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The Impact of Artificial Intelligence on China's Foreign Trade and Countermeasure Analysis

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Abstract: *At present, as a strategic technology that is spearheading a new wave of scientific and technological revolution as well as industrial transformation, artificial intelligence (AI) is infiltrating every aspect of international trade with unprecedented breadth and depth, thereby driving a profound reconstruction of the global trade system. This paper systematically examines the current application status, challenges, and countermeasures associated with AI technology in the realm of international trade in China. The research reveals that AI can effectively empower Chinese foreign trade enterprises through core applications such as intelligent translation, data analysis, and Smart Border Control, significantly enhancing the efficiency of cross-border communication, market insights, and port operations. However, the deployment of AI also presents significant challenges including data security concerns and compliance barriers, along with structural unemployment affecting traditional trade jobs. To address these challenges, this paper advocates for an accelerated development of an "internal and external" data governance framework to ensure secure data flow by strengthening domestic legislation and oversight while actively participating in the formulation of international regulations. Additionally, it emphasizes the urgent need to promote training programs for "AI + foreign trade" interdisciplinary talents to mitigate employment-related structural contradictions through systematic skills retraining initiatives.*

Keywords: *Artificial Intelligence; International Trade; Structural Unemployment*

1. Introduction

Artificial Intelligence (AI), as an emerging technology science, researches and develops theories, methods, technologies and application systems for simulating, extending and expanding human intelligence, is driving profound changes in social productivity around the world. As an important branch of computer science, the rapid development of AI technology in the fields of robotics, natural language processing, image recognition and so on is reshaping the operation paradigm of various industries with unprecedented breadth and depth.

In this context, countries and major international organizations around the world attach great importance to the strategic value of AI. The Chinese government actively promote "AI +" initiative. In June 2024, nine ministries and commissions including the Ministry of Commerce issued the *Opinions on Expanding Cross-border E-commerce Exports and Promoting the Construction of Overseas Warehouses*, which clearly proposes supporting the legal and compliant introduction of new technologies such as digital humans, expanding sales channels through live streaming and other methods, and driving the export of more competitive products. In August 2025, the State Council further deployed six major "AI +" actions, aiming to facilitate the upgrading of traditional industries and high-quality economic development through the in-depth integration of AI with various fields. At the same time, the World Trade Organization's World Trade Report 2025 also focuses on the relationship between AI and international trade, pointing out that the technology can significantly improve the efficiency of global trade, which is expected to increase global trade volume by 34% to 37% and global GDP by 12% to 13% by 2040. In addition, Artificial intelligence (AI) can optimize supply chains—for instance, by improving supply chain transparency, forecasting logistics bottlenecks, and optimizing transportation routes. It also enhances customs clearance and compliance efficiency, such as through automating customs declaration and compliance processes to cut down on delays. Additionally, AI addresses language and information barriers and lowers cross-border communication costs by providing real-time translation and intelligent customer service. What’s more, it enables enterprises to grasp market dynamics: by analyzing

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international market trends, it helps businesses—especially small and medium-sized enterprises (SMEs)—gain better access to overseas markets.

However, AI also brings challenges. First, global fragmented data rules set high compliance thresholds and increase compliance costs for Chinese enterprises to use AI for global market analysis and customer insight. Second, at the employment level, the structural unemployment risk has intensified. AI translation, intelligent customer service and other technologies are rapidly replacing traditional process jobs in foreign trade, which not only impacts the primary employment market, but also leads to the "skill mismatch" dilemma of the disappearance of low-end jobs and the scarcity of high-end interdisciplinary talents, posing a severe test to the transformation and upgrading of the labor force.

In view of this, this paper aims to systematically review the current application of artificial intelligence technology in China's international trade sector, comprehensively identify the potential risks such as data security and employment structure, and based on this, propose targeted countermeasures, with the aim of contributing ideas for building a future-oriented, intelligent, and inclusive trade system in China.

2. Application Status Of Artificial Intelligence Technology in China's International Trade Field

2.1 AI Translation Technology Solves the Language and Information Barriers of Small and Medium-Sized Enterprises

AI translation technology is systematically removing the language and information barriers for smes to participate in cross-border trade through "efficiency effect" and cost advantage. According to the WTO report, AI technology can improve the efficiency of consulting, research and development and other fields, solve language and information barriers, and reduce cross-border communication costs by providing real-time translation and intelligent customer service. This provides opportunities for small and medium-sized enterprises and developing countries to overcome their hardware shortcomings, complete data collection, annotation, content review and so on, and enter the global value chain.

In terms of application scenarios, AI translation has evolved from an auxiliary tool to a "standard configuration" of cross-border trade, which breaks the language barrier for small and medium-sized export enterprises with poor foreign language ability, and AI solves the language and information barriers. At large exhibitions such as the Canton Fair and the China International Import Expo, many overseas buyers are equipped with professional translators. In noisy environments, their audio reception, translation accuracy (especially in the business field), offline translation, and conversation modes are generally better than smartphone apps, providing a superior experience.

On the one hand, in terms of traditional trade, import and export business by offline AI real-time translation, reduce communication barriers, improve the communication efficiency and reduce the communication cost; On the other hand, in the field of cross-border e-commerce, AI translation technology can translate product descriptions into multiple languages in real time, optimize according to the cultural customs and consumption preferences of the target market, and improve the shopping experience of consumers[1]. Research has shown that neural commercial application of the machine translation of "efficiency effect" has surpassed the "competition effect" of traditional translation business impact, and promote the language service promotion enterprise's market value[2]. In terms of translation costs, long-term use of AI translation devices (2,000-3,500 yuan) shows a significant scale advantage compared to daily-paid human translation (200-600 yuan/day), although there are still limitations in professionalism for high-end political and business occasions[3], but the AI translation technology has small and medium-sized enterprises to enjoy the real technology dividend, So that every business can explore the international market as easily as using a calculator.

2.2 AI Data Analysis Technology Promotes the Intelligence and Efficiency of International Trade

As a new factor of production, data is the basis of digitalization, networking and intelligence. It has been rapidly integrated into all aspects of production, distribution, circulation, consumption and social service management, profoundly changing the mode of production, lifestyle and social governance. Data is the core of AI. In the process of using AI system, users provide data to the AI service system through the port, and AI can accurately find the target data from the huge data set, and conduct in-depth mining and analysis on it, and then mine the valuable information from it to provide accurate services [4]. The field of international trade also involves complex data, including structured data (such as orders, invoices,

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and bills of lading) and unstructured data (market research reports, customer emails, social media trends, news, etc.).

The application scenarios of AI data analysis in the field of international trade can be divided into the following three aspects:

First, using AI technology to analyze global customs, e-commerce platforms, and social media data. AI data analysis technology helps exporters identify potential popular products and market demand gaps overseas. It also assesses the market demand, competitive landscape, and trade policy risks in different countries to provide data support for companies entering new markets. Based on factors such as market demand, competitors' prices, and exchange rate fluctuations, exporters can adjust the pricing of export products in real time to maximize profits.

Second, AI processes GPS data, ship AIS data, weather data, port throughput data, etc. AI plays an important role in international cargo tracking and storage management, promoting the coordination and operation of international logistics more efficient and accurate. It can not only realize the traceability and predictability of transportation process, but also reduce the generation of demurrency and improve the logistics efficiency of goods trade[5].

Third, AI analyzes overseas customers' browsing behavior, purchase history, social media interaction and other data to help merchants provide accurate cross-border marketing and customer services.

2.3 AI Intelligent Customs Clearance Promotes Trade Facilitation

The core of international trade facilitation lies in the efficiency and security of customs clearance. Through automated document processing, intelligent risk assessment and whole-process status tracking, AI technology is completely reshaping the customs clearance experience, upgrading it from the traditional "vote by vote review" mode that relies on manual labor to the data-driven "intelligent classification and precise supervision" mode, becoming the core engine to enhance the competitiveness of China's port business environment. The core carrier of this transformation is the "single window" platform of international trade, which has undergone the transformation of digital intelligence. As the "digital portal" connecting China with the world trade, the "Single window" has realized 964 items in 25 categories, basically covering the whole chain of cross-border trade [6]. The digital-intelligence technology represented by AI promotes the digital-intelligence transformation of the "single window" of international trade through the digitalization and automation of some links of customs clearance, digital coordination between enterprises and governments (B2G), and the construction of a cross-border interconnected trade ecosystem [7]. In short, the "single window" digital-intelligence transformation driven by AI has created an efficient and safe trade environment in which law-abiding enterprises can move freely, while illegal enterprises can't move a single inch. This is the optimization of port business environment, strategic cornerstone of international trade competitiveness.

3. Challenges of Artificial Intelligence to China's Foreign Trade

Although AI technology has brought great efficiency improvement to China's foreign trade, its deep application is also accompanied by a series of severe challenges. These challenges involve aspects such as data security and privacy protection, as well as employment structure.

3.1 Data Barriers and Privacy Security Risks Have Intensified, Increasing Trade Compliance Costs

The operation of AI is highly dependent on high-quality, large-scale data. In international trade, business use of AI for market analysis, customer insight and supply chain management, inevitably need to overseas customer data collection, transmission and processing massive amounts of sensitive information with the enterprise. However, there are also barriers to international digital rules. Regulations such as the EU's General Data Protection Regulation (GDPR) and the California Consumer Privacy Act in the US place strict limits on the cross-border flow of data. When China's foreign trade enterprises use AI, if they fail to process data in compliance, they will face the risk of high fines, lawsuits and even market ban, which greatly increases the compliance cost and complexity of trade.

3.2 Structural Unemployment of Traditional Trade Jobs

The automation capabilities of AI will not only improve efficiency, but also challenge human resource

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structures and international rules. Employment structure impact: AI translation, intelligent customer service, automated document processing and other technologies are rapidly replacing repetitive and process-oriented positions in the traditional foreign trade industry (such as basic translators, document clerks, and data entry staff). These positions were originally the employment entrance for many liberal arts students and foreign trade newcomers, and their shrinkage will intensify the competitive pressure in the primary employment market. Failure to retrain and upgrade the existing workforce on a large scale will lead to structural unemployment and exacerbate social pressure. The deeper challenge lies in the "skill mismatch". The demand for foreign trade talents in the future is showing a trend of "polarization". On the one hand, low-threshold jobs are gradually disappearing, and on the other hand, high-skilled talents are scarce. What companies desperately need are multi-skilled people who can harness AI tools, make strategic decisions and complete complex interpersonal communications. In particular, What enterprises urgently need are versatile talents who can master AI tools, make strategic decisions, and handle complex interpersonal communications. Specifically, the market will increasingly require localization experts who can manage and optimize AI translation systems rather than just translators; marketing directors who can use AI data analysis results to develop global marketing strategies rather than just data clerks; and senior account managers who can deal with complex customer complaints and negotiations that intelligent customer service cannot resolve.

4. Countermeasure analysis

4.1 Build a New Data Governance System of "Internal and External Repair"

To effectively address the increasingly severe challenges of data compliance, China needs to establish a "both internal and external cultivation" governance and service system. Internally, efforts should be made to enhance the national-level data governance capabilities and service standards. We should accelerate data right confirmation and data legislation, and construct forward-looking compliance management that covers cross-border data flow, privacy protection, algorithmic ethics compliance, and other areas. Additionally, a compliance supervision and certification system covering the entire data lifecycle should be built to issue internationally aligned compliance certifications to enterprises, thereby reducing their costs in complying with regulations such as the EU's GDPR. Advice led by the Ministry of Commerce, network letter, customs and other departments, to develop foreign trade enterprise oriented data cross-border one-stop compliance public service platform, provide the main trade market data, the dynamic interpretation of laws and regulations, compliance inspection tools and standard contract template, reduce the enterprise's cognition and threshold operation. Externally, it is necessary to actively participate in and lead the dialogue on global digital governance rules. China should take the initiative to promote the establishment of more inclusive and fair cross-border data flow rules under multilateral and regional frameworks such as WTO and RCEP, and give priority to negotiating and signing data flow mutual recognition agreements with strategic partners such as Belt and Road co-construction countries, so as to form a "data circle of friends" based on security consensus and build a stable and predictable compliance environment for Chinese enterprises going overseas.

4.2 Solve Structural Unemployment Through "AI+ Foreign trade" Interdisciplinary Talent Training

We will implement systematic and forward-looking digital skills retraining for in-service foreign trade personnel. In the face of job iteration brought by AI technology, the government and enterprises need to form joint efforts to jointly invest in "AI+ foreign trade" interdisciplinary talents. At the government level, direct subsidies should be provided to enterprises and individuals participating in certification training through the establishment of "special training fund for foreign trade digital transformation", so as to stimulate the endogenous motivation of internal training of enterprises. At the same time, it should lead cross-border cooperation with industry associations, leading enterprises and vocational training institutions. The training content should go beyond simple tool use and cover core areas such as data interpretation and decision-making, AI marketing content optimization, intelligent customer service system management and cross-cultural digital communication. At the enterprise level, the upgrading of employees' skills should be regarded as a core strategy rather than a cost burden. Internal "skill certification and promotion link" mechanism should be actively established, and "digital tutorial system" and "practical workshop" should be widely introduced, and on-job training should be carried out around real business scenarios (such as using AI analysis platform to develop new customers and optimize intelligent quotation system, etc.) to ensure that employees can directly convert new skills into productivity. And employees will realize the role transformation from "operator" to "AI collaborator"

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and even "AI manager".

5. Conclusion

AI technology is reshaping the pattern of China's foreign trade with unprecedented depth and breadth. This article systematically analyzes the application of artificial intelligence in three core scenarios: intelligent translation, data analysis, and smart customs clearance, confirming its significant value in improving communication efficiency, optimizing market decision-making, and accelerating port clearance, particularly providing a historic opportunity for small and medium-sized enterprises to integrate into the global value chain. However, the deep application of technology also brings practical challenges, such as data security and compliance barriers, and structural imbalances in employment.

In the face of this change, China needs to take systematic coping strategies: on the one hand, we should speed up the construction of "internal and external repair" data governance system, promote the orderly flow of data on the premise of ensuring security by improving domestic legislation and participating in the formulation of international rules; On the other hand, we should vigorously promote the training of "AI+ foreign trade" interdisciplinary talents. Through the two-wheel drive of education transformation and on-the-job training, we should resolve the structural contradiction of employment and transform population pressure into talent dividend.

In the future, China should continue to improve the institutional environment and human resource system that adapt to technological innovation while embracing it, promoting a deeper integration of artificial intelligence with foreign trade at a higher level. This will help build lasting competitiveness in the global digital trade landscape and achieve a steady transformation from a 'major trading nation' to a 'strong trading nation'.

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