ISSN 2616-5902 Vol. 8, Issue 3: 47-53, DOI: 10.25236/AJBM.2026.080306

Research on the Influencing Factors of China 's Service Trade Export under the RCEP Framework of Artificial Intelligence Empowerment and Institutional Synergy

Ningwei Zhou, Xiaoxing Qiu*

Beijing Union University, Beijing, China
**Corresponding author: 18810791139@139.com*

Abstract: *Based on the quantitative data of digital service trade exports of RCEP member countries, after systematic empirical analysis, it is found that the core elements driving the export of digital service trade in the region have shifted from the completeness of digital infrastructure and the scale of ICT service export in traditional cognition to the dual support system composed of the total economic scale of member countries and the level of institutional openness. It is worth noting that under the background of industrial transformation with the deep penetration of artificial intelligence technology, the factor-driven growth model is accelerating the transformation to the technology-driven paradigm. This structural transformation shows significant regional heterogeneity under the RCEP framework. As the largest developing country in the region, the intelligent upgrading path of China 's digital service trade needs to build a multi-dimensional support system-not only to consolidate the technical base through the large-scale deployment of new intelligent computing infrastructure, but also to deepen the mutual recognition of regional digital governance standards relying on the RCEP rule system. It is also necessary to accelerate the gradient development process of the digital service industry through differentiated policy tools, and finally form a sustainable development pattern driven by technology empowerment and institutional innovation.*

Keywords: *artificial intelligence empowerment; digital service trade; RCEP; intelligent Computing Infrastructure Layout*

1. Introduction

In today 's era, a new round of scientific and technological revolution and industrial transformation with artificial intelligence as the core driving force is reshaping the underlying logic of global economic trade with unprecedented depth and breadth. The connotation and competition paradigm of digital service trade have undergone a fundamental change-its development momentum has shifted from traditional network infrastructure and big data computing power support to the improvement of innovation efficiency driven by artificial intelligence, the precise supply of intelligent services, and the construction of co-evolution ability of industrial ecosystem. The full entry into force of the Regional Comprehensive Economic Partnership Agreement (RCEP) marks the formal formation of the world 's largest free trade area. This institutional open framework provides a key strategic fulcrum for China to build a data element aggregation hub in the Asia-Pacific region, expand the application scenarios of artificial intelligence technology, and export intelligent service solutions. In this context, the transformation and upgrading of China 's service trade shows significant structural optimization characteristics. According to the statistics of the Ministry of Commerce, between 2012 and 2023, China 's service trade continued to lead the global average with an average annual growth rate of 6.2 %, and exceeded the growth rate of trade in goods over the same period. What 's more, the proportion of trade in knowledge and technology-intensive services has jumped from 34 % in 2012 to 41.4 % in 2023, and the proportion of exports has risen to 57.5 %[5], highlighting the dual increase of ' gold content ' and ' new content ' in service trade. Behind this qualitative leap is the multiplier effect generated by the deep integration of digital technology and the real economy. The large-scale application of cutting-edge technologies such as big data analysis, blockchain traceability, and artificial intelligence decision-making not only reconstructs the value creation chain of service trade, but also spawns emerging formats such as intelligent logistics, digital finance, and telemedicine, injecting continuous kinetic energy into the high-quality development of

ISSN 2616-5902 Vol. 8, Issue 3: 47-53, DOI: 10.25236/AJBM.2026.080306

service trade.

2. Analysis of the status quo of China 's digital service trade export

2.1 Global export scale and trend

As shown in Table 1, global exports of goods, services, and digitally delivered services have exhibited distinct trends over the 2019–2025 period. While goods exports experienced significant volatility—contracting sharply in 2020 and 2023 before rebounding moderately—digitally delivered services exports demonstrated consistent growth throughout the same period. In 2020, despite the pandemic-induced decline in overall goods and services trade, digitally delivered services exports rose by 13.7%, underscoring the resilience and structural momentum of digital trade. By 2025, digital delivery exports reached $4,915.5 billion, reflecting a compound annual growth trajectory that outpaces both traditional goods and overall service exports. [6]

Table 1 Global Exports of Goods and Services by Size and Growth

Year	export of goods		service exports		Digital delivery export	
	amount	speed increase	amount	speed increase	amount	speed increase
2019	190,180	-2.7	62,372	3.3	28,193	5.0
2020	176,529	-7.2	51,898	-16.8	32,054	13.7
2021	223,190	26.4	62,507	20.4	37,623	17.4
2022	249,175	11.6	71,940	15.1	39,001	3.7
2023	237,835	-4.6	78,397	9.0	42,504	9.0
2024	285,170	2.1	85,452	9.0	46,329	9.0
2025	291,028	2.4	82,393	4.6	49,155	6.1

Unit: 2019-2025 (US 100 million)
Data source: WTO database and ' Global Trade Outlook and Statistics 2025'

From the perspective of development, the global digital economy is accelerating its evolution to a multi-polarization pattern. The United States, China and Europe continue to lead the global digital circuit by relying on the advantages of market volume, technological accumulation and rule-making. At the same time, emerging economies such as India and Southeast Asia are struggling to catch up with the advantages of backwardness. The rapid development of the digital economy has made the trend of multi-polarization more clear.

In the global digital economy, the United States undoubtedly occupies a key position as the leader. In 2022, the scale of its digital economy has climbed to $ 17.2 trillion, with North America accounting for nearly 40 % of the global market share. With its deep accumulation in the frontier fields of artificial intelligence, semiconductor and cloud computing, the United States has built a complete industrial ecological closed loop, and the penetration rate of digital products in the global market is as high as more than 70 %. As an important driving force, China 's digital economy has exceeded 53.9 trillion yuan by 2023, nearly four times the size of 2012. More noteworthy is that China has more than 60 % of the world 's 5G base stations and more than 1 billion mobile payment users. For the first time, the digital penetration rate of the secondary industry has surpassed that of the tertiary industry, highlighting a breakthrough in the field of intelligent manufacturing.

Under the RCEP framework, the positive effects of institutional synergy are gradually releasing data from 2022, showing that the volume of digital service trade among member countries has grown strongly at a rate of 18.7 %, far exceeding the growth rate of 9.3 % for non-member countries. However, institutional obstacles such as data localization storage requirements and differences in intellectual property protection standards still exist. Like invisible walls, they hinder the deep expansion of regional digital trade cooperation to a certain extent.

2.2 The scale of China 's service trade export

Under the background of the continuous wave of economic globalization and the accelerating process of China 's opening to the outside world, service trade has occupied a key position in the field of China 's foreign economic cooperation. Its rapid growth and the continuous expansion of trade volume are

ISSN 2616-5902 Vol. 8, Issue 3: 47-53, DOI: 10.25236/AJBM.2026.080306

increasingly becoming an important driving force for China 's economic growth.

Driven by the deepening of globalization and the continuous development of the open policy, the scale of China 's service trade has achieved a historic leap. From 2009 to 2023, its total import and export volume expanded more than twice, with an average annual growth rate of 7.8 %, and the global market share jumped from 3.06 % to 6.86 %. In 2023, the total trade volume exceeded USD 933 billion, accounting for 13.6 % of foreign trade, and the international competitiveness ranking rose to the sixth in the world. Behind this leap is the synergy effect driven by the deep empowerment of digital technology and the two-wheel drive of institutional innovation. The pilot free trade zone has promoted the proportion of knowledge-intensive services to exceed 43 %, and the negative list system of cross-border service trade has released 37 % of the opening dividend in 12 areas. Finally, a coordinated development pattern of traditional service trade and digital service trade has been formed, contributing China 's plan to the growth of global service trade.

2.3 Analysis of China 's trade export industry structure

2.3.1 Changes in the proportion of traditional service trade

In recent years, the scale of China 's service trade has been expanding, but the traditional service trade still plays an important role in the overall pattern, especially in the import field. In 2023, China 's service trade deficit reached USD 229.4 billion, and the deficit in travel and transportation accounted for more than 65 %, which fully reflects that traditional service trade is the main source of the deficit. Although the proportion of knowledge-intensive service exports has increased from 35 % in 2012 to 55 % in 2020[8], the structural optimization trend is significant. In this case, the proportion of traditional service imports still exceeds 50 %. The import volume of transportation and travel services adds up to more than half of the total import volume of services for a long time, highlighting the influence of traditional service trade.

In addition, in 2023, the import of travel services surged by 66.8 %, and the import of equipment maintenance services also increased by 35.4 %, which clearly reflects the strong and continuous demand of the domestic market for traditional services. Traditional service trade is still an important part of China 's service trade system. Even if its proportion is too high, it also exposes that China 's supply capacity in the high-end service sector is lacking, and the service trade structure needs to be transformed and upgraded.

2.3.2 The rise of digital economy service trade

Driven by the wave of digital economy, the scale of China 's digital service trade has been advancing by leaps and bounds, and has become a new strong driving force for service trade to move towards high-quality development. In 2023, China 's digitally delivered services imports and exports amounted to $ 385.9 billion, an increase of 3.5 % year-on-year, accounting for 41.4 % of total services imports and exports. The booming growth of digital services trade is clear at a glance. The rise of the digital economy has not only brought about the expansion of the scale, but also promoted the optimization and upgrading of the service trade in the structure and the innovation breakthrough in the format. The wide application of cutting-edge digital technologies such as cloud computing, big data, and artificial intelligence has effectively promoted the rapid development of emerging service trade formats such as telemedicine, online education, digital content, and cross-border e-commerce. Demand for telemedicine and online education has exploded, particularly during the novel coronavirus pandemic, giving a strong impetus to cross-border delivery of related services[7].

In addition, China 's digital content exports have achieved remarkable results. Cultural products such as network literature and digital music have emerged in overseas markets and gradually won the favor of overseas audiences. The vigorous development of the digital economy has effectively promoted the transformation and upgrading of service trade, from labor-intensive to knowledge and technology-intensive. The export growth of emerging services such as software services and information technology services is significant, which injects a steady stream of new impetus into optimizing the structure of China 's service trade and enhancing its international competitiveness.

2.4 The level of artificial intelligence infrastructure in China

2.4.1 Scale of computing power

In China, the construction of artificial intelligence computing infrastructure is continuing to advance

ISSN 2616-5902 Vol. 8, Issue 3: 47-53, DOI: 10.25236/AJBM.2026.080306

with a vigorous trend, and its scale is expanding and growing rapidly. It has become a key core base to support the vigorous development of the digital economy and the deep transformation of industrial intelligence. According to the data of China Information and Communication Research Institute, as of June 2025, the scale of intelligent computing power in China has reached 788 EFlops (FP16), which has laid a solid foundation for the processing of massive data and the training of complex models[9]. Under the guidance of national strategies such as ' east and west ', the layout of computing power is increasingly showing a good trend of overall planning and intensive development. The scale of intelligent computing power of the eight national hub nodes has accounted for more than 80 %. At the same time, operators and head technology companies are actively involved in the construction of card-level intelligent computing clusters, and fully support the training of hundreds of billions or even trillions of parameter models. This undoubtedly marks the new journey of China 's intelligent computing facilities from the large-scale construction stage to the high-efficiency service.

2.4.2 Data resources

Data is the key production factor driving the development of artificial intelligence. Its resource scale, governance ability and circulation efficiency jointly build an important framework for AI infrastructure. China has a huge data resource ' rich ore ' and continuous improvement of information and communication technology facilities, which has laid a solid physical foundation for efficient data circulation. At present, local intelligent computing centers are actively promoting deep collaboration with high-value data resources. However, the obvious ' digital divide ' between regions can make the data flow unbalanced and unidirectional, which hinders the full release of collaborative innovation and value to a certain extent.

Therefore, building a cross-border data flow mechanism based on risk management and control, deepening international data cooperation, and jointly developing a large model of vertical industries are the key to revitalizing data resources and cultivating new momentum for AI development.

3. The impact of digital technology on the international competitiveness of China 's service trade

3.1 Digital technology is the key engine to reshape the competitiveness of China 's service trade

Digital technology has already broken through the boundaries of traditional tools, and has become the core strategic element to promote the optimization and upgrading of China 's service trade structure, the substantial improvement of efficiency and the deep reconstruction of value. With the top-level design, China has introduced policies such as the " National Information Development Strategy Outline " and the " New Generation Artificial Intelligence Development Plan, " and has achieved leapfrog development in digital infrastructure construction, technology research and development, and industrial applications, laying a solid foundation for enhancing the competitiveness of service trade.

In the 14 years from 2007 to 2021, China 's digital technology development index was like a wild horse, soaring from 0.226 to 0.531, with a growth rate of 135 %[10], leaving the average growth rate of 48.8 % in the sample countries far behind. This data intuitively shows China 's all-round leading trend in the construction of hardware facilities such as 5G network, data center and computing power scale, as well as soft technology fields such as artificial intelligence and big data. With the strong empowerment of digital technology, the scale of China 's service trade continues to expand like a snowball. The total import and export volume increased from USD 265.4 billion in 2007 to USD 821.2 billion in 2021, achieving a qualitative leap. More importantly, digital technology is reshaping the competitiveness of China 's service trade with unprecedented depth and breadth. At present, there is still a gap between China 's service trade in the international market share and the developed countries such as the United States and the United Kingdom. The revealed comparative advantage index also fluctuates from time to time. Even so, digital technology has spawned a new growth point of knowledge-intensive service trade represented by telecommunications, computer and information services. It promotes the transformation of China 's service trade structure from traditionally dominated by travel and transportation to high value-added and high-tech fields, and provides an indispensable key driving force for China to break through the dilemma of " low value-added lock-in " and climb to the high end of the global value chain.

3.2 The core path and the upgrade strategy under the RCEP framework

First, it is urgent to accelerate the construction of intelligent computing infrastructure, which is the key to building a new competitive foundation driven by artificial intelligence. At present, the role of

ISSN 2616-5902 Vol. 8, Issue 3: 47-53, DOI: 10.25236/AJBM.2026.080306

traditional digital infrastructure in promoting trade is declining, and the core of international competition has changed from " network connectivity " to " intelligent computing power supply capacity. " In this context, China needs to get rid of the excessive dependence on traditional indicators such as broadband penetration rate, plan and layout the intelligent computing center for artificial intelligence training and reasoning in advance across the country, and create an intensive, efficient, green and low-carbon integrated computing network system. Specifically, it is necessary to closely integrate national strategies such as ' East Number West Computing ', build large-scale green data centers in energy-rich regions in the central and western regions, undertake the high computing power needs of the eastern region, and focus on the layout of high-performance computing clusters that serve cutting-edge algorithm development and agile innovation in innovative highlands such as the Yangtze River Delta, Guangdong, Chinese Hong Kong and Chinese Macao[1]. These developments have optimized the allocation of computing resources in terms of time, space, and structure, providing strong impetus for the development and cross-border delivery of high value-added digital services such as MLaaS and intelligent industrial solutions, thereby breaking through the bottlenecks driven by traditional technical elements at their root [11].

Secondly, in order to build an intelligent governance environment to achieve institutional coordination and mutual recognition and mutual trust, it is a key measure to strengthen the inter-regional digital rule docking. Although the entry into force of RCEP has set up a framework for reducing institutional barriers, even so, non-tariff barriers such as data localization requirements and differences in intellectual property standards are still significant, and the digital trade restriction index of some member countries remains high, which undoubtedly hinders technology spillover and service flow. In order to fully release the potential dividends contained in institutional coordination, China should actively lead and participate in the deepening negotiation and formulation of digital trade rules under the RCEP framework, promote the construction of a cross-border data flow mechanism based on risk classification, and promote the mutual recognition and standard docking of rules in key areas such as electronic authentication, digital invoices and consumer protection. It is advisable to take the lead in building a " digital trade demonstration zone " in a region with mature conditions, and pilot innovative mechanisms such as cross-border payment and intelligent contract dispute resolution enabled by blockchain technology[2]. Only by building a transparent, predictable regional digital governance system that is linked to high international standards can we effectively reduce the compliance costs and uncertainties faced by China 's intelligent service exports, and completely remove institutional barriers to the large-scale cross-border application of new technologies such as artificial intelligence.

Thirdly, under the situation of significant digital development gap and ' digital double circulation ' risk simmering in the RCEP region, in order to promote the coordinated development of the regional value chain and realize the leap of capacity, China needs to accelerate the step-by-step development process of the digital service industry and implement a differentiated and phased intelligent promotion strategy.

From a short-term perspective, artificial intelligence technology can be used to create smart sea kits for small and medium-sized enterprises in the region, focusing on improving trade facilitation, helping enterprises to rapidly expand market coverage and seize market share. In the middle stage, it is necessary to build an innovative ecology. These initiatives will jointly carry out research and development with leading technology members such as Singapore and South Korea, and jointly cultivate industry solutions and formulate industry standards in cutting-edge fields such as the industrial Internet and smart medical care. To Malaysia, Thailand and other countries with a solid digital foundation, output a comprehensive solution of ' hardware facilities connectivity + software service connectivity ', and cooperate to build artificial intelligence application demonstration projects[3]. In the long run, the goal should be anchored in leading the construction of regional and even global digital governance systems. Focusing on cutting-edge issues such as artificial intelligence ethics, digital tax, and cross-border autonomous driving data, we will actively contribute to China 's wisdom and solutions, promote the all-round upgrading from technology application, industrial output to rule-making, and finally form a new ecology of intelligent digital service trade with complementary advantages and synergy in the RCEP region[4].

4. Summary and recommendations

This study tends to conduct a comprehensive and systematic analysis of the key influencing factors of China 's digital service trade export under the RCEP framework. The empirical research results clearly show that the economic scale and institutional openness of RCEP member countries are the solid foundation and core driving force for the continuous growth of China 's digital service trade export.

ISSN 2616-5902 Vol. 8, Issue 3: 47-53, DOI: 10.25236/AJBM.2026.080306

However, the driving effect of traditional digital infrastructure and ICT service exports is weakening sharply. This fully reflects that the competition mode of global digital service trade has undergone a major change. It has gradually moved from relying on traditional network and hardware capabilities to a new track of technological innovation, computing power supply and intelligent service capabilities with artificial intelligence as the core. At present, China 's digital service trade has a considerable scale and a continuously optimized structure in the region. In this case, it still faces a series of structural challenges to be solved in the fields of high-end artificial intelligence service output, core algorithm self-control, and regional digital governance coordination.

At present, there are three significant contradictions in the development of China 's digital service trade. One is the imbalance of regional market penetration. For developed economies, the export of high value-added services is weak, and for less developed economies, it is still dominated by low-end service exports. Second, technology-driven transformation is blocked. The pulling effect of traditional infrastructure and ICT services is declining, and the innovation and ecological closed-loop of artificial intelligence in key links are not yet mature. Thirdly, the lag of institutional coordination widens the digital divide. The digital access capacity of some member countries is limited, and the rules and standards are uneven, resulting in a ' double circulation ' situation in the regional digital market, which hinders the coordinated development of the overall value chain and the cross-border promotion and application of China 's intelligent services.

In order to firmly seize the opportunities brought by RCEP and promote the upgrading of China 's digital service trade towards intelligence and high-end, it is necessary to build a systematic promotion strategy of " technology-system-market. " In the short term, it is necessary to accelerate the layout of the national integrated intelligent computing power network, focus on overcoming key technical problems such as core artificial intelligence algorithms and high-end chips, and lay a solid hardware and algorithm foundation for the export of intelligent services. In the medium-term stage, we should deepen the docking of regional digital rules, promote the establishment of a cross-border data flow mechanism based on risk management and control, and jointly build a " digital trade demonstration zone " to reduce the compliance cost of intelligent service exports and break down institutional barriers. In the long run, it is necessary to implement a stepped regional cooperation strategy to promote the overall improvement of digital capabilities in the region through joint R & D of technology, co-construction of infrastructure, and co-creation of industrial ecology. This cooperative approach actively participates in and leads the formulation of international rules such as artificial intelligence ethics, digital tax, and cross-border data governance, achieving a comprehensive leap from technology output and service export to rule shaping, and ultimately building a new ecology of digital service trade with intelligent integration and synergy in the RCEP region.

References

[1] Ma Fan. Discussion on the policy of additional deduction of R & D expenses for small and medium-sized enterprises [J]. Finance, 2023, (15): 51-53.
[2] Guceri I, Liu L. Effectiveness of fiscal incentives for R&D: quasi-experimental evidence[J]. American Economic Jour-nal: Economic Policy, 2019, 11(1):266-291.
[3] Duguet E. The effect of the incremental R&D tax credit on the private funding of R&D: an econometric evaluation on french firm level data [J]. Working Papers, 2012(03):405-435.
[4] Dai Tianshi, Zhao Qi. Innovation incentive policy and enterprise skill requirements — Evidence from the r & D expense additional deduction policy [J]. Financial Research, 2022 (03): 92-112.
[5] Yang Yumeng, Research on the Influencing Factors of China 's Digital Service Trade Export under the Intelligent Wave-Empirical Analysis Based on RCEP Framework [J].2025, (12): 1-3
[6] Shi Gaocui. Research on the efficiency of China 's digital service export trade to RCEP countries under the digital trade rules [C]. China Association for Science and Technology Policy Research. Abstracts of the 21st Annual Conference of China 's Science and Technology Policy and Management. China Jiliang University; 2025: 573.
[7] Hyuk K. The Impact of Artificial Intelligence Service Competency Among Korean Citizens on Digital Utilization Outcomes in the Context of Digital Trade Expansion: The Mediating Role of E-Commerce [J]. Journal of Theoretical and Applied Electronic Commerce Research, 2025, 20 (4): 292.
[8] Wang Xia, Yuan Chenchen. Effect of digital economy development on China 's service trade export-Empirical research based on RCEP countries [J]. Commercial economy research, 2025, (16):136-142.
[9] Hou Jie, Wang Xianglian. The impact of digital infrastructure on digital services trade between China and RCEP countries [J]. Business Economics Research, 2025, (11):139-143.
[10] Wu Jiachen. Research on the impact of digital economy development level of RCEP trading partners

ISSN 2616-5902 Vol. 8, Issue 3: 47-53, DOI: 10.25236/AJBM.2026.080306

on China 's digital service export [D]. Northern University for Nationalities, 2025.
[11] Wang Shaohui, Wang Fanghong, Liu Gang, et al. Comparison of international rules on digital trade and suggestions for China 's docking - analysis based on RCEP, CPTPP and DEPA [J]. Southwest Finance, 2025, (01): 39-50.