

# ***Generative AI Reshaping International Trade Pattern: How Do Foreign Trade Enterprises Seize Opportunities***

Yuexi Liu<sup>1,a</sup>, Zhaokai Liang<sup>1,b</sup>, Jiangang Zhang<sup>1,c,\*</sup>

<sup>1</sup>Guangdong University of Technology, No. 100 Xiaoguwei Street, Panyu District, Guangzhou City, Guangdong Province, China

a. [yuexi.liu@foxmail.com](mailto:yuexi.liu@foxmail.com), b. [riker.leung@easypus.com](mailto:riker.leung@easypus.com), c. [jgzhang@gdut.edu.cn](mailto:jgzhang@gdut.edu.cn)

\*corresponding author

**Abstract:** The year 2023 is the first year of the outbreak of generative artificial intelligence applications, and digital transformation has also become the development trend of international trade today. Digital transformation, driven by the rapid development and adoption of generative AI technologies, has also become the dominant trend of international trade in the contemporary world. Generative AI, exemplified by ChatGPT, a powerful natural language generation model, has attracted global attention and sparked heated discussions about its implications and possibilities in different fields. Generative AI is a subset of artificial intelligence, which create new content from existing data by learning the underlying patterns and structures of the data. International trade, as an important part of the global economy, is inevitably influenced by the emergence and advancement of generative artificial intelligence. This paper aims to explore the current and potential impacts of generative artificial intelligence on international trade, focusing on three main aspects: creating new value from data, data analysis and preparation. The paper argues that generative artificial intelligence offers unprecedented opportunities for the international trade industry, as it help sellers in international trade to create more diverse and customized products and services, to optimize their production and marketing strategies, and to increase their competitiveness and profitability. The foreign trade enterprises should seize the opportunity and adopt proactive and innovative approaches to leverage the benefits of generative artificial intelligence, while also being aware of and prepared for the potential risks and challenges it poses to international trade.

**Keywords:** Generative artificial intelligence, International trade, Foreign trade enterprise

## **1. Introduction**

Generative artificial intelligence, based on the Transformer architecture, uses the self-attention mechanism to process the input sequence, enabling the model to better understand the context and semantic relations. By learning a large amount of data or corpora, it extracts the latent language rules, patterns and structures, and uses them to generate new content, such as text, images, audio, etc., that are similar to but not limited by the original data. In the international trade industry, generative artificial intelligence's vast knowledge database enables it to help users improve their work efficiency and achieve benefit growth within a certain period of time. It once activated the global market economy, and while pushing AI research and development to new heights with its strong business

potential, it also provided possibilities for the digital construction of various industries in the future. This year, China added 368 new artificial intelligence enterprises, and the adoption rate of generative artificial intelligence enterprises in China has reached 15%, and the market size is about 14.4 trillion yuan[1].

## 2. Create New Value From Data

Generative artificial intelligence (AI) has two main capabilities that benefit sellers in international trade: image processing and multilingual and multicultural transformation. On the one hand, image processing is the capability of generative AI to produce images or videos from text descriptions, such as product features, customer preferences, or marketing messages. This capability leverage existing data to help sellers design diversified and customized product images or videos that attract potential customers, increase their satisfaction, and ultimately boost sales. On the other hand, generative AI's multilingual and multicultural transformation capability provide accurate, fast, and real-time multilingual translation services, greatly reducing the language communication costs and providing sellers with better cross-cultural communication and negotiation tools. This enhance the customer's engagement and emotional connection with the product and the seller, and increase the likelihood of purchase and repurchase. Therein, image processing is one of the most popular and widely researched applications of generative AI in e-commerce, especially in the fields of recommender systems, sentiment analysis, personalization, and optimization [2].

Data analysis is the ability of generative artificial intelligence to process, interpret, and generate large and complex data sets related to international trade which help sellers improve their decision-making and operations in various aspects. The following is a brief analysis of four aspects: demand forecasting, order management, risk assessment and trade contracts:

**Demand forecasting:** Accurately and timely predict the demand for different products or markets, help sellers optimize inventory levels, and avoid overstocking or shortages. After the COVID-19 pandemic, the recovery of different regions and sectors around the world is uneven, depending on the evolution of health conditions and policy responses. Therefore, for sellers in international trade, it is crucial to use data analysis to predict the demand for their products or markets, and adjust their inventory accordingly. Data analysis help exporters identify new markets, diversify their products, and increase their market share.

**Order management:** Manage and track existing inventory across data sources and channels in real time, analyze warehouse layout and worker movement patterns, and devise strategies to improve warehouse efficiency and reduce storage costs. In the context of digital transformation of trade, sellers can use data analysis to optimize their order fulfillment process, such as choosing the best transportation mode, shortening delivery time, and minimizing errors and returns. Practitioners access and interact with international trade data in the visualized data center of the International Trade Administration, to explore the latest trends and patterns[3].

**Risk assessment:** Independently set up emergency alarms, abnormal order status details, regular tracking of abnormal orders, etc., to ensure the safe execution of orders. Intelligently identify potential risk points in the supply chain that cause delays or interruptions, and issue warnings for risk events, enhancing the security and stability of the supply chain.

**Trade contracts:** Provide regulatory consultation and interpretation for foreign trade enterprises, review and generate contract documents, identify potential risks and issues in contracts, and ensure that contract content complies with relevant laws and regulations, effectively reducing the compliance risk of foreign trade enterprises.

Generative artificial intelligence reduces trade costs by enabling more efficient and customized production, distribution and consumption of goods and services through processing existing data.

Market data shows that it adds value equivalent to 2.6 to 4.4 trillion US dollars per year across 63 use cases, including international trade.

### 3. Reduce Trade Barriers

Small and medium enterprises (SMEs) face common difficulties when they try to expand their foreign trade business or start a foreign trade venture. These difficulties usually include language barriers, lack of experience in the import and export trade process, difficulty in obtaining detailed data on the business environment of the target country, and the production of sales materials for their own products.

Language is a crucial factor in international trade, as it affects the communication and negotiation between buyers and sellers, the interpretation of contracts and regulations, the access of market information, and the promotion and branding of products. Language barriers hinder the development of foreign trade, especially for SMEs, who may not have enough resources or expertise to deal with linguistic and cultural differences. English is widely used as a medium of communication in many international settings[4]. The number of English speakers is about 331 million, accounting for 4.68% of the world's population. However, not everyone can use English fluently for cross-border trade. This is a limitation for enterprises or entrepreneurs who do not have English as their native or second language. They may fail to obtain important trade information due to language barriers. According to a survey conducted by the European Commission[5], language barriers are one of the main obstacles for SMEs to engage in cross-border trade within the European Union. It found that 11% of SMEs lost a contract because of language problems, and 37% of SMEs did not trade across borders because of language difficulties. Moreover, the survey estimated that the potential loss of trade due to language barriers amounted to €118 billion per year, or 0.8% of the EU's GDP. This suggests that overcoming language barriers could bring substantial economic benefits for SMEs and the world as a whole. The emergence of generative artificial intelligence (AI) has greatly alleviated the trade barriers caused by language problems. Natural language processing (NLP) is an important application area of generative AI. By using generative AI techniques, computers understand and process human language, and perform tasks such as text generation, text classification, machine translation, etc. In the field of machine translation, generative AI automatically translate one language into another, and the translation quality will improve with the increase of usage and technology updates.

When developing foreign trade business, practitioners often have a limited understanding of the industry background of other countries. They spend a lot of time managing the existing production and business in the domestic market, such as dealing with environmental inspections, checking the capacity and quality of factory workers, and handling large customers. However, collecting a large amount of information on the import and export trade processes and the detailed data on the business environment of the target countries requires time and energy. If they hire consulting firms to make reports, that would be an expense that small and medium-sized enterprises can hardly afford. The remuneration of international trade consultants varies considerably according to several factors, such as the location and type of the client, the expertise and experience of the consultant, and the nature and scope of the assignment. A survey of some sources indicates that the average daily fee for consultants working for organizations based in high-income countries, including international NGOs and UN agencies, is approximately 300 USD[6]. However, this fee may range from 180 USD to 1000 USD depending on the consultant's qualifications and the client's expectations[6]. Similarly, for consultancy assignments funded by the EU development cooperation, the daily fee may differ from 400 EUR for junior experts (with 3-5 years of experience) to 800 EUR for senior experts (with more than 10 years of experience)[6]. Other factors that may affect the fee include the type of deliverable, the length and frequency of the assignment, the travel and living costs, and the negotiation skills of the consultant. Therefore, the high monetary and time costs of obtaining information have also

become a key factor that raised the entry barriers to the international market in the past. Generative AI capture and analyze the market data and sales information of global e-commerce companies, and help cross-border e-commerce enterprises list the global e-commerce sales rankings and product attribute keyword rankings for different product categories. At the same time, it summarizes the market size and growth rate development for different regions, countries, and types of e-commerce, and helps enterprises conduct more targeted in-depth market research, better understand the local market trends, achieve accurate layout of e-commerce product categories, and thus improve decision-making efficiency and market competitiveness.

An essential preparation in the sales process is the product promotion materials. In cross-border trade, the buyers and sellers cannot display the goods face to face, so the current international trade relies heavily on e-commerce platforms to acquire and promote customers. An attractive product main picture and a concise text introduction even become a factor that surpasses similar products. Generative artificial intelligence (AI) create new and original content (such as images, texts, or sounds) based on certain inputs or constraints, which is especially suitable for foreign trade companies that need to adapt to different markets and customer preferences. Generative AI generate and optimize design solutions based on the target market, product category, and desired features, using algorithms and data, to help foreign trade companies design product main picture and product introduction. It not only reduces the time and cost of manual design, but also provides practitioners with more attractive product design inspiration, making them stand out in the competition. It is estimated that by 2025, 30% of the external marketing information from large organizations will be synthetically generated, and 80% of the product materials in a product launch event may be generated by AI (from text to video)[7].

Therefore, the emergence of generative artificial intelligence has actually greatly lowered the entry threshold for practitioners in the international trade industry in terms of their personal skills.

#### **4. Preparation For Generative AI in International Ttrade**

The development of artificial intelligence technology in China has been fast in recent years, and many management policies related to artificial intelligence have emerged, covering various sub-fields. The “Regulations on Algorithm Recommendation Management for Internet Information Services” and the “Regulations on Deep Synthesis Management for Internet Information Services” set technical compliance standards for algorithm governance, deep synthesis governance, and other areas. To foster the healthy development and standardized application of generative artificial intelligence exemplified by ChatGPT, the “Measures for the Administration of Generative Artificial Intelligence Services” was released in July 2023, which is the first normative policy at the national level for the generative artificial intelligence industry. The policy covers the definition, scope of application, usage requirements, data sources and processing, supervision measures, and other aspects of generative artificial intelligence technology. In reality, China’s generative artificial intelligence has moved from theoretical research to practical application[8].

While we are investing in the dividends brought by generative artificial intelligence, we should not neglect its potential risks. Generative artificial intelligence provides a lot of opportunities for foreign trade enterprises, such as creating more diverse and customized products and services, optimizing their production and marketing strategies, and increasing their competitiveness and profitability. However, they should also pay attention to the possible problems of the content generated by generative artificial intelligence, such as forgery, intellectual property, and ethical issues. It is suggested that foreign trade enterprises should focus on cooperating with customers with high credibility in the development process, and take proactive measures to prevent the reputational, impersonation, fraud, and political risks that malicious use of generative artificial intelligence may bring to individuals, organizations, and governments. For example, they should verify the

authenticity and quality of the content generated by generative artificial intelligence, respect the rights and interests of the original data owners and creators, and disclose the source and method of the content generation when necessary. Moreover, foreign trade enterprises should follow the guidelines on the responsible use of generative artificial intelligence, which are implemented through approved lists of vendors and services, and give priority to those vendors and services that strive to provide transparency on training datasets and appropriate model usage, and/or offer open-source models. These guidelines aim to ensure the quality, reliability, and accountability of the generative artificial intelligence services, and to promote the ethical and social values of the generative artificial intelligence applications.

## 5. Conclusion

The application of generative artificial intelligence is an important milestone in the development of artificial intelligence, which has been evolving rapidly in recent years. Generative AI refers to the ability of AI systems to generate novel and realistic data, such as text, images, audio, or video, based on existing data or user input. Generative AI brings unprecedented opportunities for the international trade industry, which is one of the most dynamic and competitive sectors in the global economy. It has the potential to help sellers conduct international trade by creating more diverse and customized products and services that meet the needs and preferences of different customers and markets. For instance, generative AI help design new products, generate product descriptions, create marketing materials, or provide customer service in multiple languages. However, despite the huge benefits of generative AI, it is crucial for foreign trade enterprises to adopt proactive and innovative approaches to leverage these advantages and to be prepared for the potential risks and challenges brought by generative AI. Some of the risks and challenges include ethical, legal, and social issues, such as data privacy, intellectual property rights, quality control, or social responsibility. Moreover, generative AI may also pose threats to the existing business models, competitive advantages, or market positions of some foreign trade enterprises, as it may lower the barriers to entry, increase the competition, or disrupt the supply and demand. Therefore, foreign trade enterprises need to be aware of these implications and adopt appropriate strategies to cope with them. As technology advances and the economic model of international trade changes, foreign trade enterprises should keep pace with the industry development, to fully exploit the potential of generative AI and to cope with the constantly changing international trade pattern in the era of digital transformation. Digital transformation refers to the process of using digital technologies, such as cloud computing, big data, or blockchain, to improve the efficiency, effectiveness, and innovation of business operations and processes. Digital transformation help foreign trade enterprises enhance their capabilities, expand their markets, reduce their costs, or improve their customer satisfaction. However, digital transformation also requires foreign trade enterprises to adapt to the new technological environment, to acquire new skills and competencies, to manage the organizational and cultural changes, or to deal with the regulatory and security issues. Therefore, foreign trade enterprises need to embrace the opportunities and challenges of digital transformation and generative AI, and to strive for excellence and innovation in the international trade industry.

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