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Characteristics and Influencing Factors of Digital Service Export in RCEP Countries

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Abstract

This study investigates the features and trends of digital services export using data over the period across 15 countries (China, Japan, South Korea, Vietnam, Philippines, Cambodia, Laos, Myanmar, Thailand, Malaysia, Brunei, Singapore, Indonesia, Australia and New Zealand) over 2005 until 2020. Additionally, the paper employs the two- step system GMM approach to investigate the factors that determine digital services export at the national level. The study found that the global digital services export is highly unbalanced, especially the trade in goods and traditional services, with a small number of developed countries dominating the global digital services trade market. The global digital service export is extremely imbalanced, notably in terms of traditional service commerce and the exchange of goods. A Digital Services Export national economic development is highly correlated with the growth of digital service export. The growth of service industry, transnational capital flow and the advancement and implementation of information technology would significantly promote the growth of digital service export.

KEYWORDS: Digital Services Export, Digital Trade, Factors Affecting, Characteristics

1 INTRODUCTION

The worldwide trade in digital services is currently increasing, and the era of digital globalization is rapidly approaching. As a result of the emergence and implementation of communication and information technology, the modern society is undergoing a digital revolution in a number of different domains, the people in the process of production, life began to more frequent use of mobile phones, digital hardware such as calculating machine, mutual communication, communication and cooperation between the interaction from offline to online, such as a large amount of data and the existing products and services in the form of data, As a result, a new "digital state" has been formed on the basis of the existing physical state. The flow of data and services in the form of data between countries has brought different "digital countries" together.

Services such as education, health care and entertainment that people get online in their daily lives may come from other countries, as may real-time instructions in factories. The original international division of labor begins to shift from the physical world to the digital

world, and considerable changes are being made to the division of labour and distribution linkages between nations. Since the beginning of the new century, digital service industry has achieved unprecedented development. The competition of digital service trade in the international market has become increasingly fierce service industry has gradually become an important factor to measure the comprehensive strength of a country.With the increasing influence of digital service trade and the strengthening of international competition and cooperation games, it is with the utmost importance that additional studies be conducted on the key challenges surrounding the business of digital services.Figure 1 shows the export scale of digital services of three developed countries from 2005 to 2020. We can see that the digital service export scale of selected developed countries is rising rapidly. This shows that the national digital service export scale is related to the national economic development.

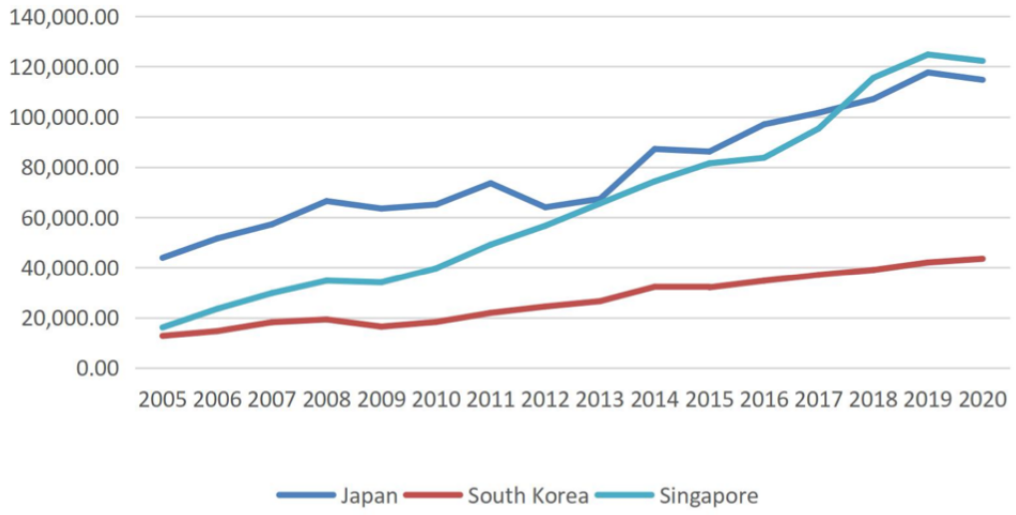

Figure 1: *Export of Digital Services*

This paper analyzes the digital service export scale, per capita GDP, during 2005 until 2020, the overall output benefit of the service sector, the share of the service industry, and the percentage of Internet users in RECP nations will be used to address the following issues:What are the characteristics and influencing factors of the development of digital service trade?

2 LITERATURE REVIEW

Digital service trade mainly refers to the service trade delivered through network transmission.In 2012, the Us Bureau of Economic Analysis (USBEA) put forward the concept of "digital service trade" for the first time in its Report on The Development Trend of Digital Service Trade, which refers to cross-border service trade in which the field of information and communications technology plays a major part, particularly with regard to copyright and licence fees, financial and insurance services, communications services, professional and technical services, and so on[1]. Towards a Digital Trade Measurement Manual: Updated was published in 2018 by the Organization for Economic Cooperation and Development (OECD) and the International Monetary Fund (IMF)[2]. According to this definition, international trade

in digital services encompasses all forms of commerce that are carried out via the international transmission of information and communication networks. This includes the sale of digital books, data, and database services.

According to the United Nations Conference on Trade and Development (UNCTAD,2015), e-commerce is defined as the process of making purchases and sales via the use of computer networks[3]. The UNCTAD also perceives that e-commerce encompasses the trading of physical goods in addition to digital products and services. According to Deardorff (2020), international digital commerce is defined as a type of business that involves multiple countries and involves the exchange of digital products, or at least part of the trade is advertised, ordered, delivered, paid for, or served through the use of the Internet or similar digital technologies[4].

In the mid-1970s, some western scholars began to define the concepts of service trade and digital service trade. In terms of international trade, the expansion rate of trade in digital services is currently outpacing that of trade in commodities, and this trend is expected to continue in the near future. Because of these economic occurrences, western experts have come to the conclusion that the expansion of digital service commerce has, to some extent, overtaken the growth of commodity trade as the primary factor behind economic expansion. As a result, a number of academics have started to investigate, from the point of view of empirical analysis, the qualities and elements that influence the trade of digital services overseas.

3 METHODOLOGY

3.1 Research approach

The export of digital service trade has an important impact on a country's economy. This means that it is necessary to study all the service trade exports of a country. Through reading the references, the author finds that many researchers are studying national digital service trade. However, few researchers have studied the digital service trade in Asian countries.RCEP countries were created on November 5, 2020, and there are few international studies on RCER countries.In summary, the author starts to study the export of digital services trade in RCEP countries.

This paper will adopt quantitative research. The research considering the two-step system GMM estimation method is used for empirical test. The measurement model is as follows:

$$\begin{aligned} InExport_{it} =& \beta_0 + \beta_1 InExport_{it-1} + \beta_2 InPERGDP_{it} + \beta_3 InSERGDP_{it} + \beta_4 SERPER_{it} \\ &+ \beta_5 \,\mathrm{InFDI}_{it} + \beta_6 \,\mathrm{InOFDI}_{it} + \beta_7 NETUSERR_{it} + v_i + \gamma_i + \varepsilon_{it} \end{aligned}$$

i is the exporting country, t is the year, β is the parameter to be estimated, v_i is the country fixed effect, γ_t is the time fixed effect, ε_{it} is random perturbation term. from UNCTAD database. UNCTAD (2015) defines trade in digital services as "all trade in services delivered across borders through information and communication networks", and finally obtains import and export data of trade in digital services by screening and calculating trade in services that can be delivered across borders through networks based on the classification of major products. The advantages of this method are high data availability, which can be obtained by relying on the existing statistical system of trade in services. The disadvantage is that there is some deviation in concept

Table 1: *Data Description*

	Mean	Median	Maximum	Minimum	Observations	Unit
EXPORT	23812.77	9832.467	154375.2	8.79	208	million
FDI	21683.32	8765.226	149342	-28294.65	208	million
OFDI	24374.69	7791.955	226647.9	-35783.18	208	million
PERGDP	18387.09	7119.844	68150.11	474.1112	208	dollars
NETUSER	52.46521	56.1	159.9793	0.317322	208	%
SERPER	53.44423	53.22307	71.91071	36.59897	208	%
SERGDP	8.18E+11	1.86E+11	8.03E+12	1.19E+09	208	dollars

Eviews10 software to analyze data.

definition and statistical caliber. All service trade that can be delivered digitally remotely is included in digital service trade, which means that some service trade that has the potential of remote digital delivery but is still conducted offline may also be included. Among the independent variables, PERGDP is per capita GDP, SERGDP is the total output value of the service industry, SERPER is the proportion of service industry, FDI is the scale of foreign direct investment, OFDI is the scale of foreign direct investment, NETUSER is the proportion of Internet users.

3.2 Mathematically

For this study, The author will adopt quantitative research. The research considering the two-step system GMM estimation method is used for empirical test.After that, the author decided on the data analysis software EViews10 to be used.

The steps of data analysis are as follows: using software (EViews10) — build GMM model — set variables, dependent variables — input the collected data — get the result — analyze the result — get the conclusion

3.3 Research design

This paper first collected Export, PERGDP, SERGDP, SERPER, FDI, OFDI and NETUSER data of 15 RCEP countries (China, Japan, South Korea, Vietnam, Philippines, Cambodia, Laos, Myanmar, Thailand, Malaysia, Brunei, Singapore, Indonesia, Australia and New Zealand) from 2005 to 2020. In order to make the analysis result more practical, logarithms of PERGDP, SERGDP, FDI and OFDI were used in data analysis.This paper would use EViews.

For this study, the paper collected data from 15 RCEP countries from 2005 to 2020. The specific variables are shown in the following table(Table 1).

3.4 Method of data analysis

This paper will adopt quantitative research. The research considering the two-step system GMM estimation method is used for empirical test.

Table 2 reports the results of the two-step system GMM estimation for the full sample of 15 countries from 2005 to 2020 (what names of these countries). For investigating the connection

Table 2: *Benchmark Estimates*

	(1)lnExport	(2)lnExport	(3)lnExport	(4)lnExport
C	−0.677556∗ (0.245658)	−16.88268∗ (0.291767)	−9.362928∗ (1.182819)	−8.964007∗ (1.260076)
lnPERGDP	$1.043457* -0.027399	−0.198828∗ (0.058094)	−0.298098∗ (0.062629)	−0.369271∗ -0.101474
lnSERGDP		0.927246* (0.010462)	0.539360* (0.057252)	0.536865* (0.057814)
SERPER		0.062190* (-0.008261)	0.081142* (-0.007482)	0.082472* (-0.008176)
lnFDI			0.040032*** (0.0040972)	0.044410* (0.042637)
lnOFDI			0.264415* (0.046148)	0.266571* (0.04612)
NETUSER				0.003362*** (0.003189)
Test Summary		**Chi-Sq.Statis tic**	**Chi-Sq.d.f.**	**Prob.**
Cross-section random		24.941837	6	0.0004

Mark:* * *, * * and * represent significant at the level of 1%, 5% and 10% respectively. The more * s they have, the more connected they are.The contents in parentheses represent Std. Error .(the same as in the following table)

between a country's level of economic growth and its export of digital services, only per capita GDP, country and annual fixed effect are included in the first column estimation. In order to determine whether or not the level of economic advancement is related to the availability of electronic service exports via the growth of service business, it is necessary to examine two variables that reflect the level of growth of service business: the total output valuation and the percentage of the service business, are added into the estimation in column 2. For investigating the influence of inter-country capital flows, two variables, foreign direct investment and foreign direct investment, are added into the estimation in column 3. For investigating the influence of the implementation and advancement of ICT, the percentage of people who use the internet was added to the fourth column.

Table 3 reports estimates grouped by income level to examine differences in the determinants of digital services exports in some countries at different levels of economic development. Referring to the world Bank's national income level grouping criteria, this paper divides 15 countries into economically developed countries and non-developed countries. The first column is the group of economically developed countries and the second column is the group of non-developed countries.

Table 3: *Estimated results grouped by economic level*

	(1)lnExport	(2)lnExport
C	10.37040**	-12.76129*
	(5.641701)	(1.458467)
lnPERGDP	1.109860**	-0.444965*
	(0.611399)	(0.124788)
lnSERGDP	0.106653***	0.0755636*
	(0.091044)	(0.04855)
SERPER	0.078355*	0.089311*
	(0022399)	(0.006677)
lnFDI	0.158466***	-0.146871*
	(0.092802)	(0.049366)
lnOFDI	0.263823*	0.258001*
	(0.069083)	(0.055667)
NETUSER	-0.006073***	0.012966*
	(0.011873)	(0.003762)

4 RESULT AND DISCUSSION

4.1 Result

Through the data in table 2, you can see that all the data are marked with *, suggesting that the country's PERGDP, SERGDP, SERPER, FDI, OFDI, NETUSER are related to digital services trade exports.For investigating the connection between a country's level of economic growth and its export of digital services, only per capita GDP, country and annual fixed effect are included in the first column estimation, and the estimation results show that the increase of per capita GDP would play a vital role in greatly promoting the expansion of digital service exports. In order to determine whether or not the level of economic advancement is related to the availability of electronic service exports via the growth of service business, it is necessary to examine two variables that reflect the level of growth of service business: the total output valuation and the percentage of the service business, are added into the estimation in column 2. The estimation results show that the two newly added indicators of the development level of service industry are significantly positive. In addition, the estimated coefficient of per capita GDP declined, indicating that the level of economic development affects digital service export to a certain extent through the development of service industry. For investigating the influence of inter-country capital flows, two variables,foreign direct investment and foreign direct investment, are added into the estimation in column 3, and the estimation results are both significantly positive, indicating that both foreign investment in China and domestic investment in other countries contribute to the promotion of digital service export. For investigating the influence of the implementation and advancement of ICT, the percentage of people who use the internet was added to the fourth column. This was done so that the column could accurately reflect the level of advances in information technology from the point of view of the scope of network use. The estimation results show

that the increase of the proportion of Internet users are going to get an important influence, both positively and significantly, on the exportation of digitalization.

We can see these by looking at Table 3.The first one is the group of economically developed countries, and the estimated per capita GDP is significantly positive, which may indicate that the improvement of economic development level at this stage is conducive to digital service export, and when economic development enters a higher level, the competitiveness of national digital service industry will be fully released. The improvement of the overall economic level, the development of the service industry and the application of information technology will have a significant positive effect on the export of digital services. The negative value of the estimated number of Internet users indicates that when the digital service industry lacks sufficient competitiveness, if the Internet penetration rate is very high, external digital services will rapidly enter the domestic market and occupy the development space of the domestic digital service industry, thus inhibiting the growth of digital service export. In the second category, the estimation results show that the increase of per capita GDP inhibits the growth of digital service export, which may be because the focus of economic development at this stage is agriculture, industry and low-tech service industry, resulting in crowding out effect on digital service industry. The estimated result of FDI is negative, which may be caused by the inflow of foreign capital into the service sector that does not have advantages, but squeezes the development space of the digital service industry.

4.2 Discussion

First, we need to have a deep understanding of the significance of developing trade in digital services. At present, global trade is developing towards the direction of service, and digital service trade is the key driving force. The expansion of China's market for digital services is of critical importance to the country to integrate into a new round of service-centered global division of labor. First, it will help accelerate the country's economic and social digital transformation. The digital transformation process of the global economy is accelerating. Whoever can promote the digital transformation of domestic industries as soon as possible will gain the advantage in international competition. Promoting the development of digital services trade will help introduce high-quality digital services from around the world and speed up the process of digital transformation in China.

Second, we need to build an inclusive and win-win system of international rules. The development of international trade in digital services is quite unequal at the moment, and countries have relatively diverse requirements for the regulations that govern international trade in digital services. The developed nations support an international trade environment that is extremely open, whereas the developing nations support a level of protection that is moderate in order to guarantee adequate room for their businesses to expand.

5 CONCLUSION AND FUTURE WORK

5.1 Conclusion

Digital service trade originates from the international expansion of digital economy and has some characteristics and rules in traditional service trade and digital economy. In this

study considers that digital service industry, information communication technology and the interconnection of networks is among the most significant factors that determines the number of digital services exported from various countries, and analyzes their impact on the export of digital services respectively.

Digital service industry is the foundation of digital service trade. Trade in digital services has changed in ways.Digital service trade also follows the laws of traditional international trade theories. The comparative advantages and industrial foundation of digital service industry in various countries largely determine the development and international division of labor of digital service industry.Digital services trade, by definition, refers to the trade in services through online remote transmission delivery, including both the "Internet + Medical Care", the "Internet + Education", "Internet + Financial" digital remote transmission after delivery of the traditional service industry, including telecom, big data and cloud computing, most of the emerging on the online services, such as artificial intelligence. From the perspective of a specific industry categories, the digital service involves the service category mostly belongs to the producer services, is an important link of value chain division of labor, throughout the manufacturing in the upstream, midstream, and downstream, to ensure that the production process is carried out without interruption, to encourage production specialization and the advancement of technology, to raise the level of overall factor productivity, and so on. High levels of technology and capital investment, as well as a high barrier to entry into the market, are all characteristics of producer services. Therefore, developed countries with abundant technology and capital have more comparative advantages, and their related industries develop faster and further expand into the international market. The relative development of relevant industries in developing countries is relatively backward. Moreover, only a small proportion of them contribute to the global division of labor. There is a possibility that the economic benefits of scale, which were generated by market protection, industrial strategies, and a number of historical incidental events, contributed to the success of a few specific situations.

ICT services is a booster of digital services and trade in digital services. The traditional service industry has been completely transformed from one that is inefficient and non-tradable as a result of advances in network and information technology, which has also significantly enhanced the thrust of service globalization. (I) service become can be stored and replicate, a lot of professional knowledge and skills to be transformed into can be stored and replicated data stored in the operation and analysis function of cloud servers, gift services more possible, such as intelligent CT imaging in the diagnosis of medical industry, the financial industry of intelligent service, and manufacturing of industrial Internet services, etc. (ii) Services become standardized, including the standardization of service content and service process. The former ensures the effective meeting of common needs, while the latter guarantees the quality of services, such as commodity push and customer service on e-commerce platforms. (iii) The transaction of services is moving to online, and the inseparability of producers and consumers in traditional services has changed. Computers provide services instead of consumers. (iv) The platform becomes the hub of service trading, where information of supply and demand is gathered to improve the efficiency of transaction matching, and consumers can obtain all kinds of required services through the professional service platform.

The open policy of service trade between countries and network connectivity are the key to the development of digital service trade. Through reading relevant literature at home and

abroad, this paper summarizes the factors that may limit the national digital service trade into the following four aspects: (I) Openness policy of service industry: Compared with industry and agriculture, some service industries are more sensitive, such as telecommunications, finance, culture, medical and other service industries are related to national economic security and social stability. Many developing countries have a relatively low level of openness, which may restrict the development of digital service trade at least to a certain degree. (ii) The degree to which the network is connected, the price and connection mode of communication, Internet, satellite navigation and other important information infrastructure of each country, high-speed Internet access determine whether digital service trade between countries can be carried out smoothly. (iii) Data flow and storage rules, such as restrictions on cross-border movement and localization of data storage, force digital service firms to set up branches in consumers' home countries, increasing unnecessary additional costs and reducing the efficiency of digital service trade. (iv) Secure and credible institutional guarantee, it is necessary to establish an internationally recognized institutional system for digital service trade, give full consideration to personal privacy protection, economic governance, national security and other risks in digital service trade, and ensure certain development space for developing countries.

From what has been discussed above,the globalization of the digital economy to support the expansion of domestic digital service export is becoming the focus of all countries' attention. This study examines the features of digital service export using panel data from 15 countries from 2005 to 2020 (China, Japan, South Korea, Vietnam, Philippines, Cambodia, Laos, Myanmar, Thailand, Malaysia, Brunei, Singapore, Indonesia, Australia and New Zealand), and it employs a two-step system GMM estimation approach to investigate the influencing elements of digital service export. This paper realizes that data analysis shows that the development of global digital service trade is extremely uneven, and digital service export is concentrated in a few developed countries. Then a sample estimation shows that the economic development level of a country is highly correlated with the growth of digital service export, and the growth of service industry and cross-border capital flow will promote the growth of digital service export. After that grouped by income level, the growth of digital service export may have a high threshold of development stage, and the growth of service industry can promote the digital service export of non-developed countries.

5.2 Future work

Since the beginning of the new century, digital service trade has achieved unprecedented development. The competition of digital service trade among countries in the international market has become increasingly fierce. The export level of digital service trade has gradually become an important factor to measure the comprehensive strength of a country. In such an industry and market environment, increasing the proportion of digital service trade exports and occupying an important position in the international market is obviously the goal of all countries to achieve. In the future, countries should still make full use of their own favorable conditions to increase the export of digital service trade and focus on improving the competitive advantage of digital service trade in the market. In this paper, there are still some shortcomings in the study of digital service trade export of RCEP countries(China, Japan, South Korea, Vietnam, Philippines, Cambodia, Laos, Myanmar, Thailand, Malaysia, Brunei,

Singapore, Indonesia, Australia and New Zealand). Firstly, the sample time is short, which will affect the results of the study to some extent. Secondly, there are fewer variables selected for the study. I will solve these problems in the future research.Internationally, many scholars have studied RCEP countries (China, Japan, South Korea, Vietnam, Philippines, Cambodia, Laos, Myanmar, Thailand, Malaysia, Brunei, Singapore, Indonesia, Australia and New Zealand). For example, some scholars have studied Impact of RCEP on East Asia; Some scholars have studied the impact of RCEP on Cambodia; Some scholars have studied RCEP and Asian Regional Architecture; Some scholars have studied the history, structure and future Directions of RCEP.This paper examines the export of digital services trade in RCEP countries (China, Japan, South Korea, Vietnam, Philippines, Cambodia, Laos, Myanmar, Thailand, Malaysia, Brunei, Singapore, Indonesia, Australia and New Zealand). In the future, I will continue to study the impact of the economic development of RCEP countries (China, Japan, South Korea, Vietnam, Philippines, Cambodia, Laos, Myanmar, Thailand, Malaysia, Brunei, Singapore, Indonesia, Australia and New Zealand) on the international community, and whether the trade between RCEP member countries plays a role in promoting their own economic development.

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