Research on Influencing Factors of International Scientific Research Cooperation under the Belt and Road Strategy

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Abstract: Scientific and technological cooperation is an important part of the international cooperation of the "the Belt and Road". Under the background of the deepening trend of scientific internationalization, international scientific research cooperation plays an increasingly important role in scientific development. The research on the effectiveness of international scientific research cooperation has gradually become an important topic in the field of scientific research cooperation, such as the research on the role of international scientific research cooperation in scientific and technological development, the role of scientific research personnel in their own development, and the promotion of the accumulation of research resources. The improvement of the influence of scientific and technological papers and the impact on the cost of cooperation. This paper relies on international scientific and technological cooperation as an important platform, and the quality of talent training and scientific research of countries along the "the Belt and Road" can be significantly improved; The "the Belt and Road" strategy can also play an invaluable role in promoting the industrialization of scientific and technological achievements and promoting economic development through science and technology.

1. Introduction

In the current era of global big science, scientific research is becoming more and more complex, the division of technology research and development and specialization is becoming more and more rapid and obvious, and the research resources and research funds required for scientific research are also higher[1]. However, the process of scientific research and development has high difficulties and challenges, which makes it difficult for independent scientific research institutions to undertake and carry out research. Therefore, scientific research cooperation has become the inevitable choice of scientific research and development in the world.

With the rapid development of modern network information technology, international scientific research cooperation across countries is in the ascendant. At the policy level, the United States, the United Kingdom, Germany, Finland, France, Russia, Japan, India and many other countries have launched international scientific research cooperation strategies to support international cooperation and exchange [2]. The "the Belt and Road" strategy can also play an invaluable role in promoting the industrialization of scientific and technological achievements and promoting economic development through science and technology [3-4]. In the research of international scientific research cooperation, some indicators are often used to quantify the international scientific research cooperation and scientific research performance, so as to show the relationship between them more intuitively and effectively "the belt and road initiative" has given a deeper meaning to the cooperation mode of Asia, Europe and Africa, and laid a foundation for regional economic integration. After the opening of the Asia-Europe intercontinental train, the exchange of materials and personnel between them will be closer and become an important factor affecting regional power. As an important part of China's scientific and technological innovation system, China's application-oriented research institutes implement the "the Belt and Road" initiative and expand scientific and technological cooperation with "the Belt and Road" countries and regions, which is not only a

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requirement of national strategy, but also an opportunity for their own international development.

From the perspective of international scientific research cooperation, this paper examines the paper cooperation between Chinese scholars and foreign scholars, which provides a new perspective and new ideas for the study of the topic of international technology spillover media and channels[5]. China and the "the Belt and Road" countries are facing major problems such as water resources utilization, biodiversity, climate change, environmental pollution, geological disasters, etc. Regional scientific research cooperation has great potential and space. From the perspective of policy value, this study provides a scientific basis for formulating government strategies and policies to expand international and regional scientific and technological cooperation and exchanges, integrate into the global innovation network, and enhance scientific research strength in the context of China's implementation of the "the Belt and Road" opening-up strategy [6].

2. Development Status of International Scientific Research Cooperation in China

International cooperation papers are testable, stable, easy to measure and data available, and their quantity and quality represent the strength of cross-border scientific research, so they have become the international common indicators to measure the strength "the belt and road initiative" as 75 countries. Because of the serious lack of data in 15 countries such as Iraq and Syria, 58 countries along the route are selected as research samples [7]. As a national top-level strategy, "the belt and road initiative" strategy holds high the banner of peaceful development, uses the existing platform, takes "interconnection" as an important strategic support, and under the guidance of the diplomatic concept of "pro-,sincerity, benefit and tolerance". Table 1 gives the statistics of the number of scientific research cooperation papers between China and countries along the "the belt and road initiative". It is not difficult to see that China and the countries along the "the belt and road initiative" grew rapidly from 2019 to 2022, with a total of 124,201 achievements in scientific research cooperation, an increase of 22,066 in 2019, and a rapid increase of 36,459 in 2022, a full increase of nearly five times.

Table 1 China's overall and interdisciplinary international scientific research cooperation

Branch of learning	2019	2020	2021	2022	Total
Physical science	11201	15896	20157	18215	65469
Life sciences	7841	8956	9452	10124	36373
Social sciences	3024	5012	6203	8120	22359
Total	22066	29864	35812	36459	124201

It can be seen from the overall development trend of international document volume, international cooperation document volume and "the Belt and Road" countries' cooperation document volume that applied scientific research institutes have stored a large number of scientific and technological achievements[8].

Applied science and technology research institutes can take this opportunity "the Belt and Road". More and more international papers in China are published in the form of international cooperation. China and the "the Belt and Road" countries are facing major problems such as water resources utilization, biodiversity, climate change, environmental pollution, geological disasters, etc. Regional scientific research cooperation has great potential and space. It is found that the research samples selected by these studies are mainly reflected in three levels: the analysis of countries, regions or regions, the analysis of fields or institutions, teams and the analysis of individual researchers. That is, when the above-mentioned subjects of scientific research cooperation involve different countries or regions, international scientific research cooperation will occur[9].

3. Research on Influencing Factors of International Scientific Research Cooperation under the Belt and Road Strategy

3.1. Research level of international cooperation

By analyzing the papers on the relationship between international scientific research cooperation

and scientific research performance by scholars at home and abroad, it is found that the research samples selected by these studies are mainly reflected in three levels: the analysis of countries, regions or regions, the analysis of fields or institutions, teams and the analysis of individual researchers. Both the improvement of the host country's scientific research strength and China's own scientific research level will contribute to the development of scientific research cooperation between the two countries [10]. From the perspective of policy value, this study provides a scientific basis for formulating government strategies and policies to expand international and regional scientific and technological cooperation and exchanges, integrate into the global innovation network, and enhance scientific research strength in the context of China's implementation of the "the Belt and Road" opening-up strategy. In the current era of global big science, scientific research is becoming more and more complex, the division of technology research and development and specialization is becoming more and more rapid and obvious, and the research resources and research funds required for scientific research are also higher. However, the process of scientific research and development has high difficulties and challenges, which makes it difficult for independent scientific research institutions to undertake and carry out research. Therefore, scientific research cooperation has become the inevitable choice of scientific research and development in the world.

Studying international scientific and technological cooperation from the perspective of international division of labor and cooperation is to realize the effective and rational allocation of resources on a global scale; Studying international scientific and technological cooperation from the perspective of political and economic globalization and sustainable development is to rationally develop resources, effectively use resources and protect the basic environment for human survival and development, so as to carry out international cooperation between the two countries, regardless of a certain discipline or the overall discipline. By analyzing the influence of international scientific research cooperation on scientific research performance, we can draw the following conclusions: in most disciplines, international scientific research cooperation is conducive to improving the quality of scientific research output.

3.2. Analysis of Influencing Factors of International Scientific Research Cooperation

Under the background of the deepening trend of scientific internationalization, international scientific research cooperation plays an increasingly important role in scientific development. The role of scientific research personnel in their own development, and the promotion of the accumulation of research resources The improvement of the influence of scientific and technological papers and the impact on the cost of cooperation. This chapter mainly analyzes the influencing factors of international scientific research cooperation, which can be divided into external environmental factors and market environmental factors.

3.2.1. External environmental factors

International cooperation can improve the quality and influence of research results, which is reflected in the fact that cooperative papers usually have higher citations than independent papers. In order to understand and master the current research situation in this field and find out the entry point for future research in this field, this paper first defines the two important concepts of international scientific research cooperation and scientific research performance on the basis of systematic research, and then combs and analyzes the research papers on international scientific research cooperation and scientific research cooperation from the research levels, analysis indicators and analysis methods, The specific analysis framework is shown in Figure 1.

The theory of regional economic integration refers to the process of a transnational regional group that is carried out by countries or regions close to each other in order to realize common interests, re-combine and allocate production factors rationally, realize the liberalization of the circulation field, eliminate barriers between each other through the formulation of common policies, and realize the free flow of factors such as goods and labor.

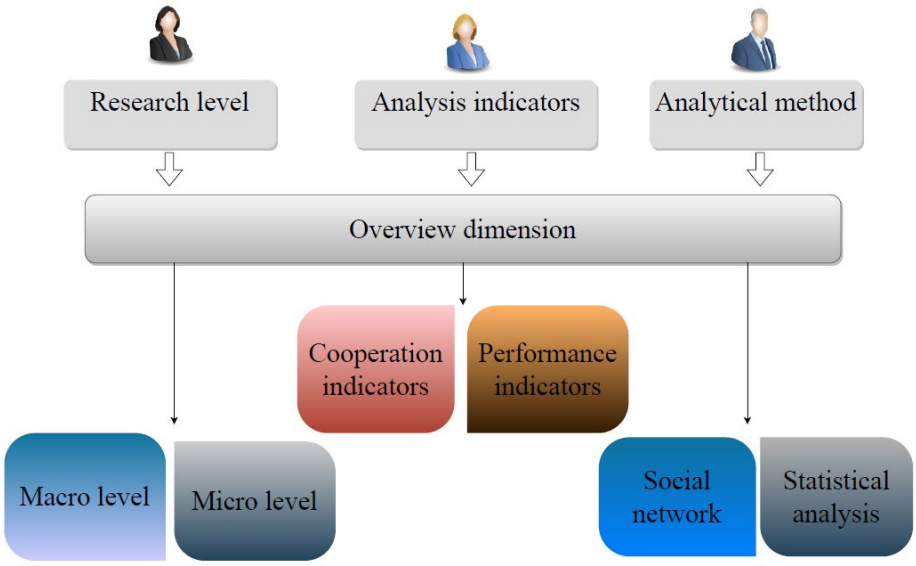

Figure 1 Analysis framework of the impact of international scientific research cooperation on scientific research cooperation

3.2.2. Market environment factors

Based on the technology supply of renewable resources in neighboring countries, combined with the existing ways and modes, this paper focuses on the current situation, existing problems and obstacles of applicable technology transfer, and also puts forward that the state and the Yunnan provincial government should play a role in technology promotion at the strategic level and develop the markets of neighboring countries in a targeted manner. In the research of international scientific research cooperation, some indicators are often used to quantify the international scientific research cooperation and scientific research performance, so as to show the relationship between them more intuitively and effectively "the belt and road initiative" has given a deeper meaning to the cooperation mode of Asia, Europe and Africa, and laid a foundation for regional economic integration. After the opening of the Asia-Europe intercontinental train, the exchange of materials and personnel between them will be closer and become an important factor affecting regional power. By analyzing the papers on the relationship between international scientific research cooperation and scientific research performance by scholars at home and abroad, it is found that the research samples selected by these studies are mainly reflected in three levels: the analysis of countries, regions or regions, the analysis of fields or institutions, teams and the analysis of individual researchers. That is, when the above-mentioned subjects of scientific research cooperation involve different countries or regions, international scientific research cooperation will occur.

4. Conclusions

This paper analyzes the influencing factors of international scientific research cooperation between countries along the "the Belt and Road" and China. China's own scientific research strength will contribute with the rapid development of modern network information technology, international scientific research cooperation across countries is in the ascendant. At the policy level, the United States, the United Kingdom, Germany, Finland, France, Russia, Japan, India and many other countries have launched international scientific research cooperation strategies to support international cooperation and exchange. The "the Belt and Road" countries and regions involve multiple cultures and systems, and the international situation is complex and changeable. The existence of international cooperation management departments or teams should have the sensitivity and professional ability to respond to international changes. They have a certain understanding of countries and regions along the "the Belt and Road", which can support and check the international cooperation of business departments. The "the Belt and Road" strategy can also play an invaluable role in promoting the industrialization of scientific and technological achievements and promoting

economic development through science and technology. As an important part of China's scientific and technological innovation system, China's application-oriented research institutes implement the "the Belt and Road" initiative and expand scientific and technological cooperation with "the Belt and Road" countries and regions, which is not only a requirement of national strategy, but also an opportunity for their own international development in scientific and technological development, the role of scientific researchers in their own development, the role of promoting the accumulation of research resources innovation capacity and efficiency to actively develop and utilize the advantageous innovation resources of global countries and realize the complementarity and strengthening of advantageous resources and technologies.

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