



Systematic Literature Review about Exploring the Relationship of Cross-border E-commerce and China's Foreign Trade Based on Different Models

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ABSTRACT

The proportion of Chinese cross-border e-commerce in China's foreign trade has gradually increased in recent years. In the last few years, scholars have used different empirical test models such as the trade gravity model and coupling model to empirically test whether cross-border e-commerce can promote China's foreign trade from different perspectives. Based on researching and collating the academic journals in Chinese National Knowledge Infrastructure, this paper sorts out and reviews relevant literature studying relationship between cross-border e-commerce and China's foreign trade. Through the trade gravity model, the mutual promotion relationship between the development of cross-border e-commerce and China's foreign trade has been verified. The coupling model has also made clear of the fact that the coupling degree of the two systems has to be improved so as to continuously promote the development of cross-border e-commerce. On account of the existing researches, the new directions and prospects of future research are put forward in order to facilitate future researchers to better delve into the related topics of the interrelationship between cross-border e-commerce and the Chinese foreign trade economy.

Keywords: Cross-border E-commerce, Trade Gravity Model, Coupling Model, Foreign Trade, Review Study, China.

INTRODUCTION AND BACKGROUND

In the past few years, the transaction volume of cross-border e-commerce in China has gradually enlarged, and this industry has a really good developmental momentum. According to the data and reports of the General Administration of Customs, PRC, the total amount of cross-border e-commerce imports and export in China was 1,290.3 billion yuan in 2019, 1,622 billion yuan in 2020, and 1,923.7 billion yuan in 2021. The total import and export volume of cross-border e-commerce in 2021 increased by 18.6 per cent year-on-year compared with

2020, accounting for 4.9 per cent of China's total imports and exports. With the introduction of relevant national preferential policies, China is constantly expanding the scope of cross-border e-commerce retail import areas and the pilot cities and additionally accelerating the construction and development of cross-border e-commerce comprehensive pilot zones.

In 2022, due to repeated epidemics of COVID-19, geopolitical crisis, inflation problems in Europe and the United States or other common factors, the global economy is showing a trend of recession. In an environment of reduced consumption, cross-border businesses are also facing multiple challenges such as increased costs, shrinking profits and foreign exchange fluctuations. However, opportunities and challenges always coexist. The rapid growth of global online consumption has brought opportunities for China's manufacturing industries to venture overseas. The gradual development status of global e-commerce will promote a new customer ecosystem with multiple national conditions and scenarios, and will also bring opportunities for Chinese cross-border e-commerce (CBEC) industries. The deepening and further development of service trade will also expand the scale, volume and diversity of cross-border e-commerce products. Generally speaking, the Chinese cross-border e-commerce industry is now undergoing changes and furthermore transformation.

In light of the expansion and enlargement of the CBEC industry, its effects on China's foreign trade are gradually increasing. Hence, more and more researchers have studied relatable topics such as the relationship of cross-border e-commerce and China's import and export trade economy. In different researches, scholars may adopt different perspectives, models or research methods. By combing and summarizing these published academic journals, this paper will mainly deal with three research questions as mentioned below:

1. RQ1: What is the current research status of the relationship between CBEC industry and China's foreign trade;
2. RQ2: How can the interrelationship between the two analytical subjects based on different models be analysed;
3. RQ3: What are the new research directions and prospects of the relationship between cross-border e-commerce and China's foreign trade.

LITERATURE REVIEW

A literature review summarizes and evaluates a body of writings about a specific topic [1]. Generally speaking, when do the literature review, we need to pay attention to two important aspects. First of all, we should summarize the findings and points from the previous research efforts on a specific topic. Secondly, we should evaluate the authors' points of views and present our own judgements. A literature review is more than a collation of relevant references but a discussion and analysis on the basis of a given topic. The aim of a systematic literature review is to find, assess, analyse and report on literature that is relevant for the proposed research question [2].

As for the purpose of this article, we need a comprehensive and sound literature review to explore the interaction relation between CBEC industry and China's foreign trade economy. In this article, we will not just make an arrangement, but will select and pay great attention to the representative viewpoints which are highly relevant to the topic of this paper and answer the above proposed research questions.

RESEARCH METHODS

This study is undertaken as a systematic literature review and will be conducted as the following step. The first step is to determine the database. The Chinese National Knowledge Infrastructure (CNKI) is selected to search for keywords of relevant issues. The reason why we, the authors, choose China National Knowledge Network is that it is one of the largest databases in the world at present, and the Chinese periodical data resources covered by it are very extensive and authoritative [3]. Additionally, as we are discussing the topics related to Chinese economy, choosing the CNKI database is more appropriate than others for the reason it contains more related academic journals to deal with the problem.

The second step is to screen and make the identification. The systematic review is compiled according to the review protocol shown in Figure 1, which also shows the flow chart of search strategy. The keywords are decided to be “cross-border e-commerce” and “foreign trade” on account of the study’s purpose or topic. All the data sources are selected from the CNKI database. Except for the academic journals, other document types are excluded. With the time frame from 2013 to 2023, we both retrieve the Chinese and English academic journals on this database. According to the criteria, a total of 765 academic journals are returned.

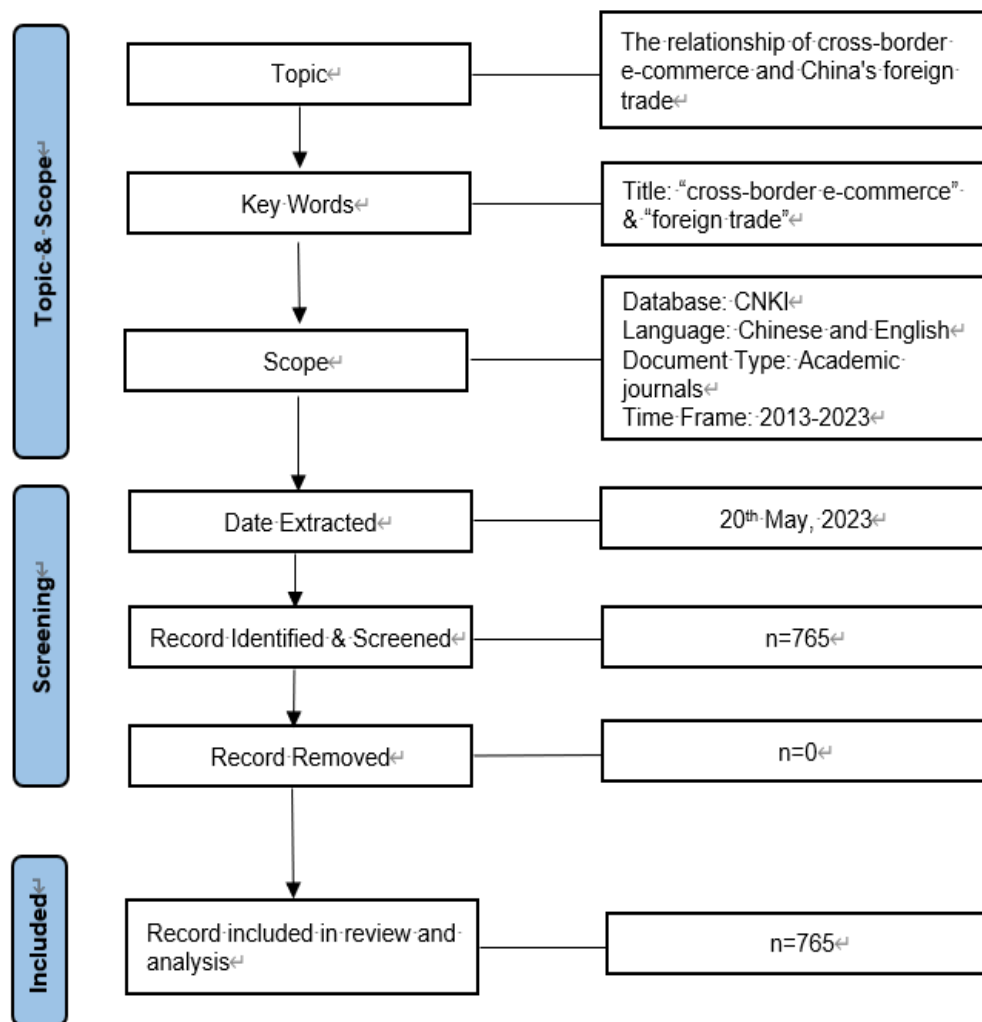


Figure 1. Flow Chart of the Search Strategy

The third step is to filtrate the literature by study purpose. The academic journals which entitled "cross-border e-commerce" and "foreign trade" are selected, as our main topic is to explore their relationship. Except for searching on the CNKI database for academic journals, we also use Excel to make tables or graphs to summarize the screened academic journals, so as to make the data content presented by the whole article more intuitive and better understood. In addition, for each research question mentioned above, we will select representative articles to elaborate the general views and contents of the articles.

ANALYSIS AND FINDINGS

Combined with the above research methodology, we will sort out and summarize the previous research questions in turn.

Research Status of the Relationship of Cross-border E-commerce and China's Foreign Trade

As we know, 765 academic journals have been retrieved, among which 396 academic journals with the main theme of "cross-border e-commerce", 48 with the theme of "export trade", 38 with the theme of "China's foreign", and 18 with the theme of "foreign trade enterprises". Since this article mainly reviews the interrelationship between cross-border e-commerce and China's foreign trade, it is upon advanced searching and screening, that we are able to sort out 34 academic journal publications titled "cross-border e-commerce" and "foreign trade".

These 34 academic journal articles mainly include the following topics with different research backgrounds. Examples include the effects of cross-border e-commerce on China's foreign trade, with a research background in ecological civilization construction or "The Belt and Road" strategy. Other studies highlight the impact of CBEC platforms or CBEC free trade zones on China's foreign trade, the influence of cross-border e-commerce on the upgrading of China's foreign trade import and export structure or mode transformation, as well as the interacting relationship between cross-border e-commerce and foreign trade economy. Furthermore, after sorting out the selected 34 academic journal papers by the timeline, we make a chart which shows the year of publication. We find out that the academic research on "cross-border e-commerce" and "foreign trade" have been fluctuating in recent years (shown in Figure 2).

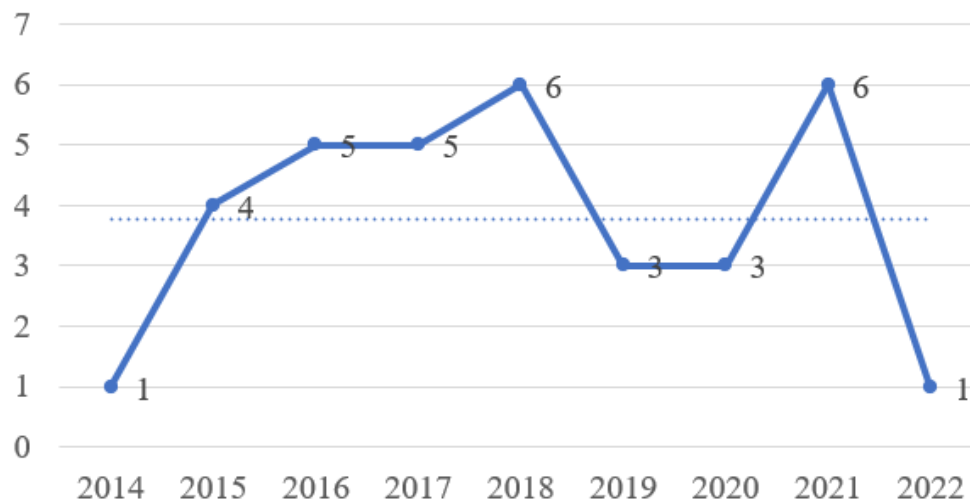


Figure 2. Publication of Chinese Academic Journals by Year

In general, there are fewer academic journals that directly study the interrelation of cross-border e-commerce and China's foreign trade than those that search the two keywords of "cross-border e-commerce" or "foreign trade" respectively. Through reading and summarizing the selected 34 academic journals, it can be concluded that the progression of a cross-border e-commerce industry will promote the Chinese foreign trade economy. From the macro level, the appearance of cross-border e-commerce will break the regional restrictions of traditional trade and realize the globalization of sales channels. In the meantime, it will also shorten the foreign trade industrial chain and additionally promote an expansion of the foreign trade economy by lowering trade costs. From the meso level, cross-border e-commerce has realized the direct contact between manufacturers and consumers, which will directly promote the needs of consumers, enrich the categories of export products and finally promote the growth of export trade. In the meantime, it can also avoid the current situation of low profit caused by upstream R&D and downstream marketing in the traditional mode to some extent. Finally, from the micro level, cross-border e-commerce may help enterprises engaged in foreign trade reduce the costs, such as the cost of discovering the transaction objects, investigation, negotiation, and price searching, which will also improve operating efficiency. Meanwhile, it can effectively drive foreign trade enterprises to carry out industrial innovation strategies and upgrade transformation tactics [4].

The Interrelationship between Two Analytical Subjects Based on Different Models

After literature review and collation, scholars mainly use two models focusing on the interrelationship between cross-border e-commerce and foreign trade, which are the trade gravity model and coupling model respectively. The two models are discussed as follows:

Based on the Trade Gravity Model:

As for this part, we select eight representative academic journals to make the sort out. The selected academic journals are shown in Table 1.

Table 1. Representative Academic Journals Based on Gravity Model

Authors	Source Journal
Zhou Guanglan, Wang Jian	Journal of Shanghai Lixin University of Accounting and Finance
Luo Na, Luo Lejuan	Journal of Commercial Economics
Jiang Bao, Wang Zhen, Li Jian	Journal of Commercial Economics
Yin, Zi Hui, and Chang Hwan Choi	Electronic Commerce Research
He Y, WANG J	Journal of Asian Finance, Economics and Business
Yang G, Wang Y, Lu F, et al	Journal of Global Information Management
Chai Li, Dong Chen	Journal of Commercial Economics
Zhen Chunfang, Zhang Yanqiu	Journal of Graduate School of Chinese Academy of Social Sciences

The gravity model of economic geography is an application of the law of gravity of physics based on the effect of distance decay in economics [5]. The gravity model reveals that the volume of trade flows from one country to another is directly proportional to the respective economic scale (GDP gross) of the two countries, and inversely proportional to the distance between the two countries. This research conclusion has become an important proposition in the research area of international trade. Since then, a lot of other scholars have added population, per capita income, exchange rate, culture and other factors to the standard gravity model, and obtained many rich research results.

The development level of e-commerce in a country not only affects domestic economic development but it also affects the whole world. So far, cross-border e-commerce has become a significant forcing power to promote the development of international trade [6]. This is the conclusion of the panel data analysis based on the gravity model on the basis of the data of 46 major trading partners of China from 2008 to 2016. In this study, for the reason of lacking official statistics on e-commerce in many countries, a similar variable "Network readiness index" was chosen as a substitute. The network readiness index has high authority. Its calculation includes the main hard indicators to measure the level of e-commerce and also includes the soft indicators such as the political and market environment of a country. In the study, they argue that the continuous development of cross-border e-commerce will affect the rules of online trade and also help China establish trade dominance under the new system of rules.

Cross-border e-commerce is now a hot topic in the field of international trade. Some scholars question whether "trade gravity" is still applicable to the cross-border e-commerce industry, and some scholars question whether the original standard gravity model has good explanatory power in the new environment. Therefore, some scholars modified the original standard gravity model and introduced new variables to enhance the explanatory power. Some authors introduced per capita GDP, the populational size of trading partners and other factors into the trade gravity model for analysis. Through the empirical test, it showed that the modified trade gravity model applies to China's cross-border e-commerce, and the per capita GDP and populational size of trading partners have a significant role to promote China's cross-border e-commerce physical commodity import scale [7]. However, the distance between trading partners and China has a prominent hindering effect on the import scale of cross-border e-commerce physical goods. Moreover, the trade gravity model links bilateral trade to aggregate demand and supply in importing and exporting countries, by adding transaction costs, transport costs, and other specific trade factors in this model [8]. Some studies provided empirical evidence on the impact of cross-border e-commerce over trade in goods and services. It is indicated that the use of e-commerce in China is of great importance in promoting exporting, moreover, under the Belt and Road policy, the promotional effect of cross-border e-commerce is greater on service exports than on goods exports.

There are some other studies extending the gravity model according to different situations. It is an innovation to demonstrate how the relevant variables affect the cross-border e-commerce trade more clearly by introducing GDP, the population, the real change rate, and terms of trade into the gravity model [9]. Researchers utilized a unique data set on cross-border express deliveries to study the determinants of aggregate cross-border volume in an augmented trade gravity framework and concluded that the determinants of traditional bulk trade also have significant impacts on the volume of cross-border e-commerce trade [10].

While other researchers extended the original gravity model further in order to solve specific bilateral trade problems and verified that trade facilitation plays an important role to promote China's cross-border e-commerce export and different trade facilitation measures have different degrees of effects on the export trade of China's cross-border e-commerce to East Asia, West Asia, Central Asia and South Asia [11]. The researchers also gave suggestions that China should increase investments in "soft" transport infrastructure and ICT (Information and

Communication Technology) in countries alongside the Belt and Road on the basis of testing the trade gravity model [12].

By summarizing the views of scholars, we can see that the gravity model is very practical in studying the interrelationship between cross-border e-commerce and foreign trade development. Many scholars have adopted this model to research on the relationship between the two. The main conclusion is that cross-border e-commerce has a positive effect on the development of a country's foreign trade, and the development of a country's foreign trade will in turn promote the continued development of cross-border e-commerce. Few scholars lucubrated analysis on this conclusion, such as subdividing foreign trade into import and export, trade in goods and in services, etc., so as to study more detailed impacts and draw specific development suggestions for the development of related industries.

Based on the Coupling Model:

When we discuss the question based on the coupling model, we also try to select typical literature to conduct the review. The selected four academic journals are shown as in Table 2.

Table 2. Representative Academic Journals Based on Coupling Model

Authors	Source Journal
Lu Jinrong, Tian Zhiwei	Journal of Qingdao University of Science and Technology
Zhang Xiaodong	Enterprise Economy
Li X, Zheng C, Wang T	Discrete Dynamics in Nature and Society
Wang H D, Zheng C F, Xiao X	Discrete Dynamics in Nature and Society

The coupling effect refers to a phenomenon that two or more systems interact with each other to synergistically produce additional forces, also known as the interactional effect [13]. The coupling empirical approach is different from the traditional empirical approach. It can comprehensively analyse the synergistic changes between different variables with the thought of system theory, without considering the causal relationship between variables. Coupling includes development and coordination, in which, development is referring to the system from simple to complex, and from low to high-level evolution; Coordination emphasizes the degree of mutual cooperation and harmonious development between two or more systems and elements within the system. Therefore, the coupling relationship between the system composed of development and coordination reflects the overall synergistic effect of "quantity expansion" of development and "quality improvement" of coordination.

According to the literature review, several studies have linked the coupling model to cross-border e-commerce. A high degree of coupling will make the system develop from independent to common progress, from disorderly growth to orderly development, and from low-level development to collaborative integration development. The coupling between systems is complex, influencing factors are numerous, and information, capital, entity and energy are exchanged simultaneously. It is a prerequisite for analysing the coordination mechanism and development of the system to find out the influencing factors of system coupling accurately and clarify the coupling relationship between these factors. The order and coupling degree between cross-border e-commerce and economic system in thirty-five cross-border e-commerce comprehensive pilot zones in China are uneven. To obtain sustainable competitive advantages, it is necessary to have a good coordination degree and close integration degree between the

economic system and cross-border e-commerce system, and we should constantly improve the coupling coordination degree between them [14].

There are also some researches concentrating on the relationship between the cross-border e-commerce supply chain and the economic system, especially by using the coupling model. These scholars thought that the two systems have interactive effects on each other and various indicators also influence the two systems. After data standardization and analysis, the scholars proposed that it is essential to improve the orderliness of both the supply chain and economic system. Meanwhile, it is also necessary to upgrade the strengthening integration and close cooperation between the two systems in order to improve the coupling and coordination [15]. From the above analysis, it can be seen that coupling model is an important model to study the development of cross-border e-commerce and foreign trade economic development. Cross-border e-commerce has greatly promoted the development of China's foreign trade [16]. Scholars have built the coupling model to study the interaction effect between the two subjects. Scholars believed that we need to improve the coupling degree between the two systems in order to obtain better competitive advantages. Factors such as cross-border logistics, economic development and social consumption power can further promote the high-quality development of cross-border e-commerce.

RESEARCH DIRECTIONS AND PROSPECTS

On the grounds of the above literature summary, we put forward the slightly lacking parts of the current research and the prospects of future research. First of all, most of the studies on the relationship between cross-border e-commerce and foreign trade by scholars at present only involve the synergistic effects between the two, but they have not conducted in-depth studies on the mutual promoting effect between the two. In particular, during the research process, a unified selection criterion has not been formed for the factors influencing cross-border e-commerce on trade [17].

To solve this problem, future researches can combine some data and modelling tools for further in-depth research.

On the second point, the current research is not detailed and in-depth enough, and more deep going studies are lacking. For the study in the near further, we may classify or segment Chinese import and export trade even more finely, we may dig into the intensive study in different aspects, or else, subdivide the cross-border e-commerce in detail into different modes B2C, B2B, C2C or some newly rising modes. As for that, we can make respective researches into the specific interaction effects on different modes or different circumstances.

On the last point, most current academic journals focus on macro analysis, using panel data or foreign trade data to describe the cross-border e-commerce environment of a region or a country. However, the data of industries and enterprises themselves are less, so the operational data of leading or representative cross-border e-commerce enterprises could be selected in the future to further analyse its influence on foreign trade in a certain region, such analysis is relatively micro, but also an effective supplement to the current research status.

CONCLUSION

Through the systematic review, we firstly summarize the current status of the research on the interrelationship between cross-border e-commerce industry and foreign trade to get conclude that the progression of a cross-border e-commerce industry has a positive influence to promote the Chinese foreign trade economy.

Secondly, on the basis of the analysis of the trade gravity model and the coupling model, we carefully review and summarize the selected representative journals. For the gravity model, the previous scholars not only adopted the standard gravity model, but also added new variables to modify the original gravity model, and concluded that cross-border e-commerce and the foreign trade economy have mutually promoting effects on each other. While for the coupling model, it is a more complex and systematic model compared with the gravity model. There is relatively little research on the relationship between cross-border e-commerce and foreign trade economy by adopting the coupling model from the macro view, but the research on the coupling relationship in specific fields of cross-border e-commerce has also given us some enlightenments that high-quality development of cross-border e-commerce need the development of the foreign trade economy elements.

For the third research question, the study proposes three points about the future research directions or prospects. In the future study, we need to make an endeavour to conduct the researches on the potential aspects including more in-depth researches on the mutual promotion relationship, the researches after subdividing each element and the researches based on the micro enterprises.

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