

The Tech-Driven Era: Deep Integration of Artificial Intelligence and Cross-border E-commerce

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Abstract: As the artificial intelligence technology continues to advance and iterate at an unprecedented pace, the cross-border e-commerce industry has entered a new era of AI-driven e-commerce. Artificial intelligence technology has been changing every aspect of the cross-border e-commerce ecosystem and business flow, propelling the industry toward a greater level of efficiency and intelligence. This study reviews the development of cross-border e-commerce, and explores the industry's emerging trends, opportunities and challenges in this tech-driven era.

1. Introduction

In 2024, Li Qiang, Premier of the State Council, made a report at the Second Session of the 14th National People's Congress of PRC on March 5, 2024 [1]. Premier Li pointed out that high-level opening up should be expanded so as to promote mutual benefit. Efforts should be made to promote the healthy development of new business forms such as cross-border e-commerce. Work should be done to optimize the layout of overseas warehouses and support the upgrading of processing trade. Actions of extending new growth points such as the intermediate goods trade and green trade should be taken as well.

Wang Wentao, Minister of Commerce, made a report on the Press Conference on Economic Issues of the Second Session of the 14th National People's Congress [2]. He stated that it is crucial to further promote cross-border e-commerce exports, as well as to improve policies such as customs clearance, taxation, and foreign exchange. It is also highlighted that efforts should be made to accelerate the construction of supply chains and ecosystems which adapt to the development of cross-border e-commerce.

According to *2023 Cross-Border E-Commerce Development Report* [3], the latest statistics released by UNCTAD and major economies around the world showed that after 2020, the scale of e-commerce retail in major economies around the world has grown rapidly, and the proportion of e-commerce retail in total retail has also increased significantly. With the rapid growth of China's cross-border e-commerce industry, both the total import-export value and the share of cross-border e-commerce in China's total goods exports have demonstrated a significant upward trend.

China Cross-Border E-commerce Market Data Report [4], a report released by E-Commerce Research Center of NetSun, indicated that the scale of the domestic Cross-Border E-Commerce

market in 2023 reached 16.85 trillion yuan, raising 7.32% from 15.7 trillion yuan in 2022. In addition, the market size (growth rate) in 2019-2022 is 10.5 trillion yuan (16.66%), 12.5 trillion yuan (19.04%), 14.2 trillion yuan (13.6%) and 15.7 trillion yuan (10.56 %) respectively. It is predicted that the market size of cross-border e-commerce would continue expanding in the next five years .

The cross-border e-commerce industry is currently at a defining turning point of transformation. As AI technology is still advancing and iterating rapidly, the industry has entered a new era, facing great changes, opportunities and challenges.

2. Arrival of the New Tech-Driven Era

After the Print Media-based Foreign Trade Era, PC-based E-commerce Era and Mobile E-commerce Era, the AI-driven E-commerce Era is coming. It is an era which is characterized by technologies like the generative artificial intelligence, big data, cloud computing and etc.

According to Wang Yuedan and EWTO Research Institute(2024) [5], the development of cross-border e-commerce has been affected by technological iteration. Mainly two stages and four types are included, as shown in Figure 1.

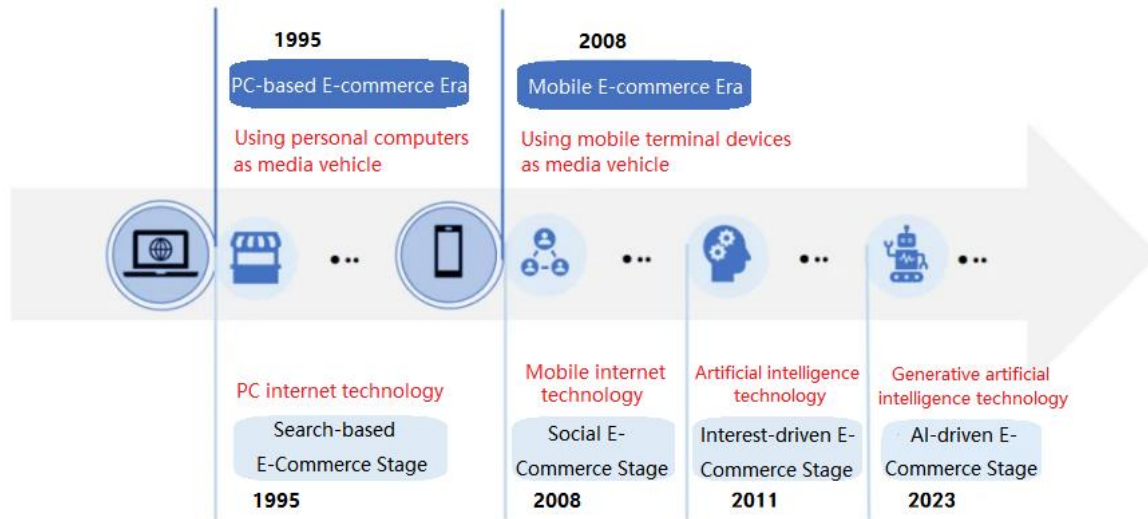


Figure 1 Development of Cross-border E-commerce Industry (The original figure is from Wang Yuedan and EWTO Research Institute(2024) and has been translated by the authors)

Two stages, classified according to its media vehicle, are PC-based E-commerce Era and Mobile E-commerce Era. Four types, classified according to the mode of cross-border e-commerce platforms and the technology applied to them, are Search-based E-commerce, Social E-commerce, Interest-driven E-commerce and AI-driven E-commerce. With the help of AI, the changes of cross-border e-commerce industry's business flow and ecosystem are anticipated in the near future.

The high-level development of cross-border e-commerce has close relationship with the development of national economy. With the help of AI Assistant, AI Customer Service, AI Operator and so on, cross-border e-commerce will more efficiently align the matching of merchant supply side and user demand side in the future, driving the industry development and further promoting the participation of large, medium and small enterprises in global trade. The global layout of the digital industry chain and the integration development of e-commerce supply chains will be promoted, and this will help drive "Made in China" brands and goods to the global market (Zhang Xiaodong 2024 [6]).

3. Challenges in the New Era

3.1 Changes of Ability Requirements for Practitioners

Cross-border e-commerce is an interdisciplinary subject that embodies the characteristics of both international trade and e-commerce. Thus, positions in this industry extend to fields like cross-border e-commerce operation, online marketing, customer relationship management, data analysis, warehousing and logistics and etc.

On the basis of the nature and content of the work, these positions can be roughly divided into three types, namely the technical position, operational position and managerial position.

According to *Forecast Report on Talent Demand in the Cross-Border Digital Trade Industry* [7] and Zhu Chunlan(2021) [8], enterprises exhibits the most significant workforce demand for operational positions, with a notable transition from conventional platform operation to emerging domains such as the overseas social media operation and live-streamed e-commerce operation. To navigate the industry evolution and autonomously execute professional responsibilities, practitioners must demonstrate not only foundational competencies in traditional domains like international trade and commerce, but also solid foreign language skill, data-driven digital intelligence and cross-cultural communication ability.

The duties, competency requirements and trends of transition corresponding to cross-border e-commerce professional positions are shown in Table 1.

Table 1 Cross-border E-commerce Job Requirements

Job Position	Duty	Requirement	Trend
Cross-Border E-Commerce Operations Specialist	Daily operation and management, including product listing, price adjustment, inventory control, etc.	Familiar with data analysis, operation process of platforms; good at using market research tools.	Master advanced automated tools and technologies to facilitate the daily operation.
Overseas Marketing Specialist	Overseas marketing of cross-border e-commerce products, including social media marketing, e-mail marketing, content marketing, etc.	Familiar with overseas social media platforms and proficient in using SEO and SEM for promotion; good at cross-cultural communication.	Optimize marketing strategies through iterative updates to maintain alignment with dynamic market trends.
Cross-Border E-Commerce Data Analysis Specialist	Collecting and analyzing data generated by platforms to help enterprises optimize their operational strategies and enhance business performance.	Good at the data collection and analysis and the use of tools like Excel and Python;	Master advanced data analysis techniques and algorithm models.
Cross-Border E-Commerce Customer Service Specialist	Overseas customer communication through various channels such as email, telephone, instant messaging, etc; resolving customer inquiries and after-sales issues efficiently.	Good at cross-cultural communication and understanding cultural differences; able to deal with intellectual property disputes.	Master customer service skills and use information technology to improve customer satisfaction and work efficiency.
Visual Marketing Design Specialist	Designing product pictures, posters, videos and other content on cross-border e-commerce platform to enhance the brand image and customer's purchase willingness.	Proficient in design software such as Photoshop, Illustrator, etc; apt at visual marketing; high level of creativity.	Master multimedia content creation skills.
Cross-border Logistics Specialist	Arranging international shipment of goods, including selecting logistics service providers, tracking cargo status, and handling customs clearance procedures.	Familiar with international trade rules and logistics processes; able to coordinate multiple resources to ensure timely delivery of goods.	Master technological tools such as logistics tracking system, automatic warehouse system, etc.

It can be seen from Table 1 that practitioners of cross-border e-commerce industry are required to master comprehensive domain knowledge and technical competencies, such as product management, overseas marketing, data analysis, supply chain management and etc. Therefore, practitioners must possess strong foreign language proficiency and cross-cultural communication capabilities. However, these requirements are mainly based on previous stages; with the advent of the AI-driven E-commerce Era, how to integrate the AI technology into the business flow of cross-border e-commerce is one of the greatest challenges in this period.

Due to the emerging requirements introduced by AI technologies, practitioners must adapt to the industry trend by acquiring digital intelligence tools and enhancing their digital literacy. For instance, cross-border e-commerce operations specialists need to employ AI-assisted tools for optimized pricing strategies and inventory management; overseas marketing specialists can leverage data monitoring technologies to conduct sophisticated marketing research and implement intelligent advertising campaigns; cross-border e-commerce data analysis specialist may utilize automated BI dashboards to generate insightful data reports; visual marketing design specialist can employ AI design assistants to create compelling product images or videos; cross-border logistics specialists can enhance their working efficiency through automated customs clearance systems, intelligent logistics solutions, etc.

3.2 Updates of Talent Cultivation

As mentioned above, cross-border e-commerce involves multiple job positions, covering diverse functions across the entire industry ecosystem and business flow. In the past, these job positions required practitioners to have such professional skills as the foreign language and communication skill, e-commerce operation skill, supply chain management skill, digital marketing skill and etc. As a result, the curriculum design of talent development programs related to Cross-Border E-Commerce mainly revolved around two kinds of course: linguistic and cultural courses (e.g. Business English, Intercultural Business Communication) on one hand and e-commerce and international trade courses (e.g. Cross-border E-commerce Practices, International Trade Operations) on the other.

With the development of AI technologies, employers have higher requirements for job seekers in terms of their knowledge base and skill set, necessitating updates of the cultivation of cross-border e-commerce talents. Courses like Foundations of Artificial Intelligence and Data Analytics should be included in the curriculum because of their contributions in building up students' digital literacy. Besides, critical elements in the talent development program of cross-border e-commerce major should be adjusted accordingly, including the teaching content composition, textbook selection, evaluation system, industry-academia integration in school and etc. Exploration should be conducted through teaching experiments and practical activities.

3.3 Possible Problems in Application of AI Technologies

Due to the rapid iteration of AI technologies, potential issues inherent in its applications, such as AI algorithm bias, ethical concerns, intellectual property ownership, data security, legal supervision, are all in urgent need for standardization. Meanwhile, in the process of applying new AI technologies, in addition to the changes brought about by the industrial ecosystem and business flow, issues like decision-making fairness and employment shock are also worthy of attention.

Throughout history, every technological revolution, while liberating productive forces, has invariably precipitated novel social dilemmas, contentious debates and systemic challenges, which has had a profound and lasting impact on the social structure, organizational relation and cultural concept. Therefore, while embracing new technologies and enjoying the convenience brought by AI,

people must also actively take various measures to meet the challenges and ensure the proper use of AI technology. Specifically, for the cross-border e-commerce industry, it is of great value to comprehend how to optimize processes and enhance efficiencies by applying AI technologies while avoiding corresponding negative impacts (e.g. the user privacy leakage, intellectual property infringement, industry monopoly). Further academic exploration and research will promote the integration of AI technologies and cross-border e-commerce industry, facilitating the healthy development of the industry.

4. Conclusions

The fast development and persistent iteration of artificial intelligence technology will take the cross-border e-commerce industry into a new era. AI, with its powerful data processing and analyzing capabilities, will reshape every facet of the cross-border e-commerce ecosystem and business flow, bringing vitality in.

After reviewing the main stages of cross-border e-commerce, this paper discussed the challenges of cross-border e-commerce industry driven by AI technology. Due to the changes in job requirements, it is necessary to update the talent cultivation system for educators and trainers and to standardize the application of artificial intelligence in the industry. Further studies are advised to furnish useful references in terms of the integration of artificial intelligence technologies and cross-border e-commerce.

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References

- [1] China News. (Posted on 20240305) Li Qiang Proposed in the Government Work Report to Expand High-level Opening-up. <https://baijiahao.baidu.com/s?id=1792650685461719302&wfr=spider&for=pc>, (Search on 20240901).
- [2] China Daily. (Posted on 20240306) Wang Wentao: New Momentum for Foreign Trade Development to Be Cultivated from Four Aspects. <https://baijiahao.baidu.com/s?id=1792774439243718501&wfr=spider&for=pc>, (Search on 20240901).
- [3] Shanghai Academy of Social Sciences, Standard Chartered Bank, Money Weekly and Dun & Bradstreet. (2023) 2023 Cross-Border E-Commerce Development Report. Shanghai: Shanghai Academy of Social Sciences.
- [4] E-Commerce Research Center of NetSun. (2023) China Cross Border E-commerce Market Data Report. Hangzhou: NetSun.
- [5] Wang Yuedan, EWTO Research Institute. (Posted on 20240527) Two Major Transformations and Four Revolutions in Cross-Border E-Commerce. <https://mp.weixin.qq.com/s/UsRXl8J8UJg4cgM0DqCHPw>, (Search on 20241201).
- [6] Zhang Xiaodong. (2024) Research on the Internationalization Development of Chinese Cross-Border E-Commerce Brands. Beijing: Economic Science Press.
- [7] Alibaba (China) Technology Co., Ltd. (2024) Forecast Report on Talent Demand in the Cross-Border Digital Trade Industry. Hangzhou: Alibaba.
- [8] Zhu Chunlan. (2021) Cross-Border E-Commerce Foundation. Dalian: Dalian University of Technology Press.