

Exploring Innovative Business Models in Cross-border E-commerce under Digital Economy

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Abstract: In the wave of digital economy, cross-border electronic commerce is becoming a global business leader, promoting the emergence of new business models and operational strategies. The purpose of this paper is to deeply study the opportunities and challenges faced by cross-border electronic commerce in the era of digital economy, and to explore the key factors of its innovative business model. Through the detailed analysis of successful enterprise cases, we reveal the positive role of digital technology in improving user experience, expanding market boundaries and promoting global competition. It is found that emerging technologies, such as big data analysis, virtual reality (VR), augmented reality (AR) and blockchain, not only give cross-border electronic commerce a new business paradigm, but also promote the digitalization of supply chain, personalization of user experience and globalization of market positioning. Successful cross-border electronic commerce enterprises stand out in the competitive environment in the digital age. They not only adapt to the changing market through continuous technological innovation, but also realize the evolution and sustainable development of business model with the support of user-centered, global perspective and strategic cooperation. These research results provide profound enlightenment for enterprises to formulate innovation strategies in the era of digital economy, and also provide useful reference for further research in this field in academic circles.

Keywords: Digital Economy, Cross-border E-commerce, Business Models.

1. Introduction

With the vigorous development of digital economy and globalization, cross-border electronic commerce has become one of the engines to promote international trade and business development. The rapid evolution of digital technology and the global connection of the Internet provide enterprises with unlimited opportunities, but also bring unprecedented competitive pressure [1]. In this dynamic and changing era, innovative business model has become the key for enterprises to gain a foothold and flourish in cross-border electronic commerce.

One of the characteristics of the digital economy is the rapid flow of information and seamless interoperability of the global market [2-3]. As an important part of the digital economy, cross-border electronic commerce provides opportunities for enterprises to break through geographical and cultural restrictions and achieve global market penetration [4]. However, the traditional business model is often lagging behind in this rapidly changing environment, so we must constantly innovate to meet the requirements of the digital age.

The purpose of this paper is to explore the innovative business model of cross-border electronic commerce in the era of digital economy. This paper will focus on how emerging technologies such as blockchain and big data analysis change the way enterprises operate in the global market, and deeply study their roles in improving efficiency, reducing costs and enhancing customer experience. By analyzing and comparing the innovative business models adopted by different enterprises, this paper reveals the key factors of success and the challenges faced, and provides reference for other enterprises to find their own innovative paths in this digital economy era.

The purpose of this study is not only to deeply understand cross-border electronic commerce under the background of

digital economy, but also to provide useful insights for enterprise decision makers, academics and policy makers, so as to promote the emergence of more innovative business models and promote the sustainable development of the global economy in the digital age.

2. The Influence of Digital Economy on Cross-border Electronic Commerce

With the rapid development of digital economy, cross-border electronic commerce is undergoing profound changes. The popularization and application of digital technology not only changes the way of business operation, but also redefines the pattern of international trade. In the era of digital economy, information is the core, and the global connection through the Internet makes information flow more freely in the international scope. From supply chain to marketing in cross-border electronic commerce, enterprises can obtain and share market information more quickly, thus responding to market demand and competitive challenges more flexibly [5-6]. The digital economy has broken the geographical restrictions. Through the e-commerce platform, enterprises can directly enter the global market and conduct seamless exchanges and transactions with global customers. Cross-border electronic commerce has become more inclusive and open, and small and medium-sized enterprises can also participate in global trade, achieve international development, and promote global market interoperability and economic globalization.

Digital Technology Using digital technologies such as Internet of Things, big data and artificial intelligence, cross-border electronic commerce can optimize logistics and supply chain management and improve efficiency. Reduce logistics time and cost, improve the accuracy of order distribution, realize accurate management of inventory and production, and promote the smooth progress of global cross-border trade. In the era of digital economy, big data analysis and artificial

intelligence technology enable enterprises to understand customer needs more accurately and realize personalized marketing and services [7]. Enterprises in cross-border electronic commerce can better meet the needs of customers, enhance the user experience, establish closer customer relationships, and thus improve customer loyalty [8-9]. The application of emerging technologies, such as blockchain, smart contract and virtual reality (VR), has injected innovation power into cross-border electronic commerce and improved the security and transparency of transactions. It reduces the trust cost in cross-border transactions, prevents information tampering and fraud, and promotes the trust construction of international trade.

The rise of digital economy has not only profoundly changed cross-border electronic commerce's business model, but also provided enterprises with a broader international market and more efficient management means. In the wave of digital transformation, adapting and adopting new technologies will become the key factor for enterprises to gain advantages in global competition.

3. The Challenge of Traditional Business Model

With the rapid development of digital economy, the traditional business model is facing a series of challenges, but also ushered in profound changes. In the traditional business model, the acquisition and transmission of information are usually limited, and the information asymmetry in the supply chain leads to the poor information circulation and inaccurate decision-making of enterprises. In the era of digital economy, the rapid transmission and sharing of information makes enterprises need more timely and accurate information, and the traditional business model of information processing is lagging behind, which makes it difficult to adapt to market changes. Traditional business model is often accompanied by huge organizational structure and complex management system, which leads to high operating costs, including manpower, logistics, warehousing and other expenses. In the era of digital economy, the application of emerging technologies can effectively improve operational efficiency and reduce costs. The high operating cost of traditional mode has become a huge burden for enterprises in global competition.

The decision-making and implementation of traditional business models usually need to go through complicated layers of examination and approval, which leads to slow market response and inability to respond flexibly to market changes. In the era of digital economy, the speed of market change is obviously accelerated, and enterprises need to adjust their strategies and products more quickly, while the slow decision-making mechanism of traditional business model has become a restrictive factor for enterprise development. Traditional retail and distribution models are facing competition from e-commerce, and the sales of traditional physical stores are impacted by online shopping [10]. The rise of e-commerce has changed consumers' shopping habits. The traditional business model needs to better integrate online and offline and provide multi-channel shopping experience to maintain competitiveness. Traditional business models often face a lagging market response, and it is difficult to meet the personalized and customized needs of consumers. In the era of digital economy, consumers' demand for personalized services and products is growing day by day,

and the traditional model needs to be more flexible and agile to meet the diversified market demand.

In the era of digital economy, the traditional business model faces a series of challenges, such as asymmetric information, high operating costs, slow market response, e-commerce competition and personalized consumer demand. Adapting to emerging technologies and flexibly adjusting organizational structure and strategy have become the key to the successful transformation of traditional enterprises in the digital wave.

4. Innovative Business Model

In the era of digital economy, the continuous emergence of emerging technologies is profoundly changing the business models of all walks of life. As an important part of digital economy, cross-border electronic commerce is also widely adopting and applying these emerging technologies to improve efficiency, reduce costs, enhance security and create a better user experience.

4.1. Blockchain technology

In the era of digital economy, blockchain technology, as a revolutionary innovation, is profoundly changing the business model of cross-border electronic commerce. Blockchain, with its characteristics of distribution, non-tampering and intelligent contract, has provided many unique advantages for cross-border electronic commerce, thus promoting the emergence of innovative business models. The technical structure of blockchain is shown in Figure 1:

Blockchain ensures the high security of cross-border electronic commerce transactions through decentralization and cryptography. Every transaction is verified by the consensus mechanism and recorded in a tamper-proof block. This improvement in security helps to reduce the risk of fraud, ensure the reliability of payment, and thus improve consumers' trust in cross-border e-commerce platforms. Blockchain technology can realize real-time monitoring and transparency of the whole supply chain, and realize traceability from the source to the terminal by recording the production, transportation and sales information of goods on the blockchain. The improvement of supply chain transparency helps to prevent counterfeit goods and improve product quality. At the same time, it also provides consumers with more information about the stories behind the products and enhances the reputation of the brand.

Blockchain technology can achieve fast and secure transactions in cross-border e-commerce payment and settlement without the intermediary of traditional financial institutions. This decentralized payment and settlement system reduces the transaction time and cost, especially in international trade, and can avoid the inconvenience caused by exchange rate fluctuations and intermediary fees. The smart contract on the blockchain is an automatically executed contract. When the predetermined conditions are met, the terms in the contract are automatically executed, thus reducing the manual intervention in the intermediate links. The application of smart contract makes the contract execution in cross-border e-commerce more efficient and transparent, and reduces the possibility of misunderstanding and disputes. Blockchain technology can optimize the global supply chain and improve the visualization and overall operation efficiency of the supply chain through digital means. Cross-border e-commerce enterprises can better manage the global supply chain, optimize inventory and logistics, reduce operating costs and improve the global market response speed

through blockchain technology.

In the era of digital economy, the application of blockchain technology has brought unprecedented opportunities and changes to cross-border electronic commerce and provided a solid foundation for innovative business models. By fully

tapping the potential of blockchain technology, cross-border e-commerce enterprises can better adapt to the development trend of digital economy and promote the innovation and sustainable development of global trade.

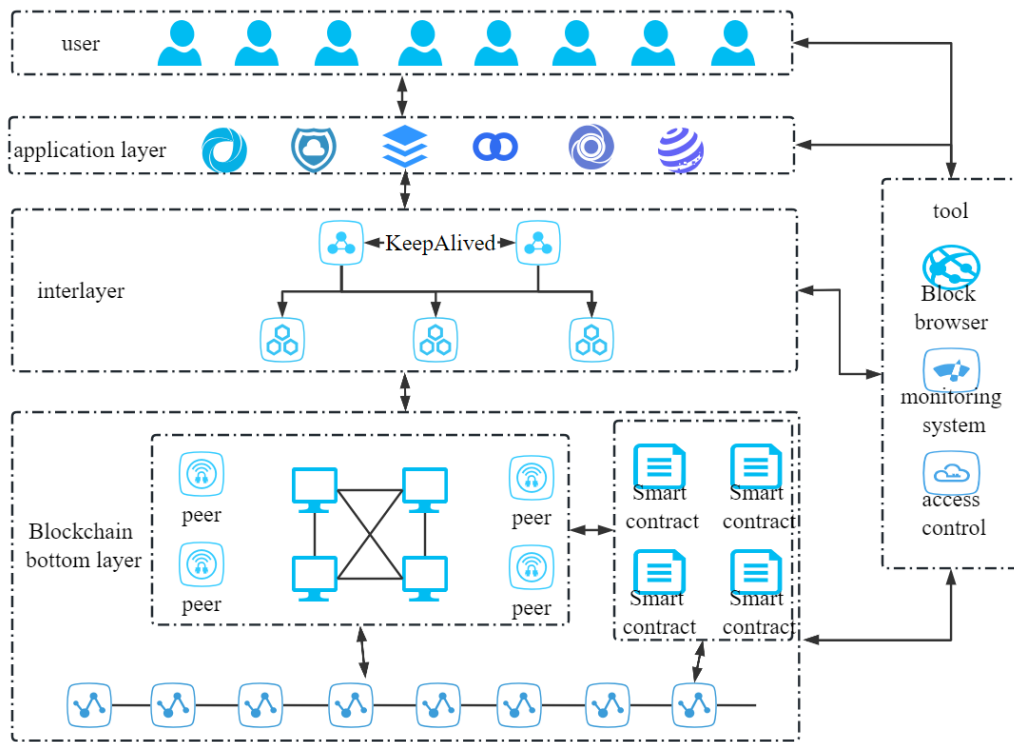


Figure 1. Blockchain technical structure

4.2. Big data analysis

In the era of digital economy, big data analysis, as a key technical and strategic tool, plays an important role in cross-border electronic commerce's innovative business model. Big data analysis can process huge market data, gain insight into user behavior and purchasing trends, and provide comprehensive market analysis and future prediction for enterprises. Through in-depth understanding of market trends, cross-border e-commerce enterprises can adjust their product strategies and pricing strategies in time to better meet the needs of the global market. Big data analysis can track and analyze users' behaviors on e-commerce platforms, and provide customized shopping experiences for each user through personalized recommendation algorithms. By better understanding users' interests and needs, enterprises can improve users' retention rate and increase transaction frequency, thus promoting sales.

The application of big data analysis in inventory management and supply chain can realize real-time monitoring of inventory level, forecast demand and optimize the operation of supply chain. Through accurate demand forecasting and real-time inventory information, cross-border e-commerce enterprises can avoid inventory backlog and out-of-stock problems, improve inventory turnover rate and reduce operating costs. Big data analysis can help enterprises better understand the target audience, carry out accurate advertising and improve advertising efficiency. Through accurate targeted advertising, enterprises can increase the click-through rate of advertisements, reduce advertising costs, and improve brand exposure and market share.

Big data analysis can be used in cross-border e-commerce to monitor transaction behavior in real time, identify abnormal patterns, and improve the ability of risk management and fraud detection. By finding and responding to potential fraud in time, enterprises can reduce transaction risks, protect users' information security and enhance overall trust. Big data analysis can personalize and optimize customer service by monitoring users' online behavior and feedback data. By analyzing customer feedback, enterprises can respond to customer needs more quickly, improve products and services, and improve customer satisfaction and loyalty.

The application of big data analysis provides cross-border electronic commerce enterprises with in-depth business intelligence and decision support, which helps to optimize operations, enhance user experience and promote the formation and development of innovative business models. By making good use of big data analysis tools, enterprises can better adapt to the trend of the digital economy era and achieve competitive advantages in the global market.

4.3. VR and AR

Driven by the digital economy, VR and augmented reality (AR) technology have gradually become remarkable innovative tools in the field of cross-border electronic commerce. They not only provide consumers with an immersive shopping experience, but also create a brand-new business model for enterprises and promote the development of online shopping.

VR technology can provide consumers with an immersive virtual shopping experience, which makes them feel as if they are in an actual store and can experience the appearance, color,

size, etc. AR technology can make consumers try on clothes on the screen through virtual fitting room, or realize three-dimensional display of goods through AR, so that users can understand products more comprehensively. Virtual fitting room and merchandise display can improve the interest of shopping, reduce the return rate and provide consumers with a more intuitive shopping experience. AR technology can provide users with real-time information about the surrounding environment and products through the superposition of real-time information, and at the same time provide navigation services to guide users to find goods in virtual or actual stores. The application of this technology makes shopping more convenient, users can find the goods they need more easily, and the efficiency and convenience of shopping are improved.

VR technology can be used to create online virtual exhibitions, enabling users to participate in various exhibitions and activities remotely. At the same time, AR technology can also be used for brand promotion, giving products more stories and backgrounds through virtual labels or information superposition. Such virtual exhibitions and brand promotion not only expand the influence of enterprises, but also enhance the interaction and loyalty between users and brands. VR technology can create a social shopping

experience in a virtual environment, enabling users to shop online with friends and share their shopping experiences. At the same time, AR technology can also create a virtual sharing experience in real space. This innovation of social shopping and virtual shared space improves user participation and promotes the development of social shopping.

By applying VR and AR technologies in cross-border electronic commerce, enterprises can not only improve users' shopping experience, but also stand out from the fierce market competition and create more innovative business models. These technologies bring more opportunities for enterprises and promote the continuous evolution of cross-border electronic commerce in the era of digital economy.

5. Case Analysis

Based on its powerful cloud computing service AWS(Amazon Web Services), Amazon has successfully integrated new technologies into its cross-border electronic commerce platform. Big data analysis is used to predict user demand, personalized recommendation and inventory management, and VR and AR technologies are used to provide virtual shopping experience and display goods. As shown in Figure 2:



Figure 2. Amazon's innovative business model

The annual revenue trend chart shows the annual revenue trend of Amazon in the past few years, and the annual revenue is growing steadily. Amazon has achieved strong financial performance in the digital economy era, and its annual revenue has continued to grow, which reflects its successful business model and the expansion of the global market.

Prime membership growth trend chart shows the growth trend of Amazon Prime membership, showing a continuous increase trend. The continuous growth of Prime members

shows that Amazon has successfully attracted more users to participate in its ecosystem by providing member-specific services and high-quality logistics, which has promoted user retention and loyalty.

The bar chart of the number of employees shows the changes of Amazon's number of employees in the past few years. The sharp increase in the number of employees reflects Amazon's strategy of rapid expansion in the digital age, which requires not only more warehousing and logistics personnel

to support the rapid growth of orders, but also technical professionals to promote technological innovation.

The heat map is used to show the correlation among annual revenue, number of Prime members and number of employees. Through the heat map, we can see that there is a positive correlation between the annual revenue and the number of Prime members, and there is also a certain correlation between the number of employees and the annual revenue. This reflects Amazon's strategy to achieve higher revenue by increasing its membership and expanding its business scale.

Amazon has successfully established the market image of "one-stop shopping platform" by establishing a global e-commerce platform and providing fast and convenient logistics services through Prime membership services. Its market positioning pays attention to user experience, and provides more convenient and efficient shopping experience through innovative services and technology applications. Amazon continues to expand the influence of its products and services through strategic cooperation. Acquired online food retailer Whole Foods and entered the offline retail market; Cooperate with major express delivery companies to optimize the logistics network; Cooperate with technology companies to promote the innovation of artificial intelligence and automation technology.

Amazon has successfully adapted to the competitive environment in the digital age through technological innovation and global market integration. Its continuous improvement of logistics efficiency, user experience and product diversification enable it to maintain its competitive advantage on a global scale. Through the promotion of digital economy, Amazon actively participates in the research and application of emerging technologies to promote the sustainable development of its cross-border e-commerce.

This case shows that in the era of digital economy, successful cross-border electronic commerce enterprises have carried out innovative practices in the application of new technologies, market positioning and strategic cooperation. By constantly iterating and integrating new technologies, optimizing user experience, developing global market positioning and establishing close strategic cooperation with all parties, these enterprises have successfully adapted to the competitive environment in the digital age and achieved outstanding commercial results.

6. Conclusions

Generally speaking, the era of digital economy has brought unprecedented opportunities and challenges to cross-border electronic commerce. The key to innovative business model

lies in the active application of technology, the optimization of user experience, the development of global market and the establishment of strategic cooperation. Successful enterprises organically combine these elements to achieve sustainable development in the digital age. In the future, with the continuous evolution of technology and the constant change of market, cross-border electronic commerce will continue to meet new challenges, innovate and adapt constantly, and lead the development trend of digital economy.

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