

The Impact of Block Chain Technology on Enterprises --A Case Study of Alibaba Group

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Abstract. In recent years, with the rapid development of digital economy, many enterprises have made full use of cloud computing, artificial intelligence, big data or block chain technologies to enhance their competitiveness in the market. This paper will take block chain technology as the center to explore its impact on enterprises. Since the introduction of blockchain technology, many enterprises have been exploring how to apply it to their accounting information systems. At present, blockchain technology has been widely used in various fields such as finance, logistics, and asset management, and it will be applied to more industries in the future. As the first enterprise to develop blockchain technology in China, it applies blockchain technology to the storage of accounting information, recording of bills, cross regional payment. Through blockchain technology, Alibaba has achieved many remarkable achievements. This article takes Alibaba as an example to analyze the positive impact of blockchain technology on enterprise information security, finance, and overseas transactions.

Keywords: Blockchain technology, Alibaba, enterprise data security, enterprise finance, overseas transactions.

1. Introduction

With the development of digital information technology, more and more enterprises are adopting new accounting information management technologies or systems. As one of the current mainstream development trends, blockchain technology is widely popular as a new data management method in China. This article chooses China's Alibaba as the research object. It is not only the earliest enterprise in China to develop blockchain technology, but also one of the enterprises that has achieved the most remarkable achievements relying on blockchain technology. Analyzing the impact of blockchain technology on Alibaba helps to gain a deeper understanding of its theories and advantages, thereby gaining a clearer understanding of the enterprises to which blockchain technology is applicable and its future development prospect.

2. Overview of Blockchain

2.1. Concept

Blockchain is a blocking storage, tamper proof, secure and trustworthy decentralized distributed ledger, it combines technologies such as distributed storage, peer-to-peer transmission, consensus mechanism, cryptography, etc., to record transactions and information through a continuously growing data Blocks, ensuring data security and transparency.

Technically speaking, blockchain is a fusion solution that integrates P2P networking (peer-to-peer networks), asymmetric encryption, distributed databases, and other technologies. From a business application perspective, blockchain is a distributed shared ledger system [1].

According to a survey by the China Academy of Information and Communications Technology, since the proposal of blockchain technology, many companies worldwide have joined the blockchain technology circle every year.

2.2. Principle

Blockchain mainly consists of three elements, which are transaction, block, and chain. Each block in the blockchain retains data and transaction records for a specified time period, which are included in the ledger of all historical transactions. A secure data chain is constructed through cryptographic methods, which is tamper proof and shared by all members. The input data is arranged in chronological order, making the included data unique and continuous.

2.3. Features

Firstly, decentralization. Blockchain networks typically consist of numerous nodes, with some or all nodes bearing the cost of data maintenance according to different needs. Offline or functional loss of a small number of nodes will not affect the overall system operation. All nodes follow a unified transaction accounting rule, and data is entered at one node. Other nodes will verify the authenticity and reliability of their accounting to ensure transparency of the enterprise and avoid abuse of authority.

Secondly, openness. The blockchain system is open, and its data is open to everyone. Anyone can query the blockchain data through a public interface, and its information has a high degree of transparency.

Thirdly, the except trust mechanism. It allows for anonymity between data exchange parties in blockchain, and each node in the system does not need to know other's identity information.

Fourthly, it cannot be changed as all transaction details can be seen at any node on the same blockchain. It has high security and is difficult to tamper with. If it is necessary to modify the relevant data of a certain block, the modified data will not match the record on the next page, and the data on the next page will need to be modified together. However, such modifications often require a huge amount of change, thereby reducing the possibility of fraud [2].

3. The Application of Blockchain Technology in Enterprises - Taking Alibaba as an Example

Taking Alibaba as an example, this paper gets the following information from Alibaba's official website: In 2015, Alibaba began to lay out blockchain, which is the predecessor of Ant blockchain; In July 2016, Alibaba announced that Ant Financial would apply blockchain technology to Alipay's charity donation platform, and then Alibaba extended blockchain technology to the application of mutual insurance. In March 2018, Alibaba officially announced that Tmall Global will use blockchain technology to track, upload, and verify the logistics information of cross-border imported goods throughout the entire chain, to prevent fraud. On May 22, 2019, the courts in Shanghai, Zhejiang, Jiangsu and Anhui introduced Alipay's ant blockchain technology, established the Yangtze River Delta judicial chain, and promoted the judicial integration in the Yangtze River Delta.

On August 3, 2018, Alibaba Cloud Computing officially launched the enterprise level Baas system (i.e. Ant Blockchain System). Alibaba Cloud Baas provides enterprise level platform services based on leading blockchain technology, helping customers build a secure and stable blockchain implementation environment. On October 24th, Alibaba's blockchain technology officially divided the global market. Alibaba Cloud BaaS supports enterprise level blockchain applications on two platforms, Hyperledger Fabric and Ant blockchain. The former is a blockchain framework implementation, while the latter is a proprietary high-performance blockchain platform with multiple patents. After the launch of Ant blockchain, it has been widely used in the financial industry, e-commerce industry, retail industry, general services industry, and even suitable for small and medium-sized enterprises and daily life scenarios.

Alibaba Cloud Computing, a subsidiary of Alibaba, was officially launched in October 2017. As a subsidiary responsible for cloud computing, Alibaba Cloud provides cloud computing services to various departments of Alibaba. Based on its demand for security and efficiency in big data computing, Alibaba Cloud has developed various enterprise level programs based on blockchain technology. In 2019, its blockchain technology was improved and matured.

4. The Impact of Blockchain Technology on Enterprises

After introducing the application of blockchain technology on Alibaba in recent years, it's impact will be discuss from three aspects. Taking Ant blockchain as an example, we will analyze the impact of blockchain technology on Alibaba or Alibaba Cloud.

4.1. Taking Ant Blockchain As an Example, Analyze the Impact of Blockchain Technology on Enterprise Data

According to the official announcement of Alibaba Cloud, on June 27, 2018, the Alibaba Cloud system malfunctioned. In the afternoon of that day, the engineering team performed a change verification operation in the launch of a new automated operation and maintenance function. This function did not encounter any issues during the testing environment validation. After being launched into the automated operation and maintenance system, an unknown code bug was triggered. The error code disabled some internal IPs, causing some products to have inaccessible access links. The affected scope includes the Alibaba Cloud official website console, as well as product features such as MQ, NAS, OSS, etc. [3].

In 2018, Alibaba Cloud still adopted centralized cloud computing technology, which control by a traditional centralized data center. Once such systems fail, various subordinate units will face risks such as collapse, data loss, and theft. After the system failure, Alibaba Cloud suffered losses in terms of enterprise reputation and other aspects, it's centralized cloud computing system was even more questioned. Traditional big data systems have other drawbacks. Firstly, they are prone to forming data isolated, although the essence of the Internet is sharing, transparency and centralization, every Internet company regards its own data as its own resources and does not share it. The second is the misalignment of data ownership, where everyone is providing big data to big data platforms, but big data companies can use it to analyze user behavior or sell it for profit [4].

To overcome these disadvantages, Alibaba Cloud has updated its cloud computing system and adopted a blockchain based cloud computing program. In 2020, the relevant blockchain program brands were upgraded to Ant blockchain.

After the launch of Ant Blockchain (Baas), with the decentralized characteristics of blockchain technology, Alibaba Cloud can effectively avoid some departments being unable to operate due to the central system failure in June 2018. According to a survey by Alibaba Group, after the adoption of the new computing system, the failure rate of the platform has significantly decreased in recent years. Moreover, the new blockchain technology ensures that the Alibaba Cloud platform provides a reliable platform for buyers and sellers, protecting the security of enterprise identity, personal identity, and the security of information. Due to the security of blockchain technology, platform transaction data is more difficult to tamper with, greatly reducing the possibility of fraud and providing security for users. The Ant Chain BaaS platform fully embodies the security capabilities of Alibaba Cloud platform. Due to its security and reliability, Ant Chain is highly popular in financial scenarios, especially in overseas e-commerce transactions.

To more, after adopting Ant Chain, Alibaba Cloud has independently developed alliance blockchain technology and financial institution blockchain BaaS platform, and currently has a core technology team from Bayern, it also has a support provided by the Financial Technology Laboratory of Alibaba Dharma Institute. Based on this, the BaaS platform can provide high-speed parallel consensus capabilities, achieve a second level of transaction confirmation, and have high reliability and fault tolerance. With ultra-high computing power support, Ant blockchain can handle a large amount of complex data computation in a short period of time, prevent server crashes caused by overloaded operation, and avoid the recurrence of server crashes like those in 2018.

4.2. The Impact of Blockchain Technology on Enterprise Finance

Alibaba Cloud is a cloud computing service provider under Alibaba, established in 2009. The services it provides mainly include various computing instances and services, which can be flexibly

scaled to meet the needs of applications or enterprises. These computing instances and services provide computing isolation at multiple levels to protect data while ensuring configuration flexibility for customer needs. Since Alibaba began laying out blockchain technology in 2015, as its development maturity gradually increases, the financial aspects of the enterprise have also been positively affected (According to Fig. 1)

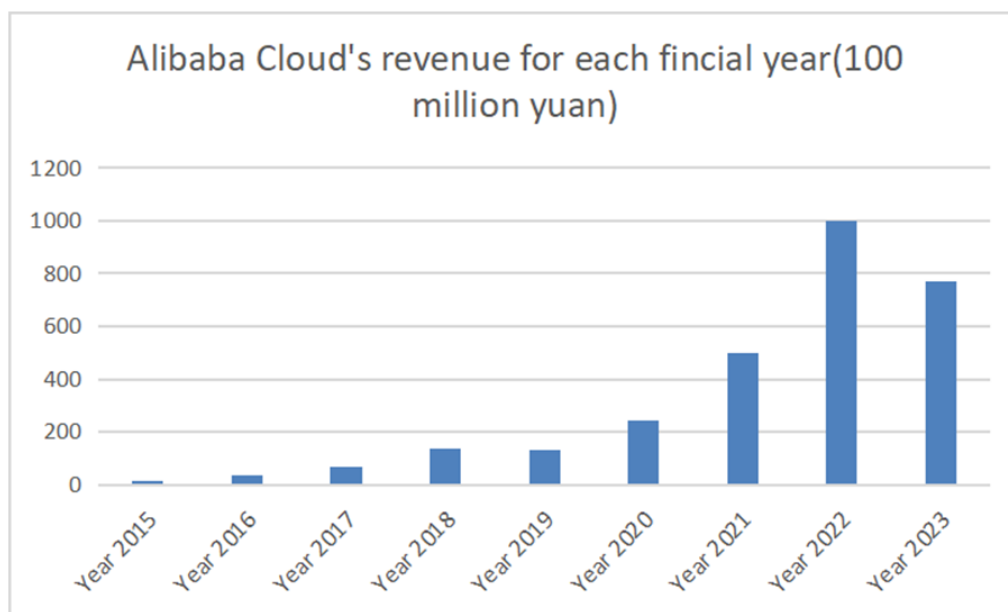


Figure 1. Alibaba Cloud's revenue for each financial year

Since the introduction of blockchain related technologies in 2017, Alibaba Cloud has seen a year-on-year growth of over 100% for three consecutive years. This indicates that various services supported by Ant blockchain have attracted many customers, leading to an increasing transaction volume for enterprises year by year, more and more investors are willing to invest in Alibaba Cloud. These indicated that blockchain technology can bring considerable financial benefits to enterprises when applied appropriately.

As the parent company of Alibaba Cloud, Alibaba has also benefited from the development of Alibaba Cloud's blockchain technology, achieving significant economic inflows in the cloud computing field supported by blockchain technology, and its revenue growth ranks among the top in other fields (According to Fig. 2).

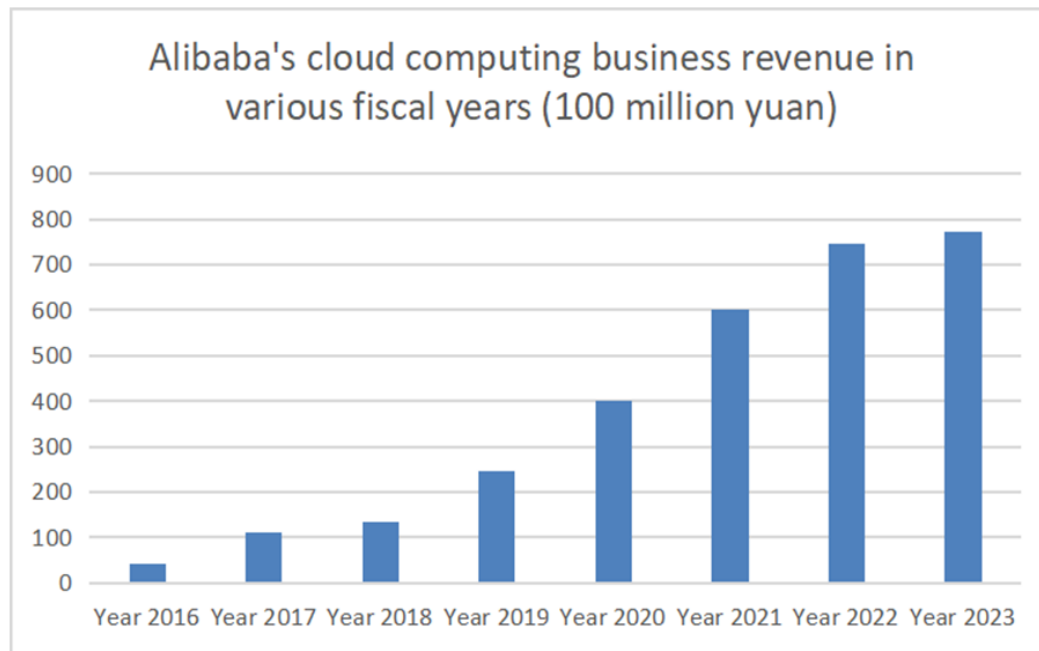


Figure 2. Alibaba's cloud computing business revenue in various fiscal years

According to the dates, Alibaba Cloud's blockchain related technology has promoted the growth of Alibaba's cloud computing business since 2017, and achieved good revenue in both 2018 and 2019. In 2020 and 2021, affected by the COVID-19, the demand for various online services increased, providing a good environment for Alibaba's technology development. Based on excellent "cloud native" technology, Alibaba has been able to develop various online service software, resulting in a doubling of revenue in the past two years. In 2023, due to the stabilization of the epidemic situation, the growth rate of its online service revenue has decreased, but it still meets Alibaba's expected revenue.

To summary, after adopting blockchain technology, Alibaba can improve its service quality, promote the increase of enterprise transaction volume, attract more customers, and thus increase financial revenue. The following text will specifically explore how blockchain technology affects the transaction volume of enterprises.

4.3. The Impact of Blockchain Technology on Enterprise Transactions

The impact of blockchain technology on enterprise exchanges can be mainly divided into two categories: the first is the impact on business volume, and the second is the impact on transaction costs. The following text will take overseas business as an example to explore how Ant blockchain affects Alibaba's transactions. After adopting blockchain technology, there have been significant changes in financial information. The reliability of information in the upstream and downstream of the supply chain can be improved by digitizing, allowing online trading platforms to protect user data privacy while ensuring transparency of transaction information. Moreover, electronic credentials can be dismantled on the blockchain to ensure the safety, openness, and transparency of the participation process of suppliers at all levels of the enterprise, ensuring that data is not tampered with.

This has solved the trust issue that has plagued overseas transactions for many years. Due to concerns about transaction reliability, more and more international customers are choosing to complete cross-border transactions through Ant Blockchain, which can help Alibaba Group increase its enterprise transaction volume [5]. The following are the transaction achievements achieved by Alibaba in recent years (According to Table 1).

Table 1. Alibaba's achievements in overseas transactions

Year 2017	Lazada's total annual active buyers have reached 83 million
Year 2018	International retail business saw a 94% year-on-year increase in annual revenue
Year 2019	The total annual active consumers of Lazada and the Aliexpress have reached 120 million
Year 2020	In terms of cross-border and global retail business, revenue for this fiscal year increased by 24% year-on-year to 24.323 billion yuan
Year 2021	In terms of cross-border and global retail business, revenue for this fiscal year increased by 42% year-on-year to 34.455 billion yuan
Year 2022	International retail business revenue increased by 24% year-on-year in this fiscal year to 42.668 billion yuan
Year 2023	The international commercial retail business revenue in the first quarter was 18.541 billion yuan

Alibaba's main platforms responsible for overseas business are Lazada and AliExpress, they are all supported by blockchain technology. Alibaba has attracted many buyers after applying blockchain technology, and the cross-border business volume has also rapidly increased.

Secondly, by citing blockchain technology, Alibaba was able to reduce the transaction costs of cross-border business. Transaction cost refers to the fees paid by both parties outside of the transaction, the most typical of which is the introduction fee paid to intermediaries. In cross-border business, tracking products, monitoring, and punishing counterfeit products all have high costs, which can deter many traders. So, Alibaba used blockchain as a technical support and developed the Lai Zanda and Global AliExpress platforms, allowing buyers and sellers to share information and conduct fair transactions even at different nodes. In addition, Alibaba relied on Alipay's guarantee mechanism and consumer evaluation mechanism to improve the reputation of the enterprise while completing the transaction. As the reputation and trust of enterprises increase, transaction costs will gradually decrease. According to a senior executive at Alibaba, the reason why Alibaba has been able to achieve a rapid increase in net profit in recent years is also due to the decrease in operating costs. The adoption of blockchain technology is also one of the main reasons for the reduction in operating costs.

5. Conclusion

Blockchain technology has the advantages of decentralization, openness, de trust mechanism, and immutability. As the earliest domestic enterprise to lay out blockchain, Alibaba has achieved many remarkable achievements with this technology. As a technical support for Alibaba, Ant Blockchain has brought many positive impacts to Alibaba. Firstly, blockchain technology can ensure data security, enhance the computing power of cloud computing systems, and reduce the risk of server crashes. Secondly, after the reasonable application of blockchain technology, it can enhance the revenue of enterprises, especially in areas such as cloud computing and electronic data. Moreover, blockchain technology can reduce the transaction costs of enterprises, attract more customers and transaction volume with its characteristics and advantages, and enhance the competitive advantage of enterprises.

For now, blockchain technology is still in the development stage, but due it's achievements in recent years, blockchain technology has been appreciated by many enterprises. In the future, blockchain technology may be combined with the stock and bond markets. The assets and transaction situation of a company can be more transparent and quickly known by more investors, and customers can also directly understand the situation of the company. At the same time, government can also formulate relevant regulations, standardize industry standards, enhance risk response and enterprise control capabilities based on the financial data of each enterprise node. With the gradual maturity of blockchain technology, its difficulty in use will gradually decrease, and its scope of use will also become broader. Soon, more and more enterprises will benefit from blockchain technology.

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