looking to get a patient’s medical details could verify with the blockchain to get the permission needed. By a compensation system, the patient may also be incentivized for positive actions. For example, tokens may be provided to obey a treatment plan or to remain safe. They can also be awarded with tokens for presenting their clinical trials and testing data [79].

Within the healthcare sector, the role of blockchain technology was valued at nearly \$48.1 million in 2018, whereas the chances of growth in CAGR was estimated as 65% from the years 2019 to 2025. While comparing the blockchain technology for the industry, it was found that the Canadian market projects a CAGR of 69.9% for the years 2019–2025, whereas for Germany, the market value was \$2.8 million for the year 2018. The growth drivers for the industry were increasing use of applications associated with IoTs within the healthcare sector, whereas cost-saving applications were also considered as growth drivers. However, regarding the adoption of blockchain technology for healthcare, there is still a need to develop trust in patients and people to maximize the efficiency and flexibility of using the technology. In particular, for developing countries, there is a lack of technical infrastructure that supports blockchain technology for the industry [80].

## 5 Conclusion

Blockchain technology seems to be complex, but it can be simplified by examining each component individually. A large proportion of blockchain technology uses cryptographic primitives, which supports the industrial mechanism of information management. It has been recognized as the future because most of the communication and exchange of data is likely to take place in the form of blocks. These virtual blocks ensure information security. However, there is a dire need for research and development to ensure that industries are adopting the technology efficiently.

## 6 Limitations

The limitations faced while conducting the investigation were access to the statistical data and figures. The trend was however, analyzed categorically, but due to time constraints, accessibility was also limited. However, each aspect was analyzed to provide precise and justifiable information. In addition, a limited number of industries were analyzed due to time constraints, so that the information presented may help in comprehensively understanding the trends in specific industries. Considering the SOPs implemented due to the outbreak of the pandemic, social interaction with intellectuals was avoided. However, to seek primeval knowledge, an on-call interaction was conducted.

## 7 Future Directions

Knowing that blockchain technology is the future of industrial development, there is an extensive array of knowledge to expand the investigation, focusing on trends of specific sectors and the need to investigate such services that do not integrate blockchain technology.

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