

Development Ideas of Free Trade Zones Under the Background of The Digital Transformation of Cross-Border Trade

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Abstract: Under the background of accelerating the transformation of global trade mode and the wide application of digital technology, cross-border trade is gradually shifting from the traditional offline document flow, manual audit and segmented services to data-driven, platform collaboration and full-process digital operation. As an important platform for China's institutional opening up, the free trade zone is not only an important carrier for the digital transformation of cross-border trade, but also an important test site for exploring the innovation of high-level opening rules and service models. The digital transformation of cross-border trade has provided new development opportunities for the free trade zone to improve customs clearance efficiency, optimise the business environment, and expand the digital trade industry. However, it has also brought practical problems such as uneven infrastructure construction, imperfect data sharing mechanism, and insufficient supply of digital trade rules. Based on this, this article starts from the impact of cross-border trade digital transformation on the development of free trade zones, analyses the main constraints faced in the current development of free trade zones, and puts forward development ideas such as improving digital infrastructure, promoting data interconnection, exploring digital trade rules and strengthening protection paths, so as to improve cross-border trade for the free trade zone. Easy service capability and institutional innovation level provide reference.

Keywords: Cross-border trade, digital transformation, free trade zone, digital trade, institutional innovation, data sharing.

1. Introduction

In recent years, the digital economy has become an important force to promote the restructuring of international trade and the reshaping of the global industrial chain. The continuous development of cross-border e-commerce, digital payment, smart logistics, electronic documents and online comprehensive service platforms has profoundly changed the transaction mode, supervision mode and service mode of cross-border trade. Compared with traditional trade, digital cross-border trade relies more on data flow, platform coordination and rule innovation, which puts forward higher requirements for the level of trade facilitation [1-2]. The free trade zone assumes the important functions of expanding opening up, pioneering and institutional innovation, and has a natural advantage in the digital transformation of cross-border trade. The free trade zone can improve trade efficiency through smart ports, "single windows" for international trade and digital supervision platforms. The free trade zone also needs to explore new institutional arrangements in terms of cross-border data flow, digital service trade, cross-border payment and settlement. Therefore, studying the development ideas of free trade zones under the background of the digital transformation of cross-border trade not only helps to improve the quality of open economic development of free trade zones, but also helps to promote China's transformation from a trading power to a trading power.

2. The Impact of Cross-Border Trade Digital Transformation on The Development of Free Trade Zones

The impact of the digital transformation of cross-border

trade on the development of the free trade zone is not only reflected in the expansion of the scale of trade, but also in the changes in the efficiency of customs clearance, logistics organisations and the way industries go to sea. Taking the Guangzhou Baiyun Airport Comprehensive Bonded Zone as an example, cross-border e-commerce enterprises quickly collect, package, inspect and send scattered commodity orders to overseas markets through digital order processing, electronic declaration, intelligent sorting and customs coordination supervision. According to the relevant data of the Ministry of Commerce and the General Administration of Customs, the total import and export of China's cross-border e-commerce in 2023 reached 2.38 trillion yuan, of which 1.83 trillion yuan was exported and 548.3 billion yuan was imported. As shown in Figure 1, exports account for a significantly larger proportion of China's cross-border e-commerce import and export structure, indicating that the digital trade platform is becoming an important channel for "Made in China" to connect with the international consumer market. At the same time, Guangzhou Baiyun Airport Customs supervised the export of 346 million cross-border e-commerce goods in 2023, an increase of 51.8% year-on-year, which also shows that digital supervision and smart logistics can significantly improve the processing capacity of cross-border trade. It can be seen that the free trade zone not only provides preferential policy space in the digital transformation, but also assumes the comprehensive hub function of connecting enterprises, platforms, customs, logistics and overseas markets.

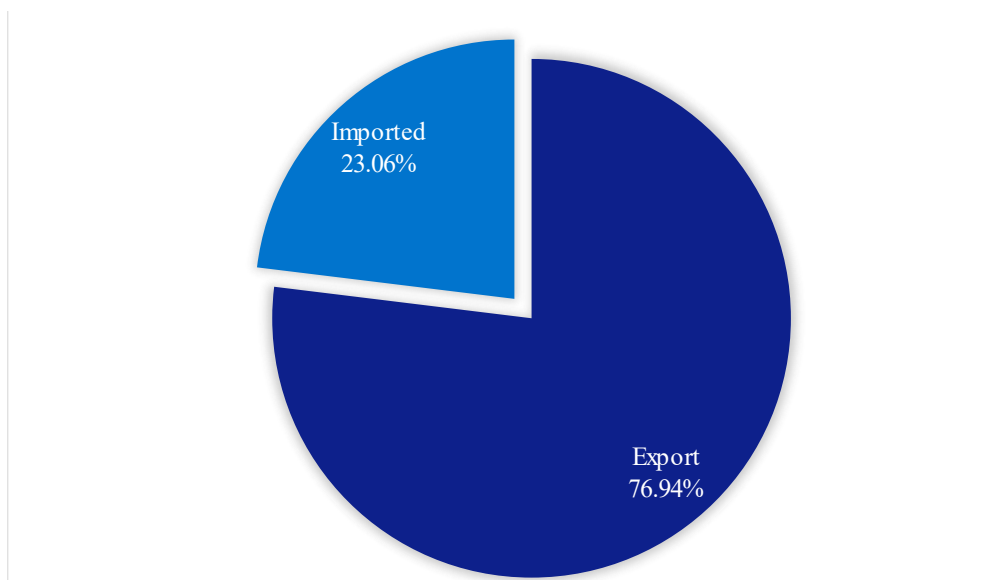


Figure 1. China's cross-border e-commerce import and export structure in 2023

3. Problems Faced by The Development of Free Trade Zones Under the Background of The Digital Transformation of Cross-Border Trade

3.1. Unbalanced Construction of Digital Infrastructure

Digital infrastructure is the basic support for the digital transformation of cross-border trade, and its construction level directly affects the ability of the free trade zone to undertake digital trade and improve trade facilitation. At present, some coastal areas and free trade zones with a high degree of openness have formed certain advantages in smart ports, intelligent warehousing, digital logistics and online public service platforms, which can provide enterprises with more efficient customs clearance, warehousing, transportation and settlement services. However, on the whole, there is still an obvious gap between different regions. Some free trade zones are limited by economic foundation, technical investment and industrial supporting conditions. The construction of digital platforms is lagging behind, the system functions are scattered, and the data processing capacity is insufficient. The result of uneven infrastructure construction is that the service experience obtained by enterprises between different free trade zones is very different, which also affects the coordination efficiency of the whole chain of cross-border trade. From this point of view, the shortage of digital infrastructure is not only a technical problem, but also related to whether the free trade zone can form a stable, efficient and sustainable open service capability [3-4].

3.2. The Data Sharing Mechanism is Not Smooth Enough

Cross-border trade involves many subjects such as customs, taxation, foreign exchange, market supervision, ports, logistics, financial institutions and foreign trade enterprises. The information separation of any link may affect the overall operational efficiency. In reality, although some free trade zones have established relevant digital platforms, there are

still problems such as inconsistent standards, incompatibility of interfaces, and untimely data updates between platforms, resulting in enterprises still need to fill in materials repeatedly when handling customs clearance, tax refund, financing, settlement and other business. Poor data sharing will also weaken the cooperative supervision ability of government departments, making it difficult for regulatory departments to grasp information such as enterprise credit, goods flow and transaction authenticity in a timely manner. From the perspective of enterprises, information barriers increase the cost of institutional transactions; from the perspective of the government, data dispersion reduces the accuracy of supervision; from the perspective of the overall development of the free trade zone, the data island restricts the level of trade facilitation and service integration. It is important to open up the bottleneck of data circulation, which is important for the free trade zone to improve the digitalisation level of cross-border trade. Premise.

4. Insufficient Supply of Digital Trade Rules

The development speed of digital trade is often faster than the speed of improvement of institutional rules, which makes the free trade zone face a certain problem of lagging rules in the process of promoting the digitalisation of cross-border trade. With the increasing number of electronic contracts, electronic invoices, cross-border payments, digital service trade and cross-border data flows, the traditional institutional arrangements based on trade in goods and paper documents are difficult to fully adapt to new scenarios. For example, whether data can be safe and compliant cross-border flow, whether electronic documents can be mutually recognised between different departments and countries, and how cross-border digital services can be taxed and regulatoryly recognised are all issues that must be responded to in the development of digital trade in the free trade zone. Some free trade zones have been explored in practice, but the institutional arrangements are still relatively scattered and lack a stable, clear and operable rule system. The insufficient supply of rules will increase the uncertainty of enterprise compliance and limit the development space of new business forms. The free trade zone cannot only stay at the level of technology platform construction, but also need to provide

clearer development expectations for digital trade through institutional innovation.

5. Development Ideas of Free Trade Zones Under the Background of Digital Transformation of Cross-Border Trade

5.1. Improve the Digital Infrastructure

In order to improve the digital development capacity of cross-border trade in the free trade zone, infrastructure construction should shift from single-point construction to system integration, Table 1. Smart ports, digital warehousing, intelligent logistics, electronic document platforms and cross-border trade comprehensive service platforms should not only be fragmented technical projects, but should jointly form a

digital service system covering customs clearance, logistics, settlement, tax refund, financing and supervision. By improving the infrastructure, it can reduce the time for enterprises to go back and forth between offline windows to handle business, and also improve the dynamic mastery of trade data, logistics status and enterprise credit. In the specific promotion, differentiated construction should be carried out according to the industrial characteristics and trade structure of different free trade zones [5-6]. The port-type free trade zone can focus on improving the ability of intelligent inspection and port logistics, and the cross-border e-commerce gathering area can strengthen the capabilities of overseas warehouses, order processing and digital payment services. The key to improving infrastructure is not simply to increase the number of platforms, but to improve the connection ability and practical use efficiency between platforms.

Table 1. Content and Role of Digital Infrastructure Construction in the Free Trade Zone

Construction Content	Main Directions	The effects on cross-border trade
Smart Port	Promote intelligent processing of customs inspection, declaration, and clearance procedures	Improve customs clearance efficiency, reduce enterprise waiting time
Digital Warehousing	Build smart warehouses with automated sorting and inventory management systems	Enhance the efficiency of goods storage, allocation and distribution
Intelligent Logistics	Advance logistics information tracking, transportation scheduling, and route optimization	Reduce logistics costs, enhance cross-border transportation coordination capabilities
Electronic Document Platform	Facilitate the digitization of documents such as contracts, invoices, customs declarations, and bills of lading	Reduce the circulation of paper materials, improve business processing efficiency
Cross-border Trade Integrated Service Platform	Integrate services including customs clearance, settlement, tax refund, financing, and regulatory oversight	Provide one-stop services for enterprises, enhance the level of trade facilitation

5.2. Promote Data Interconnection

Data interconnection is the centre of the digital transformation of cross-border trade, and it is also an important tool to improve the governance capacity of the free trade zone. Take the "single window" of Shanghai International Trade as an example. Since the start of construction in 2014, the platform has expanded its functions from the original six functional modules to 16 functional sections and 66 special applications, and supports more than a quarter of the trade volume in the country and serves more than 600,000 enterprises. By integrating customs clearance, logistics, supervision, finance and services and other functions on a platform, enterprises can complete data submission, status inquiry, automatic declaration and financial service application online, effectively reducing the problems of cross-departmental duplicate filling and information separation. Judging from the comparative data, the declaration time of goods is compressed from 1 day to half

an hour, and the time compression rate is about 97.9%; the declaration time of ships is compressed from 2 days to 2 hours, and the time compression rate is about 95.8%; in the intelligent "appointment declaration" mode, the average overall customs clearance time of customs declaration is reduced by about 60% compared with the ordinary mode; The pass rate of online credit service has reached more than 86%, and the interest cost of some enterprises can be saved by up to 50%. As shown in Figure 2, many indicators reflect the strong efficiency improvement effect, indicating that data sharing and platform collaboration can not only compress the declaration time, but also reduce the cost of enterprise financing, settlement and customs clearance. The free trade zone promotes data interconnection, not simply to build an online platform, but to drive the coordinated operation of business flow, logistics, capital flow and supervision flow through data flow, so as to improve the overall facilitation level of cross-border trade.

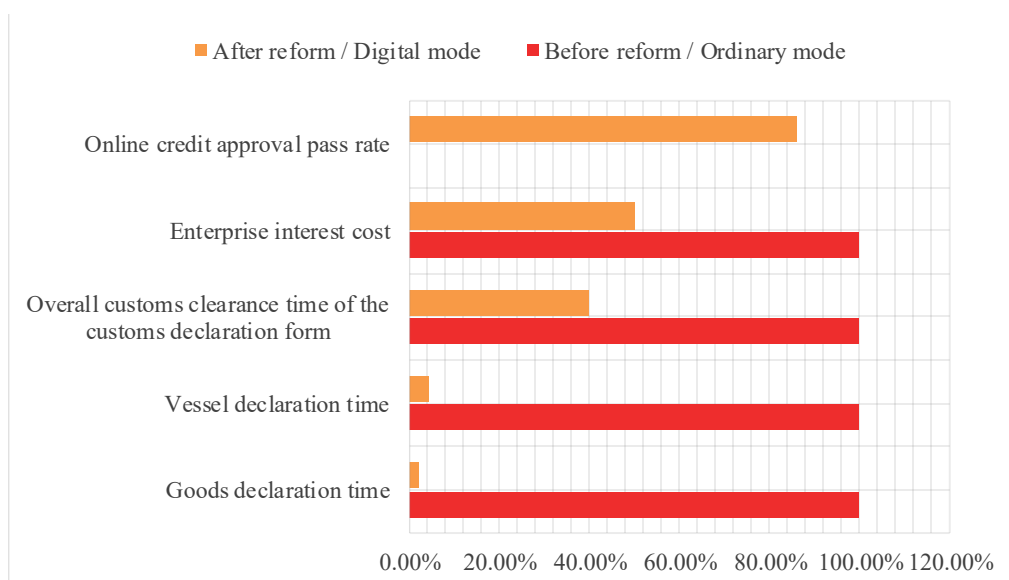


Figure 2. Comparison of the results of the digital transformation of Shanghai's international trade "single window"

5.3. Explore the Rules of Digital Trade

The innovation of digital trade rules is an important value that distinguishes the free trade zone from the general open platform. In the face of the new problems brought about by the digital transformation of cross-border trade, the free trade zone should give full play to the pilot function and carry out institutional exploration in the fields of cross-border data flow, electronic contract effectiveness, mutual recognition of electronic invoices, cross-border payment and settlement, digital service trade supervision and other fields[7-8]. Rule exploration should adhere to the problem-oriented design system arrangement around the bottlenecks encountered by enterprises in actual operation, rather than staying at the level of principled expression. For example, it can promote the recognition of electronic documents in more business scenarios, explore the facilitation supervision model of cross-border e-commerce and digital service trade, and improve the data exit security assessment and compliance guidelines. Rule innovation should also focus on replicable and generalisable, and expand to a larger range after forming mature experience. The free trade zone accumulates experience through institutional experiments, which can not only improve its own competitiveness, but also provide a practical basis for China's participation in the formulation of international digital trade rules.

6. The Guarantee Path to Promote the Digital Development of Cross-Border Trade in The Free Trade Zone

6.1. Strengthen the Top-Level Design

To promote the digital development of cross-border trade in the free trade zone, it is necessary to carry out overall planning at a higher level to avoid their own construction, duplicate input and different standards in each region and department. The significance of top-level design is to clarify the development direction, division of responsibilities and implementation path, so that digital infrastructure construction, data sharing mechanism improvement and digital trade rule exploration can form a synergy. At the national level, the overall plan for the development of digital

trade in the free trade zone can be further improved, and the functional positioning and key tasks of different types of free trade zones can be clarified; at the local level, specific implementation plans should be formulated in combination with the industrial base, port conditions and foreign trade structure of the region. Top-level design should also focus on coordinating the relationship between the government, enterprises, platforms and financial institutions, so that public services and market innovation can cooperate with each other. Only by promoting digital transformation under unified planning can the free trade zone avoid the problems of "heavy construction, light operation" and "heavy platform, light rules" and truly form a long-term and stable development mechanism.

6.2. Strengthen Policy Support

The digital transformation of cross-border trade has the characteristics of large investment, long cycle and many subjects involved. It is difficult for enterprises to complete the systematic upgrade by relying on their own strength alone, so it needs continuous and effective policy support. Policy support should not only be reflected in financial subsidies, but should also include tax incentives, financial services, pilot authorisation, standard formulation and regulatory convenience and other aspects. For enterprises involved in smart logistics, digital warehousing, cross-border e-commerce platform and overseas warehouse construction, their transformation costs can be reduced through special funds, loan support and service subsidies; for small and medium-sized foreign trade enterprises, public services such as digital tool use, online customs declaration, electronic tax refund and cross-border collection can be provided to help them reduce The threshold for entering the field of digital trade. Policy support also needs to maintain stability and continuity, so that enterprises can form clear expectations. Through the combination of policy guidance and market mechanism, the free trade zone can attract more digital trade enterprises, platform enterprises and service institutions to gather and enhance the digital ecological vitality of cross-border trade.

6.3. Strengthen the Talents of Digital Trade Talents

The digital development of cross-border trade in the free trade zone not only depends on technology and system, but also depends on the support of composite talents. Digital trade involves many fields such as international trade, data governance, cross-border e-commerce, financial settlement, logistics management, legal compliance and information technology. It is difficult for traditional single foreign trade talents to meet the needs of the new situation. At present, there is still a structural shortage of talent supply in some free trade zones, and there is a shortage of talents who understand trade rules and are familiar with digital technology and international compliance requirements. In order to solve this problem, we should promote colleges and universities, vocational colleges and universities, enterprises and free trade zone management institutions to jointly participate in the cultivation of talents, and establish a curriculum system and training mechanism for digital trade practice. Enterprises can improve the digital application ability of practitioners through practical training bases, project cooperation and job training; the government can attract professional talents through talent introduction, professional certification and policy incentives [9-10]. The effectiveness of talent cultivation will ultimately be reflected in the improvement of the institutional innovation ability, platform operation ability and international competitiveness of the free trade zone.

7. Conclusion

The digital transformation of cross-border trade is reshaping the operation mode of international trade, which also provides new impetus for the high-quality development of the free trade zone. As an important experimental platform for China's open economy, the free trade zone should actively adapt to the development trend of trade digitalisation, platformization and regularisation, and continue to make efforts in improving digital infrastructure, promoting data interconnection, and exploring digital trade rules. At the same time, digital transformation is not just a technological upgrade, but involves the comprehensive transformation of governance mode, institutional supply, industrial ecology and talent system. In the face of problems such as uneven infrastructure, poor data sharing and insufficient supply of rules, the free trade zone needs to form a systematic guarantee through top-level design, policy support and talent training. With the deepening integration of digital technology and cross-border trade, the free trade zone should further play a pioneering role to provide strong support for China's participation in global

digital trade competition and promoting high-level opening up to the outside world.

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