Analysis on Innovation Path of Cross-Border Export E-Commerce Platform Model Based on Block Chain

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Abstract. With the development of Internet technology, the business models of cross-border e-commerce platforms continue to emerge. However, due to the limitations of Internet technology, the business model of the platform has deficiencies for a long time, such as the design goal of the business model is centered on the interests of the centralized platform, the cost of trust acquisition under the business model is too high, and so on. As an emerging Internet technology, block chain technology has the characteristics of decentralization, data tamper proof, whole process trace, traceability, smart contract and so on. Cross border e-commerce platforms also began to explore its impact on the platform business model, such as whether it can make up for the shortcomings of traditional models and bring new opportunities for platform business model innovation. Firstly, this paper analyzes the current mainstream business models of cross-border e-commerce platforms based on Internet, and points out their characteristics and shortcomings; Secondly, it analyzes the feasibility of building the business model of block chain cross-border e-commerce platform from a theoretical perspective; Mode innovation is carried out in combination with block chain technology from four aspects: cross-border payment, commodity quality traceability, cross-border logistics and digital marketing of cross-border e-commerce platform. This paper discusses the innovation of cross-border e-commerce business model based on block chain, constructs the framework system of cross-border e-commerce based on block chain, and uses block chain technology to give solutions to the problems of trust, customs supervision, cross-border payment, cross-border logistics and cross-border data flow encountered in cross-border e-commerce.

Keywords: Block Chain · Cross-Border E-Commerce · Traditional Models

1 Introduction

China's cross-border e-commerce business began in 2003. After more than ten years of development, it has made some achievements. At present, the scale of China's cross-border e-commerce development is considerable. As shown in Fig. 1, the scale of China's

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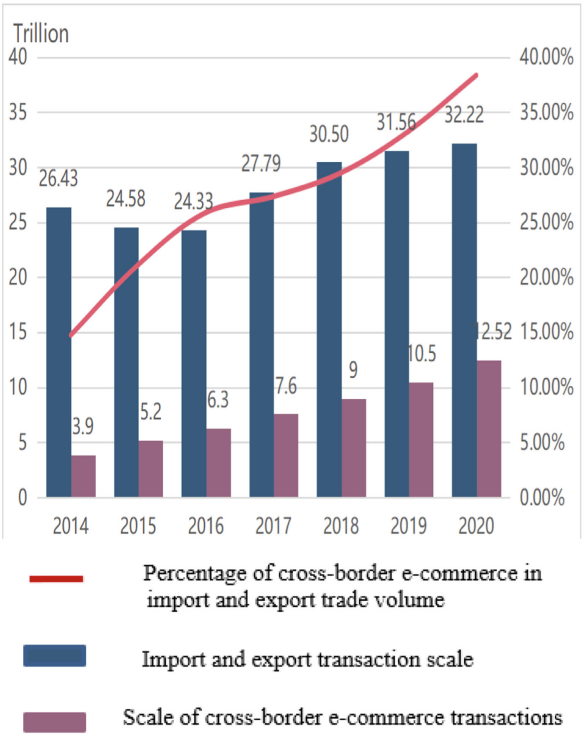

Fig. 1. 2014–2020 China's import and export and cross-border e-commerce scale

import and export transactions reached 32.22 trillion yuan in 2020, a year-on-year increase of 2.1%. The scale of cross-border e-commerce transactions reached 12.52 trillion yuan, a year-on-year increase of 19%, accounting for 38.86% of the import and export trade volume. From the perspective of goods flow, the scale of China's cross-border e-commerce export trade is much larger than that of import trade. As shown in Fig. 1, the scale of cross-border e-commerce export in 2020 was 9.7 trillion yuan, a year-on-year increase of 21%, accounting for 77% of the scale of cross-border e-commerce transactions. China's cross-border e-commerce and e-commerce policies, in particular, have great potential for cross-border development, which can be seen from the advantages of China's e-commerce and cross-border consumption policies.

While the scale of cross-border e-commerce is expanding, the business model of cross-border e-commerce is also developing and innovating. However, there are still some problems, such as high cost of obtaining credit in the process of transaction, centralized monopoly of platform and so on. In cross-border e-commerce transactions, credit is the basis. At present, trusted third parties are mainly used as guarantees to conclude transactions, but this increases the cost of both parties. At the same time, the centralization of cross-border e-commerce trading platform, first, will deposit a large number of cross-border transaction data from other countries, which is not easy to be accepted by other countries and affect the cross-border transactions of that country;

Second, the operators of the platform seek excess profits. For the trading participants, there may be hidden clauses or overlord clauses. These are not conducive to the current development of cross-border e-commerce.

As an emerging Internet technology, block chain technology has the characteristics of decentralization, non tampering, whole process trace, traceability, smart contract and so on. Using block chain technology, the participants of the system can confirm the transaction data without the guarantee of any trusted third party to complete the transaction. The emergence of block chain technology has brought new opportunities to the development of cross-border e-commerce. The 2018 white paper on China's block chain Industry issued by the Ministry of industry and information technology points out that block chain technology has great application value in the field of cross-border e-commerce, "Block chain + Cross-border e-commerce" may become an important direction of cross-border e-commerce reform. Therefore, making full use of the advantages of block chain technology to promote the reform and development of cross-border e-commerce business model is of great significance for building a new ecosystem of "block chain + cross-border e-commerce".

2 Current Situation of China's Cross-Border Export E-Commerce Platform Model

Generally, in the cross-border e-commerce industry, the customers of the cross-border e-commerce platform are divided into C-end consumers and b-end merchants, and the problems solved by the platform for customers come from the service scope provided by the platform; Business system refers to the operation system that creates and transmits value. In the business model of cross-border e-commerce platform, it can be understood as the operation process of the platform to realize cross-border transactions; Profit model refers to how the platform obtains remuneration after providing services, so as to form an economically sustainable.

The development of China's cross-border export e-commerce can be divided into three stages, which has experienced the display of products and information disclosure, online processing of some processes, including commodity display and information docking, cross-border payment and logistics and other third-party services, and online one-stop online transaction services with full business processes. At present, the main cross-border export e-commerce business models can be divided into four categories: wholesale trade platform model, wholesale and retail platform model, self purchase or pop global retail platform model and new market retail platform model. Generally, in the cross-border e-commerce industry, the customers of the cross-border e-commerce platform are divided into C-end consumers and b-end merchants, and the problems solved by the platform for customers come from the service scope provided by the platform; Business system refers to the operation system that creates and transmits value. In the business model of cross-border e-commerce platform, it can be understood as the operation process of the platform to realize cross-border transactions; Profit model refers to how the platform obtains remuneration after providing services, so as to form an economically sustainable.

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2.1 Specifications Wholesale Trade Platform Model

It is a B2B platform model with information matching as the end point. The representative platforms include Alibaba international station, made in China, global resources, etc. From the perspective of market positioning, the trading parties are mainly large-scale production enterprises and trading enterprises; From the perspective of profit model, in the early stage, the settlement fee of the platform was mainly used. In recent years, with the development of B2B, the profit was mainly based on the service fee of supply chain and overseas marketing promotion; From the perspective of operation, the platform in this mode has rich information and large export scale, which realizes the online processing of some processes.

2.2 The Wholesale and Retail Platform Mode

The wholesale and retail platform mode focuses on platform based small B2B and B2C businesses and provides one-stop trading service solutions. The representative enterprises include DH gate, Express and Shopee. From the perspective of market positioning, the trading parties of this model are mainly small and medium-sized traders, retailers and overseas end consumers; For the profit model of such platforms, the revenue mainly depends on the Commission generated by the exchange and the service fees for various promotion value-added services, such as data services, precision marketing, finance, credit guarantee, etc.; From the perspective of operation, the model responds quickly to market demand and the transaction process is clear and transparent [10]. However, small and medium-sized traders and small and medium-sized retail wholesalers have poor control over the supply chain and high risk of delayed delivery and default.

2.3 The Wholesale and the Global Retail Platform Mode of Self Purchase or Pop

The global retail platform mode of self purchase or pop is mainly engaged in the self purchase platform's self-supporting B2C and the settlement and sales of third-party businesses. It is oriented to the needs of overseas end consumers. The representative enterprises include global Tesco, stick Valley, Youshu, Tongtuo technology, etc. From the perspective of market positioning, the trading parties of this model provide one-stop B2C trading services for overseas end consumers and domestic businesses; In terms of profit, the income mainly comes from the profit brought by commodity sales; From the perspective of operation, the self purchase mode of this mode can control the supply

chain, control the whole process of commodity design, manufacturing, marketing and sales according to the needs of overseas end consumers, have one or more private brands, and cultivate international brands, but with more capital investment.

2.4 The New Market Retail Platform Model

The new market retail platform model, aiming at the differentiated needs of a specific market, takes self-supporting or platform B2C as the main business, and the representative enterprises include Zhiyu, Aoji, Saiwei, kilimall, etc. Through the joint operation mode, the upstream and downstream industrial chains will be seamlessly connected, from early product building to in-depth cooperation and sharing risks, so as to build a leading brand in subdivided fields. From the perspective of market positioning, the trading parties are mainly consumers and domestic businesses with specific market needs; In terms of profit, the income mainly comes from the profit brought by commodity sales; From the perspective of operation, the innovation of this model is to use the advantages of enterprises' familiarity with specific markets to incubate star overseas enterprises through category planning, brand operation and data management [8] (Table 1).

Table 1. Business model of export cross-border e-commerce platform.

Platform business model	Commodity wholesale trading platform	Wholesale and retail platform mode	Global retail platform mode of self purchase or pop	New market retail platform model
Representative enterprise	Alibaba international station	Express, Dunhuang	Global Tesco	Zhejiang Jolly
user	Large scale production enterprises and large trading enterprises	Small and medium-sized traders, small and medium-sized retailers, production enterprises and overseas consumers	Overseas end consumers	Emerging markets b-end and C-end
Service type	B2B information docking and supply chain services	B2B and B2C one-stop transaction	B2C one-stop transaction	B2C one-stop transaction Project incubation
profit model	Settlement fee, supply chain service fee	Transaction commission and value-added services	Profit from proprietary products	Self operated: product sales profit Platform type: Commission

3 Problems in China's Cross-Border Export E-Commerce Business Model

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3.1 Common Commodity Quality Problems of All Platforms

The current cross-border e-commerce platforms can provide traffic access, but they can not track and supervise the production process of each commodity exported overseas, which makes the goods provided by the major cross-border e-commerce platforms mixed, and even have three no products. The lack of stable quality assurance also makes it difficult for small and medium-sized cross-border e-commerce enterprises to build influential global brands [5].

3.2 Centralized Monopoly of Cross-Border E-commerce Platform

At this stage, the ownership of major cross-border e-commerce platforms at home and abroad is owned by commercial companies for profit, which leads to the platform's constant pursuit of excess profits [2]. By comparing the business models of major platforms, the profit goal is to pursue excess profits, because the platform is owned by the centralized organization of commercial companies. Taking the maximization of platform profits as the design goal of business model and the Internet network effect jointly lead to the emergence of centralized monopoly platform. Due to the economy of scope, the platform must continuously expand the traffic scale to provide better services, so as to form monopoly barriers, otherwise it will be eliminated by market competition. Therefore, in the early stage of platform development, the platform can tolerate high investment, but in the later stage, after the formation of network effect, the platform will continue to earn excess profits to meet the excess return of early investment. If the revenue growth of the platform is slow, the platform can only seize the interests of both parties to the transaction, and even the platform can use its monopoly position to do evil without punishment.

3.3 The Trust Building Cost of Cross-Border Export E-Commerce Platform is High

In each cross-border export commerce platform, the transaction basis of the buyer and the seller is to establish trust, and at this stage, the establishment of trust between the two sides is to reach a transaction based on trust in the cross-border e-commerce platform [2]. At present, each platform has stricter requirements for the qualification and identity of

sellers from the perspective of consumer protection through the review and confirmation of the identities of both sides of the transaction, but the trust cost is borne by both sides of the transaction [9]. At present, major platforms mainly reduce trust costs through brand endorsement and community building, but they still fail to effectively reduce trust costs and time costs.

4 Construction and Characteristic Analysis of Cross-Border E-Commerce Platform Based on Block Chain

As an emerging information technology, block chain is essentially a distributed ledger technology, and its core is decentralization and consensus mechanism. The information in the block chain is open, transparent, unforgettable, secure and trusted [6]. All information on the chain is shared in real time in the network and synchronized to all nodes on the chain, so that each participant on the chain has complete data, so as to create a trusted network environment and ensure that any two nodes are trusted. Applying block chain technology to cross-border e-commerce and establishing a new cross-border e-commerce model based on block chain can effectively solve the problems existing in the current cross-border e-commerce business model.

The core of the business system of the block chain based cross-border e-commerce platform is to complete cross-border transactions without relying on any trusted third party. Due to the different number of participating nodes and the different services provided by the platform [7], it can theoretically include B2B, B2C and C2C services. Since the implementation logic of the three modes is basically the same, only B2B is taken as an example here. As shown in Fig. 2, B2B transactions are completed on the cross-border e-commerce platform based on the block chain platform.

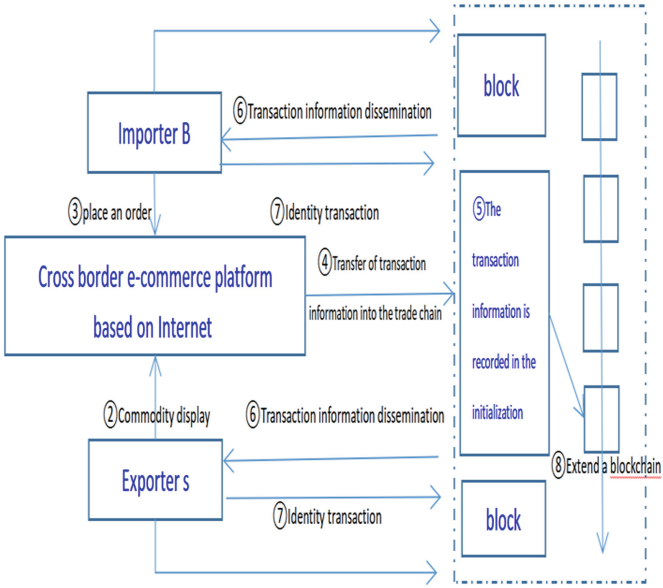

Fig. 2. Block chain based B2B transaction path map of cross-border E-commerce.

4.1 Block Chain + Cross Border Payment

The low efficiency and high cost of cross-border payment are mainly due to the fact that information needs to pass through many nodes across space and time. The traditional cross-border payment modes mainly include payment processing cost, receiving cost, financial operation cost and reconciliation cost. Using block chain technology, reduce nodes from the root and realize "point-to-point" payment [7]. With fewer nodes, the efficiency is naturally improved and the cost is greatly reduced. Block chain technology is a typical decentralized model. Each computer host is a node, and they are equal. Each node in the system can interact directly without the concept of central node. At the same time, the transaction information of any two nodes is encrypted to the whole network, and all nodes are stored in encrypted blocks and recorded separately according to the time series, thus forming a new decentralized mode. Therefore, the transmission process of the information flow from A to B is the process of fund transfer and settlement from A to B, and A and B prove their identity through their respective digital signatures, Point to point e-cash payment can be realized directly without third-party trust endorsement.

The transfer payment system based on block chain has the characteristics of high efficiency, high security, high availability and high scalability. Using block chain technology and distributed accounting, each user can query the transaction status by password and settle the funds in real time, which not only reduces the transaction cost and risk, but also greatly improves the transaction efficiency.

4.2 Block Chain + Commodity Quality Traceability

With the support of block chain technology, enterprises upload their commodity information to the block chain ledger of cross-border e-commerce platform and display it to end consumers. When consumers buy products on cross-border e-commerce platforms, they can perceive their traceability characteristics. After receiving the goods, they can also trace all links of commodity production and circulation, such as product origin, raw materials, processing, storage, logistics, sales, distribution and so on.

Traceability of the whole process - each commodity is given a "unique" ID card through block chain technology, so as to connect the key traceability information of traced commodities. Consumers can clearly see a series of detailed information such as raw material information, storage information, production and processing information, test report, transportation status and so on with one click of the platform app, which greatly improves consumers' shopping experience.

4.3 Block Chain + Cross Border Logistics

At present, there are six major pain points in the global supply chain: cargo integrity and safety, legal compliance issues, dispute resolution, supply chain digitization, traceability, trust and stakeholder management. The block chain can provide a more efficient and secure data sharing mechanism. The shared data stored in the block chain cannot be tampered with, but can only be added [3]. All participants in the supply chain keep the same data. The application of block chain technology can enable all participants in the global supply chain to grasp the real-time and correct overview of logistics. Combined

with the cross-border logistics system of block chain, it can track all relevant information about export goods, including origin, transportation method through port, arrival port, customs statement, inspection and third-party verification. The wide adoption of block chain technology also involves data sharing, so all parties need to eliminate relevant differences. Although enterprises must share some data with competitors, they can bring great benefits, including strengthening the real-time verification ability of goods sources and complete logistics routes.

4.4 Block Chain + Digital Marketing

Digital marketing - the block chain "one thing, one code" technology of e-commerce platform can give every commodity the ability to "connect" consumers [4], let brands connect with consumers by scanning the code with one key, and then establish a hierarchical system of user accounts, so as to facilitate a series of accurate overseas end-user touch activities such as questionnaire survey, red envelope marketing and lottery activities, Help brands' digital marketing more accurate and efficient, and comprehensively improve brand value.

5 Conclusions

As an emerging information technology, block chain technology has become a new outlet for cross-border e-commerce. It can not only effectively change the centralized monopoly and pursuit of excess profits of traditional cross-border e-commerce platforms, but also provide a highly open, safe and reliable trading platform, which can reduce the cost of trust building between both sides of cross-border trade. However, because of the few landing scenes, block chain has gained widespread attention. Advanced cross-border e-commerce companies have begun to apply block chaining technology to cross-border transactions through cross-border payment, quality traceability, cross border logistics and digital marketing. With the continuous development of block chain technology, the business model of block chain + cross-border e-commerce will be continuously improved, and cross-border export e-commerce will also usher in a healthier and faster development.

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