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Exploring Cross-Border E-Commerce Development Strategies for Chinese SMES in the Age of Generative AI

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Abstract

Purpose: This study analyzes the current status of China's cross-border e-commerce(CBeC) development, outlines the challenges faced by China's CBeC Small and Medium Enterprises(SMEs), and finally summarizes the development strategies of China's CBeC SMEs in the era of generative artificial intelligence(GAI), providing reference for the development of China's CBeC SMEs . Research design, data and methods: This study analyzes the current status of China's CBeC development under the background of GAI through literature analysis ; and summarizes the challenges encountered by China's CBeC SMEs through semi-structured interviews . Results: The article summarizes the current status of China's CBeC development under the background of GAI from the aspects of the transformation of traditional foreign trade factories to CBeC, CBeC trade volume, CBeC platform selection diversification, the current status of GAI development and its application in CBeC, and points out the challenges faced by China's CBeC SMEs in terms of homogeneity and reliability of GAI output, human resources, data and privacy issues. Conclusions: It provides specific development strategies for China's CBeC enterprises and provides reference suggestions for GAI .

Keywords: Generative Artificial Intelligence, Cross-Border E-Commerce, Chinese Small and Medium Enterprises, Development Strategy

Introduction

China is a representative country that actively integrates into globalization. The development of CBeC has become an important driving force for the internationalization of SMEs. Through cross-border e-commerce platforms, SMEs can reach a large number of customers with less investment, respond to transaction data in a timely manner, and maintain comparative advantages by timely analyzing market dynamics(Yan et al., 2023).Cross-border e-commerce is a complex business model that is influenced by multiple factors, including digital transformation capabilities, platform empowerment capabilities, data elements, marketing strategies, and optimized products(Yang et al., 2023) .

Many scholars have expressed their views on the impact of digital technology on CBeC. Developing countries should vigorously develop cross-border e-commerce, lower the threshold for the internationalization of SMEs through the improvement of digital facilities and digital platforms, and improve the international competitiveness and operating performance of SMEs in the process of promoting internationalization (Wen et al., 2023) . Generative AI tools can be empowering levers in the hands of marketers. It can help e-commerce funnel management by identifying key delay points or customer churn stages (customers churn and do not enter the next stage of the purchase cycle) in real time (Ooi et al., 2023). Artificial intelligence can develop more complete inventory management solutions for cross-border e-commerce, reduce excess or out-of-stock inventory, and improve sales strategies and promotional marketing activities (Tang et al., 2023) .

However, Generative AI has brought many different impacts to the development of CBeC. Challenges of using data for AI include data quality, data volume, privacy and security, bias and fairness, interpretability and explainability, ethical issues, and technical expertise and skills (Aldoseri et al., 2023). Although AI and natural language programming are developing rapidly, virtual assistants have not yet reached the technical maturity to accurately imitate human conversations (Kamoonpuri & Sengar, 023). Generative AI does not guarantee the accuracy of answers and is not responsible for the answers it provides. It has the potential to provide false information and give users information that is wrong or not applicable to users everywhere (Ooi et al., 2023). The functions of GAI tools are so numerous and diverse that organizations and individuals understanding their full capabilities may be the biggest barrier to effective adoption (Kshetri et al., 2023).

Over 100 million product listings on China' Alibaba International platforms were created using GAI. Merchants can now apply GAI tools across more than 40 e-commerce situations(Wood, 2024). In addition, Leverage Amazon Web Services for Deploying Scalable, Reliable, and Secure GAI Applications. Develop Generative AI Solutions Using Foundation Models via a Serverless application programming interface(API) Service(Amazon Web Services, 2024). Researchers at Marketplace Pulse estimate that over 40 percent of all Amazon sellers are based in China (Brands, 2022). In light of GAI tools' widespread application and significant influence in the Chinese B2B CBeC marketing, this research aims to examine the current status and future trends of the industry in the GAI era. The research seeks to highlight the practical challenges faced by GAI tools in CBeC, underscore the transformative potential of GAI tools

for Chinese SMEs, and propose strategic solutions to enhance their B2B CBeC marketing capabilities and organizational performance.

Current Status of Cross-Border E-Commerce Development in China

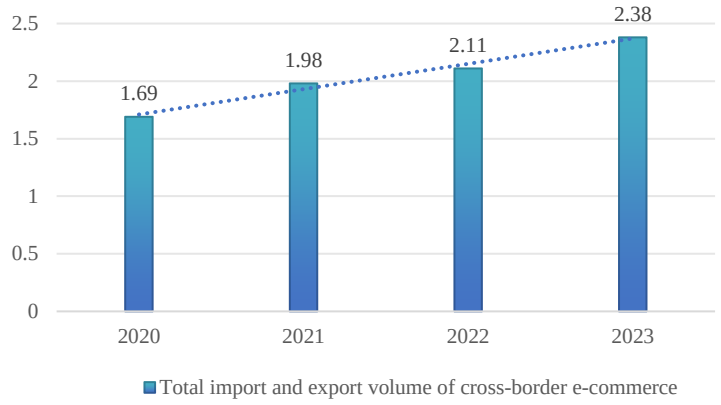
The Transformation of Traditional Foreign Trade Factories to Cross-Border E-commerce

For reasons of production schedule security and price stability, producers often focus on large customers who order in large quantities (Drechsler & Holzapfel, 2023). However, when manufacturers turn to Internet sales, they need to adapt to a new environment that includes transactions with a wide range of customers with more frequent demand and smaller order batches (Ye et al., 2023). CBeC has become an important player in this dynamic environment, providing new opportunities for companies to expand their influence and take advantage of global markets. The emergence of B2B CBeC platforms has also facilitated Chinese manufacturers to reach overseas business customers . More and more Chinese manufacturers have begun to export products directly to foreign consumers through e-commerce platforms such as Amazon and Alibaba (Han et al., 2024). raditional manufacturing companies, representing a significant segment of the global industrial landscape, are facing the imperative of embracing cross-border e-commerce as a burgeoning distribution channel (Ballerini et al., 2024). On the other hand, the advent of intelligent manufacturing, commonly referred to as Industry 4.0, is driving the expansion of cross-border e-commerce exports through the fusion of artificial intelligence (AI) and big data analysis (Ma et al., 2024).

Cross-border e-commerce trade volume continues to grow

In the past five years, the scale of China's CBeC trade has increased more than 10 times(Ministry of Commerce(2024). In 2023, China's total import and export volume reached 41.76 trillion yuan, a year-on-year increase of 0.2%. In 2023, China's total CBeC import and export volume was 2.38 trillion yuan, an increase of 15.6% (see Figure 1)(Ministry of Commerce & General Administration of Customs, 2024) . Among them, exports were 1.83 trillion yuan, an increase of 19.6%; imports were 548.3 billion yuan, an increase of 3.9%(Ministry of Commerce & General Administration of Customs, 2024). This shows that CBeC imports and exports have become a major component of China's total imports and exports. In 2024, there are more than 120,000 CBeC entities, over 200,000 independent websites, more than 1,000 CBeC industrial parks, and more than 2,500 overseas warehouses covering an area of over 30 million square meters, with more than 1,800 of these warehouses exclusively dedicated to serving CBeC and covering an area of more than 22 million square meters (Ministry of Commerce, 2024). As of May 2024 , China has successively established 165 CBeC pilot zones across the country (Ministry of Commerce(2024). There are more than 120,000 CBeC enterprises in China(Ministry of Commerce, 2024). It is estimated that by 2025, the scale of China's B2B CBeC market will reach 13.9 trillion yuan (China Center for International Economic Exchanges, 2022).

Figure 1 Annual Growth Trend Chart of China's Cross-border E-commerce Import and Export Total Amount.



Diversified Cross-Border E-Commerce Platform Choices

The CBeC sector is showing a diversified trend, including multiple platforms such as Lazada, Amazon, Alibaba International Station and Shopee. Given the surge in sales in the CBeC market and the fierce competition among different CBeC platforms, a large number of customers frequently switch from existing CBeC platforms to other platforms(Li et al., 2024). In addition, the scale of China's CBeC independent station market will reach 3.4 trillion yuan in 2024, accounting for 35% of the CBeC B2C market(Zhejiang Securities,2024). For example, Anker Innovation, the first independently listed cross-border e-commerce company in China, has developed its own independent cross-border website in addition to utilizing third-party platforms. In 2022, the revenue growth rate of its independent sites reached 71.75%(Anker Innovation, 2023).

In addition, live streaming is becoming a new channel for increasing customer engagement and sales in CBeC. The rise of e-commerce technology, especially on TikTok, has improved the shopping experience, provided a creative platform, and continued to be the most downloaded application since 2020 (Cheng & Li, 2024). Cross-border live streaming e-commerce is a hybrid of live streaming and cross-border e-commerce, aiming to assist consumers in different regions to purchase cross-border goods through live streaming interactions (Li et al., 2022). In this way, B2B CBeC suppliers do not need to spend a lot of time and energy to attract and contact potential suppliers by participating in traditional trade shows, and suppliers can also let distributors know about their latest products (Liao et al., 2023).

Generative AI

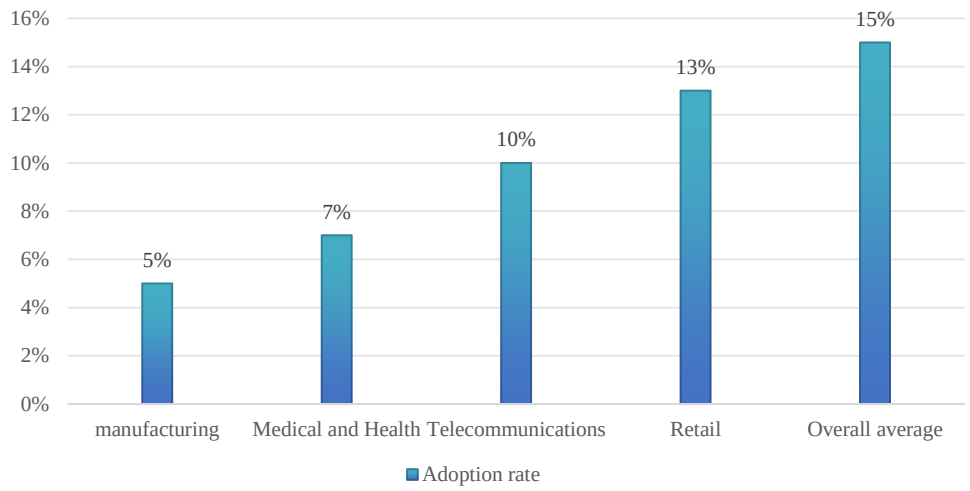
Generative Artificial Intelligence

Generative AI refers to computing techniques that can generate seemingly new, meaningful content (such as text, images, or audio) from training data (Feuerriegel et al., 2024). Generative AI is able to process a variety of content types, such as images, videos, audio, and code, while performing multiple functions within an organization, including classification, editing, summarization, answering queries, and generating new content (Norbäck & Persson, 2023). These functions can create value by reshaping operational processes in business functions and workflows (Norbäck & Persson, 2023).

Current Development Status of Generative AI in China

From the adoption rate of GAI tools in various segments in China,While adoption of GAI tools has grown in manufacturing, healthcare, telecommunications, and retail, it still lags behind the overall AI enterprise average(see Figure 2)(Ministry of Industry and Information Technology, 2023). In addition, the actual use of the application end is limited and not yet popular.At the same time, it can be seen that in the mobile internet application sector, GAI tools has become one of the fastest-growing and most profitable industries. The number of standalone app users has surpassed 73.8 million, with an eightfold year-on-year increase(QuestMobile, 2024). This indicates that the growth momentum of GAI tools individual users in mobile internet applications is rapid, providing a solid foundation for the popularization and application of this technology. Experts predict that by 2035, GAI tools is expected to contribute nearly 90 trillion yuan in economic value to the world, and China will exceed 30 trillion yuan, accounting for more than 40%(Ministry of Industry and Information Technology, 2024).

Figure 2 Comparison of Adoption Rates of Generative AI Technology in Various Segments in China



In recent years, the Chinese government has continuously promoted the healthy development and standardized application of generative artificial intelligence through the introduction of new policies and documents, encouraging its innovative application in various industries and fields, generating positive and high-quality content, and building an application ecosystem. For example, the Cyberspace Administration of China, in collaboration with several departments, jointly issued the "Interim Measures for the Administration of Generative Artificial Intelligence Services", which took effect on August 15, 2023, providing a conducive environment for the rapid development of generative artificial intelligence technology in CBeC (see Table 1).

Table 1
Some Examples of GAI Tools and their Marketing Applications

Key points explained	Purpose	Nature of policy
Promote innovative applications of generative AI across industries, generate high-quality content, optimize scenarios, and foster an application ecosystem. Support collaboration among industry organizations, enterprises, educational and research institutions, public cultural institutions, and relevant professional bodies for AI innovation, data resources, and transformative applications.	Promoting multi-party collaboration in the application of generative artificial intelligence technology	Support Category
Encourage innovation in core generative AI technologies and engage in international cooperation. Participate in shaping international regulations on generative AI. Develop generative AI infrastructure and public training data platforms. Facilitate collaborative sharing of computing resources to enhance efficiency.	Improve the accuracy and reliability of generated content.	Support Category
Respect intellectual property rights, business ethics, and confidentiality. Avoid monopolistic and unfair practices using advantages like algorithms and data. Protect others' rights, including intellectual property, physical and mental health, reputation, and privacy. Prohibit infringement of others' lawful intellectual property rights.	Respect the intellectual property rights and legitimate rights of others.	Normative Category
If illegal content is found, the provider must act quickly to stop generation, transmission, and delete it. They should optimize models and report to authorities. Establish a complaint mechanism, with a convenient portal, clear process, and feedback. Handle public complaints promptly and provide feedback on outcomes.	Improve disposal measures.	Normative Category

Application of Generative Artificial Intelligence in Cross-border E-commerce

Generative AI has become the main force driving enterprises to truly adopt AI . This study focuses on the three most important marketing applications of Generative AI: personalization ,insight generation , and content creation (Kshetri et al., 2023). Currently, Chinese CBeC practitioners are primarily focused on the platform side, seller side, and service provider side. Sellers make up 88.3% of CBeC practitioners, with 65.4% engaged in CBeC operations, 14.6% as cross-border entrepreneurs, and 8.3% in general roles like website design and customer service(AMZ123, 2024). CBeC operations roles mainly involve tasks such as product promotion, ranking optimization, data analysis, and product updates, which require a diverse range of create marketing content skills and enterprise are a high demand for such talents(AMZ123, 2024).

The implementation of GAI provides an opportunity to cut costs associated with positions such as content creators, copywriters, and advertising editors (Kshetri, 2024). Using Generative AI to create marketing content can improve customer experience, operational efficiency, and productivity, thereby optimizing marketing activities (Cui et al., 2024) . The rapid development of new information technologies such as big data, cloud computing, and artificial intelligence has not only spawned new trade models such as cross-border e-commerce (Amazon, eBay, AliExpress, etc.), but also greatly reduced trade costs (Yan et al., 2023)。A wide variety of GAI tools have been built to facilitate CBeC marketing activities (see table 1). Soni (2023) concludes that successful integration of GAI tools requires more than just its deployment; it should be part of a comprehensive strategy that takes into account market dynamics, skilled human capital, and the enhancement of existing technological infrastructure.

Table 1
Some Examples of Gai Tools and Their Marketing Applications

GAI example	**How can it help with marketing?**	**Example of its application**
ChatGPT (Kshetri et al., 2023)	Encouraging creativity, crafting compelling content, marketing strategies, tailoring personalized solutions.	Utilize customer purchase history and behavior data to offer personalized product suggestions. Generate innovative concepts and streamline content creation for more efficient and cost-effective marketing.
Midjourney (Kshetri et al., 2023)	Generating images from textual prompts.	Product pictures and detail page design.
Rufus (Amazon) (Mehta & Chilimbi, 2024)	Personalized recommendations. Rufus is a generative AI-powered expert shopping assistant.	Answer customer questions about a variety of shopping needs and products, provide comparisons, and make recommendations based on the conversation.
OKKI (Alibaba International Station) Xiaoman Technology.(2024).	Intelligent marketing, customer management, decision support.	Foreign trade salesmen only need to enter the company name, product name, and polish the content to generate high-quality customer development emails with one click.
AI Business Assistant (Alibaba International Station) Alibaba International Station.(2023).	Intelligent customer reception.	The AI business assistant can quickly understand the needs of overseas buyers, give more accurate response suggestions based on the buyer's actual situation, and automatically fill out quotation forms.

Challenges Faced by Chinese Cross-Border E-Commerce SMEs in the Generative AI Era
According to the geographical location of China's CBeC sellers, they are mainly distributed in East China, South China, Central China, Southwest China, North China and Northwest China. From March to April 2023, online semi-structured interviews were conducted with managers of 20 CBeC SMEs in the above regions. Interview questions: a) Company profile: Briefly introduce the company's background and main business. b) How did the company perform in 2022? : Ask about the company's operating performance in the previous year, including sales, market share, etc. c) What difficulties and biggest challenges did the company encounter in

using GAI tools? : Explore the specific problems and most challenging aspects encountered by the company in applying GAI tools. d) What plans does the company have for the application of GAI tools this year? : Understand the company's application strategy and development plan for GAI tools in the current year. e) What difficulties did the company encounter in marketing? : Explore the challenges and difficulties faced by the company in market promotion and marketing. f) Other common problems faced by Chinese CBeC: Explore some common problems in the industry, as well as the company's views and response strategies to these problems.

Business Impact of Generative AI

Producing Homogeneous work Results that Depreciate Over Time

Homogeneous marketing content may lead to the loss of uniqueness and innovation in the output results. More importantly, it may lead to the blurring of the differentiation between the enterprise and its competitors, thereby reducing its value or even causing value loss to the enterprise . If the marketing content is too similar, consumers may not be able to distinguish the differences between products or brands, thus reducing their brand loyalty and willingness to buy.

SMEs in China often operate on multiple CBeC platforms, so they need to create marketing content related to the same product on different platforms. However, because marketers use similar models and data sets, and may even only have one GAI tool, the marketing content for the same product on each CBeC platform is similar. This is especially true when it comes to live streaming marketing, because the live streaming script may also be affected in the same way. In addition, homogenized marketing content may also lead to consumer fatigue and boredom with advertising.

Insufficient Manpower, Resources and Skills Required to Collaborate with GAI

CBeC companies face two major obstacles in effectively using GAI tools: first, GAI tools have many functions and a wide variety of types; second, new GAI tools are constantly emerging in the market and their functions are updated at a fast pace.

The above obstacles will further bring perceived risks to enterprises and lead to enterprises and employees' reluctance to use GAI to perform marketing tasks . On the one hand, SMEs are already facing a shortage of CBeC talents. On the other hand, SMEs lack sufficient training and education resources . C hatGPT was launched in 2022, while Alibaba International Station did not launch the GAI tool until 2023. GAI tools are not used in China's CBeC. The management of many SMEs still lacks sufficient understanding and confidence in the application of GAI tools. Therefore, they are not proficient in how to choose the right GAI tool and integrate it with the business. This makes it difficult for management to effectively manage employees' learning and use of GAI tools, and it is difficult to provide them with the right learning opportunities.

The Reliability of Generative AI Recommendations is Difficult to Assess

At present, although the GAI tool is powerful, it cannot completely replace the skills and experience of human teams. SMEs lack the ability and skills to evaluate the GAI tool's recommendations, especially when the marketing content originally created by the human

team is not effective or requires new content creation.Therefore, they lack examples to compare the reliability of marketing content created with GAI tools.

The direct costs, time, and frustration incurred in validating the marketing reliability of GAI tools, along with the expenses associated with rectifying errors due to unfamiliarity, necessitate significant investments for companies to verify the credibility of generative AI recommendations.In addition, due to the high proportion of CBeC sales expenses in total expenses, SMEs may be less willing to spend additional resources to verify the reliability of GAI tool recommendations through market feedback.In the case of adopting GAI tools in CBeC marketing, mid-level and junior marketers are more likely to use such tools than senior marketers. This may mean that they may not evaluate and trust the tools as much as senior marketers, making it more difficult to evaluate reliability.

Data Security and Privacy Issues

Inputting data into GAI tools may lead to data leakage or abuse, which will have a serious impact on corporate reputation and legal liability as well as corporate interests . Once sensitive information falls into the hands of competitors, it may lead to the leakage of business secrets such as product design and marketing strategy, which will affect the competitiveness and market position of the company and suffer financial losses . Marketers can use GAI tools such as ChatGPT to analyze customers' purchase history and other behavioral data to provide personalized product recommendations. Many company employees put confidential customer data into GAI tools such as ChatGPT, in addition to business information such as the company's newer product parameters. In particular, many local GAI tools are currently emerging in the Chinese market , and as of April 2024, 117 large models in China have completed the registration of GAI tools services . Therefore, the same marketer may use several GAI tools, exacerbating the risks of data security and privacy.

Development Strategies for Chinese Cross-Border E-Commerce SMEs in the Era of Generative AI

Based on the above situation assessment, the following suggestions can be made to Chinese CBeC companies, especially SMEs.

Skills Training and Resource Support

Due to the resource constraints of SMEs, they can make full use of online training resources, especially the GAI tools and corresponding online training courses provided by CBeC platforms such as Amazon and Alibaba International Station. For those companies that have not yet been exposed to GAI tools, the free tools and courses provided by these platforms are a good way to get started. These courses should focus on how to combine GAI tools with the specific business scenarios of the enterprise to maximize their benefits. In addition, for paid GAI tools purchased by employees themselves, enterprises should provide financial support within a reasonable range to encourage employees to learn independently. Enterprises should actively participate in GAI tool skill competitions and industry salons organized by CBeC platforms and cross-border trade industry associations with the support of the Chinese government . In addition, enterprises can cooperate with universities to carry out enterprise marketing sandbox simulations through GAI tools with the help of practical training software of Chinese higher education institutions .

Verification and Review Mechanism

Enterprises with limited resources can use the training software of Chinese higher education institutions and combine it with GAI tools to conduct enterprise marketing sandbox simulations, which can not only improve employee skills, but also avoid actual marketing risks caused by the uncertainty of GAI tool recommendations. At the same time, with the support of college live broadcast bases, the GAI tool-assisted marketing content live broadcast competition can not only cultivate compound talents, but also further verify the reliability of GAI tools in live broadcast scenarios. In addition , big data technology focuses on extracting information and insights from data, while GAI tools focuses on generating new content and creativity based on data. SMEs should adhere to continuous use of systems, instead of discarding old systems each time a new one is introduced, as every system requires significant investment.Big data technology helps to capture rich data about consumer phenomena in real time . Therefore, enterprises can use the big data of CBeC platforms to extract consumer insights, from mining consumer habits and preferences to using GAI tools to generate marketing applications, and finally to conduct precision marketing. In this process, enterprises can fully use big data analysis technology to assist in verifying the reliability of GAI tools for marketing recommendations . In addition ,When Chinese companies connect with buyer partners in countries where major markets are located, they can understand their perception of marketing content formed by GAI tools through buyer feedback .

Strategic Cooperation and Sharing

Enterprises can actively connect with key partners in related industries, including but not limited to CBeC platforms, technology providers, and other enterprises to jointly build an application ecosystem. By establishing strategic partnerships, enterprises can share resources, technologies, and experiences to accelerate the application and promotion of GAI tools in the marketing field. Enterprises should actively participate in the construction of industry communities and platforms to jointly explore ways to solve industry problems and promote industry development. Content shared by industry communities includes exploring optimized application scenarios, using GAI tools , etc. Based on China's extensive individual user advantage of GAI tools, in addition to corporate initiatives, it is encouraged for all relevant individual to actively engage in collaboration to collectively drive industry advancement.In the process of the Chinese government actively promoting the construction of a public training data resource platform, enterprises should actively respond and be willing to share their resources to promote the openness and sharing of data resources and promote the development and innovation of the entire industry.

Planning AI Job Responsibilities and Roles

In the marketing field, although GAI tools cannot completely replace humans, they have gradually replaced some tasks of marketers. Confronted with the issue of content homogeneity, numerous SMEs lack diverse data sources to train generative artificial intelligence, further lack their ability for independent research and development. Consequently, they can only rely on standardized GAI tools available in the market.Therefore, it is necessary to introduce human intervention, such as corrections or adjustments when generating scripts or product introduction details pages to ensure the diversity and quality of content. Therefore, enterprises need to plan the job responsibilities and roles of GAI tools. In actual operations, enterprises need to evaluate the capabilities of GAI tools and determine the scope and responsibilities of their involvement to ensure that marketers do not deliver

work to them that exceeds the capabilities of GAI tools. Even leading to the overuse of GAI.At the same time, as the capabilities of GAI tools change, continuous evaluation is necessary, and this process can even be incorporated into human resource planning as part of the process, treating the GAI tool as a virtual employee.

Legal Compliance and Data Protection

In terms of legal compliance and risk assessment, companies should conduct a comprehensive legal and compliance assessment on the use of GAI tools to ensure that they comply with relevant laws, regulations and industry standards. This includes but is not limited to compliance with the "Interim Measures for the Administration of Generative Artificial Intelligence Services" in terms of protecting consumer privacy, complying with intellectual property laws, and avoiding unfair competition. In particular, many GAI tools have emerged in the Chinese market. Before use, it should be confirmed whether these tools have completed the GAI tools service filing. It is also necessary to track changes in regulatory policies and regulations in a timely manner, adjust strategies and measures in a timely manner, and reduce losses and impacts caused by legal risks. At the same time, it is recommended that companies set up a dedicated legal team or cooperate with professional lawyers to regularly conduct risk assessments and compliance reviews on the company's marketing activities and the use of GAI tools to ensure the legality and robustness of the company's operations. In addition, China's CBeC companies should take this opportunity to strengthen the management of corporate digital security , including the supervision of internal personnel's online behavior.

Conclusion

While all functional areas within organizations benefit from the latest developments in these technologies, the marketing domain particularly benefits from this breakthrough innovation. The development of GAI tools has brought rapid and profound changes to CBeC marketing, providing new marketing opportunities for manufacturing transitioning from traditional foreign trade factories to CBeC, especially those managing multiple CBeC platforms simultaneously, including live streaming. These manufacturing face a significant marketing challenge. GAI tools have a significant impact on their competitiveness and revenue growth. However, merely applying GAI tools extensively does not guarantee a competitive advantage for businesses. In the process of adapting to technological developments and environmental changes, manufacturing must recognize the challenges posed by GAI tools and effectively integrate them into the development strategies of SMEs in CBeC to achieve long-term success.

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