

Optimizing Digital Trade Ecology and Enabling the Integration of Two Industries

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Abstract: With the deepening development of the new round of scientific and technological revolution and digital economy, digitalization, networking and intelligence have become the strategic direction of manufacturing development. The integration of the two industries and the continuous release of new dynamic energy for high-quality economic development are important ways to respond to the new round of technological revolution and industrial change, enhance the core competitiveness of manufacturing industry, improve the modern industrial system, cultivate new dynamic energy, new industry and new mode, build a new development pattern, promote high-quality development and move towards intelligent manufacturing. Through the analysis of the current situation of digital trade and the optimization mechanism of digital trade ecology, this paper puts forward the countermeasure suggestions related to the integration of digital empowerment.

1. Introduction

At present, the digital economy with big data, cloud computing, artificial intelligence, Internet of Things, blockchain and other new generation of information technology applications as the core is advancing in depth. Digital economy is an innovation economy, representing advanced productivity and new development direction. Digital trade is a new trade model of the digital economy, which is a product of economic globalization, information and communication technology and digital technology development to a certain stage. Digital trade is a new form of global trade and a new engine of future trade[1]. From the overall digital trade, the global digital trade is developing rapidly, and the scale of China's digital trade is in the global leading position.

2. Relevant Definition and Development Mechanism

2.1. The Connotation of Digital Trade and the Integration of Two Industries

Digital trade originates from electronic commerce, which is defined by the World Trade Organization (WTO) as the business activity of trading and delivering products or services through electronic platforms and network channels. The prevailing view is that digital trade includes not only the trade of physical goods facilitated by online promotion, trading and settlement based on ICT, but also the trade of digital services transmitted through information and communication networks, such as the trade of data, digital products and digital services[2]. According to the National Industrial Information Security Development Research Center's "2020 China Digital Trade Development Report" and other public information, the connotation and characteristics of digital trade are shown in Table 1.

Table 1: Digital trade connotation characteristics

Theoretical Perspective	Phase Characteristics	Scope of content	Representative Institutions
Theoretical Perspectives on International Economic Cooperation	E-commerce or cross-borderization	The subject matter of the transaction is mainly intangible services, information and data	U.S. International Trade Commission (USITC), Congressional Research Service (CRS)
Innovation Ecology Systems Perspective	Digitization of transaction content	Digital subscription trade (e-commerce), digital delivery services (digital service trade), digital intermediary platform to enable trade	Organization for Economic Cooperation and Development (OECD), World Trade Organization (WTO) and International Monetary Fund (IMF)

The "integration of two industries" refers to the deep integration of advanced manufacturing industry and modern service industry. "Advanced manufacturing industry" mainly refers to those technology-intensive, capital-intensive and intelligent manufacturing industries with high technology content, high added value, long industrial chain and global value chain competitiveness. "Modern service industry" mainly refers to the knowledge, information and skill-intensive service industry developed by modern information technology and modern business management experience[3].

2.2. Development Mechanism

The optimization of digital trade ecology is a positive path to empower the development of the integration of two industries for quality change, and an important practice mechanism of digital economy empowerment. The integration of two industries is concentrated in the process of chain action, i.e., deploying industrial chain with value chain, deploying innovation chain with industrial chain, deploying manufacturing chain with innovation chain and deploying service chain with manufacturing chain. Based on the theory of industrial integration and the theory of value chain upgrading, manufacturing and service industries are integrated through "chain", i.e. promoting value chain through collaborative innovation of industrial chain - supply chain - service chain. The integration can greatly enhance the development resilience of manufacturing industry and expand the future growth space.

3. The Current Situation of Digital Trade Development

3.1. The Development of Digital Trade is Rapid

China's digital trade is developing rapidly and has become a major participant for global digital trade. According to the data of the United Nations Conference on Trade and Development, from 2011 to 2020, the scale of China's digital services trade increased from 168.43 billion U.S. dollars to 293.99 billion U.S. dollars, with an average annual growth rate of 6.7%, and the global ranking rose from the 10th to the 5th. In 2021, China's total digital services trade reached 359.6 billion U.S. dollars, with a year-on-year growth rate of 22.3%, accounting for 43.2 %. (reference: UNCTAD data)

3.2. The Role of Digital Trade is Clear

The driving role of digital trade on trade growth, the optimization of trade structure, and the driving role of trade innovation are becoming increasingly apparent. The advantages of telecommunications computer and information services exports emerged, with an annual growth of 30.4% in 2021, accounting for 39.5% of digital services exports. Cross-border e-commerce is growing strongly, with 28.3% export growth in 2021, accounting for 6.4% of total exports, playing an important role in stabilizing foreign trade export growth and promoting the digitization of trade in goods[4]. The international market for digital payments has accelerated its expansion, with WeChat and Alipay being used by more and more countries. China is becoming the most dynamic arena for the development of global digital trade.

4. The Digital Trade Ecology Enables the Integration Effect of Two Industries

4.1. Theoretical Framework of Digital Trade Ecology

Based on the basic features and dimensions of digital innovation ecosystem, combined with the actual development of digital trade, theoretically construct the theoretical framework of digital trade ecology (as shown in Table 2) to realize the behavioral logic of the integration of two industries and value co-creation[5].

Table 2: Theoretical framework of digital trade ecology

	Astringency	Scalability	Self-growth	Modularity
Main Body	Digital subject and subject digitization	Digital production factors	Digital User Identity	Digital Trade Platform
Structure	Blurring the ecological boundaries of innovation	Improve bottleneck performance	Promote information exchange synergy	Refining the tiered model
System	Digital Governance	Digital Infrastructure Governance	Coordination mechanism	Platform Governance
Function	Digital	Scaling	Servitization	Holistic
Evolution	Evolutionary Deepening	Transformation and upgrading	Model Innovation	More open cooperation

Source: Based on "Digital Innovation Ecosystem: A Theoretical Construction and Future Research" and other sources.

4.2. Digital Trade Ecological Platform Upgrade Path

The digital trade platform accelerates upgrading to an ecological platform to build industrial supply and demand relationship and ecological synergy relationship. The ecological industrial platform will break the information barriers between industrial subjects and between industrial subjects and financial institutions by enhancing the platform's connection, perception and response capabilities, build new supply and demand relationships and ecological synergy relationships, upgrade and reconstruct industrial networks and form a higher quality value ecology[6]. The ecological industrial platform will further accelerate the digital transformation of traditional industries, enhance the value of supply chain empowerment, and thus contribute to the dual transformation of supply-side production mode and demand-side procurement mode of China's economy.

4.3. Digital Empowerment of Two Industries Integration Effect

(1) Optimizing digital trade ecology, empowering the transformation of manufacturing industry

Around the "Internet +" "big data +" "artificial intelligence +", the manufacturing industry to strengthen the "industrial brain". In the core fields of Internet of Things, communication equipment, intelligent manufacturing, life and health, the manufacturing industry uses cutting-edge digital technology to deepen the digital scene innovation and application promotion of the whole industry chain supply chain system.

(2) Optimizing digital trade ecology, empowering the development of modern service industry

Promote the extension of modern service industry to manufacturing industry in the fields of information software, R&D design, industrial design, consumer services and other pilot projects. Enhance the wisdom of the information and software industry to lead the digital production, and promote the transformation of software service providers trade platform[7]. Promote the R&D and design industry to embed in key aspects of manufacturing and transform to high-end integrated design services.

(3) Optimizing digital trade ecology, enabling diversified integration

The first focus is "digital + service + manufacturing": vigorously implement new manufacturing, "new factory" "future factory" and other plans to promote collaborative manufacturing, smart manufacturing, shared manufacturing, network-based manufacturing and other new manufacturing. The second focus is "service derived manufacturing": take advantage of big data, channels and other

advantages, through the brand licensing to the manufacturing chain to extend the expansion, to achieve the integration of retail services and private brand manufacturing. The third focus is "supply chain synergy": promote design, procurement, manufacturing, sales, consumer information interaction and process reengineering to form a smart supply chain network. The fourth focus is the "overall solution": guide and support the qualified enterprises from the provision of equipment to provide systems integration turnkey services, from the provision of products to provide total solutions.

5. Suggestions of Digital Empowerment and Integration

5.1. Accelerate the Construction of Digital Trade Infrastructure

The rapid development of digital trade requires accelerating the research and development of core digital technologies and the construction of new infrastructure, including information infrastructure and industrial integration infrastructure. Participants should fully play the role of core digital technology research and development, strengthen the layout of communication network infrastructure represented by 5G, Internet of Things, industrial Internet and satellite Internet, and build a research and application platform based on "5G + artificial intelligence + cloud computing".

5.2. Create Digital Trade Industry Clusters

Accelerate the establishment of support for a number of key digital trade industry parks, and focus on building digital trade industry clusters with provincial characteristics. Create digital trade industry chain, strengthen digital technologies such as 5G, big data, artificial intelligence and block chain to empower traditional industries, and actively promote the transformation of advanced manufacturing industries to new modes such as networked collaborative manufacturing, service-oriented manufacturing, shared manufacturing and flexible production. Relying on digital technology, vigorously develop specialized high-end production service industry, actively cultivate new service industry, focus on expanding value-added services to meet the integration of "two industries", and gradually guide the flow of productive service resources to the production of high technology and complex intermediate goods in the manufacturing industry[8]. Enhance the "position" of enterprises in the global value chain, strengthen the quality of digital products and services, and improve the added value of products.

5.3. Improve the Incentive Mechanism for Digital Trade Talents

Accelerate the construction of local big data centers, focus on building integrated circuit design platforms, artificial intelligence supercomputing platforms, cloud service platforms and other big data public technology service platforms, and strengthen the collaborative development of industrial chains. Accelerate the cultivation of compound digital talents, increase the policy support for high-end talents in digital trade, actively build a sharing service platform for high-level talents, gather talents in digital economy, use the scale effect and polarization effect of high-tech industrial clusters to attract outstanding talents, improve the incentive mechanism for talents, and provide intellectual support for the in-depth integration of "two industries".

5.4. Sound Legal and Regulatory System for Digital Trade

Drawing on successful experiences at home and abroad, it is necessary to strengthen multi-sectoral joint decision-making and responsibility control. Promote cross-regional, cross-level and cross-departmental synergy of digital trade policies. Create cross-border e-commerce industrial parks (bases and incubation parks), integrate platforms and service resources, and innovate the regulatory system and mechanism for cross-border e-commerce[8,9]. Promote cooperation on cyber security and intellectual property protection, establish a long-term mechanism for cyber security cooperation and dialogue, strengthen the digital legal system, crack down on cyber crimes, hacking attacks and infringements of digital information technology, control digital trade risks, safeguard trade security, and guide the smooth and healthy development of the digital trade market.

6. Conclusions

Through the analysis of the connotation, development mechanism, development status quo and integration effect of digital trade, this paper puts forward the countermeasures for the integrated development of digital enabled advanced manufacturing and modern service industries, which mainly include: accelerate the construction of digital trade infrastructure, create digital trade industry clusters, improve the incentive mechanism for digital trade talents and sound legal and regulatory system for digital trade.

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