Empirical Analysis of Northeast Asia Regional Economic and Trade Relations and Research on Cooperation Countermeasures Based on Computer Software under the Background of "the belt and road initiative"

Yumin Xu1,*, Hongfang Duan1
1HeiLongJiang University of Technology, HeiLongJiang, China, 158100

*Corresponding author email: 490123457@jxdx.edu.net

Abstract. In the new era of rapid growth of science, the belt and road initiative is the development of ideas and cooperation initiatives, which will have a very positive impact on cooperation among different regions. Paying attention to research on regional economic cooperation between the belt and road initiative and Northeast Asia is conducive to achieving good cooperation between regions, realizing scientific treatment of overcapacity and ensuring good economical collaboration between different regions. Therefore, it is necessary to combine the connotation and implementation of "the belt and road initiative" initiative and the growth requirements of the Northeast Asia regional economy, and actively carry out the cooperative research work between them based on the technology of computer software, so that the Northeast Asia regional economy can develop effectively beneath the influence of "the belt and road initiative" initiative, and deal with the problems existing between the two cooperation to ensure the smooth implementation of the "the belt and road initiative" initiative. The paper analyzes economic and trade relations in Northeast China and studies the overall cooperation countermeasures, hoping to inject new vitality into the long-term development of my national income and society and promote the further development of the world income. At the same time, countries in the region should make joint efforts to strengthen political mutual trust, shoulder responsibilities and commit themselves to realizing regional cooperation in Northeast Asia.

Keywords: "The Belt and Road Initiative", Cooperative Research, Northeast Asia, Northeast China

1. The relevant introduction of "the belt and road initiative"
In response to the lack of motivation in the process of global economic development, President Xi Jinping fully considered China's basic national conditions during his overseas visit in 2013 and put forward the great decision of One Belt One Road. Its contents mainly include: giving fully use of the geographical benefits of Inner Mongolia connecting Mongolia and Russia, perfecting the track passage
and the regional track internet from Heilongjiang to Russia, and cooperating land and sea transport between Northeast China and Russia's Far East. From the content of "the belt and road initiative", that can be seen that implementation for its initiative is related to Northeast Asia, which can inject vitality into the development of some areas in this region. Therefore, it is necessary to improve the correct understanding of "the belt and road initiative" and actively carry out related research work. Establishing "the belt and road initiative" together adapts to the development trend of globalization, but also helps to maintain the world economy and global trade system, and is conducive to the rational and effective allocation of market resources. Geographically, "the belt and road initiative" connects East Asia, Central Asia, South Asia, Southeast Asia, eastern Africa and southern Europe, and has great economic vitality and development potential. At the same time, in history, the onshore Silk Road and the nautical Silk Road are important channels for China's foreign trade and cultural exchanges. From the perspective of inheriting and upgrading the ancient Silk Road, "the belt and road initiative" has a profound historical origin and a humanistic foundation, and plays a significant role in improving the continuation. The "the belt and road initiative" strategy has a profound background of the times, and this strategy is a comprehensive, systematic and open development strategy.

![A rough road map of the belt and road initiative](image)

**Figure 1.** A rough road map of the belt and road initiative

2. **My country's participation in the belt and road initiative and the Necessity of Regional Integration in Northeast Asia**

In order to integrate Northeast Asia into the "the belt and road initiative", that is important to enhance the analysis of the necessity of integrating this region into the application of the "the belt and road initiative" initiative. The specific performance is as follows:

(1) Affected by many unfavorable factors, such as unreasonable economic structure and tasks in economic alteration, the economical growth in Northeast China has been hindered to some extent. In view of this situation, if we can carry out the research work of attaching importance to the amalgamation of Northeast Asia into the development of "the belt and road initiative", we could strengthen the cooperation between Northeast Asia and Northeast China, and enhance their dependence on each other, thus providing guarantee for the realization of the revitalization goal of Northeast China;
(2) If Northeast Asia can be integrated into the development process of "the belt and road initiative", vigour needed for China's economic development can be imported from Russia and Mongolia, thus reducing the energy import cost and improving the efficiency of my country's vigour shortage;

(3) In the process of accelerating regional economic integration, paying attention to the integration of Northeast Asia in the growth of "the belt and road initiative" can promote regional economic integration. At the same time, it can also provide guarantee for the stability of regional economic development. [1]

3. Taking Northeast China as an example to analyze the cooperation countermeasures in Northeast Asia

3.1. The economic difficulties faced by Northeast China since the reform and opening up
Northeast China is a very important Old industrial bases in China. Since the reform and opening up, due to the adjustment of my country's economic structure. Northeast heavy industry base, lack of self-capacity, has some problems, such as slow economic development, unbalanced economic structure, slow growth of Per capita income and so on. At the same time, we can clearly find that the economic development speed of Northeast Old industrial bases is obviously lower than that of domestic advanced areas. Therefore, the economic status of Northeast Old industrial bases declined relatively, and the economic scale expanded slowly.

3.2. The pulling effect of economic cooperation in Northeast Asia on Northeast China's economy
(1) Expanding the scale of foreign trade in Northeast China In 2009, the trade volume between China and Northeast Asian countries reached 462 billion US dollars, and Northeast China's exports to Northeast Asia accounted for 23% of national exports. With the further acceleration of regional economic cooperation in Northeast Asia, the demand for various resource products, raw material products and manufacturing products will greatly increase, which will greatly promote the development of foreign trade in Northeast China.

(2) Market pulling effect Northeast Asia cooperation is conducive to the expansion of the internal market and the improvement of the degree of integration, and will also be very beneficial to the market-oriented construction in Northeast China. The in-depth development of cooperation in Northeast Asia will help Northeast China absorb the experience of countries with more mature market economy systems in the region, better integrate into the Northeast Asian economic circle, and constantly strengthen the maturity of market entities and the construction of institutional systems in accordance with relevant international practices and contracts, so as to promote market growth.

(3) Two-way complementary advantages. Northeast Asian countries have different levels of economic development, the obvious economic structure gradient and strong complementarity. The advantages of Japan and South Korea are capital and technology; China's advantage is that it has a large market of cheap labor with high quality; North Korea, Mongolia and the Far East of Russia are rich in resources. Such economic complementarity has created very favorable qualification for area economical collaboration. Through economic collaboration, we can perform full performance to the comparative advantages of different regions, realize the strategic division of labor, and form a good interactive and cooperative relationship, thus promoting the economic development of Northeast Asia, especially Northeast China.[2]
3.3. Strategies for Accelerating Northeast China's Participation in Northeast Asia's Regional Economic Cooperation and Revitalizing Northeast China's Economy

(1) Adjustment of the Endogenous Structure of Northeast China's Economy. Determine the direction of industrial adjustment and development from the height of economic globalization and international industrial division of labor. Make Northeast China actively complement its neighboring countries by relying on geographical advantages and develop together. Further transform traditional industries, build a brand-new industrial system, develop modern equipment manufacturing industry, cultivate new technology industries and develop ecological agriculture. Strive to promote the upgrading of Northeast Old industrial bases in the regional economic cooperation in Northeast Asia.

(2) Promoting the Improvement of Cooperation Mode. At present, the cooperation between Northeast China and Northeast Asia countries or regions is mainly based on the differences in resource factor endowments, which can be summarized as a "complementary" cooperation mode. With the application of the "re-industrialization" scheme in Northeast Old industrial bases, the cooperation between Northeast China and Northeast Asia in the field of heavy chemical industry has deepened, which needs to be upgraded from complementary to strategic. The strategic cooperation between Northeast China and Northeast Asia can be accelerated in the following four aspects: First, scientific and technological cooperation. Based on computer software, we can cooperate to develop new environmental protection textile fabrics, and jointly develop mining and refining technologies. Second, higher-level production cooperation and transnational investment. That is, to improve the economic collaboration between Northeast China and Northeast Asia from a long-term strategic level, and to carry out production cooperation and transnational investment. This not only helps to improve the overall cooperation level between the two sides, but also has a strong demonstration effect. Third, energy and environmental cooperation. Northeast Old industrial bases needs to strengthen the overall deployment and planning of energy and environment cooperation with Northeast Asian countries or regions, and gradually establish regional organization and coordination mechanism of energy and environment, regional fund raising mechanism, regional energy and environment standards and evaluation mechanism. [3]

(3) The establishment of a free trade zone, Japan and Korea and Northeast Asia cooperation as soon as possible. Although it has embarked on the road of institutionalized development, the progress is still not fast. The founding of China-Japan-Korea Free Trade Area will greatly improve the growth of regional economic cooperation in Northeast Asia. That experience of the establishment of the European Union and North American Free Trade Area shows that regional economy needs core countries or axis countries. Accelerating the construction of China-Japan-Korea Free Trade Area will more effectively promote the formation of the core factors of the three countries in Northeast Asia regional cooperation.

4. "The belt and road initiative" Northeast Asia Economic Cooperation Strategies computer software-based analysis of the initiative

4.1. Pay attention to the implementation of national initiative.
The deepening of global integration and the expansion of influence scope have a great shock on the economical growth of different regions. Facing the complicated political situation, so as to realize the
growth of "the belt and road initiative" and the deepening of regional economic cooperation in Northeast Asia, it is important to take note of the implementation of national initiative. The specific manifestations are as follows:

(1) Starting from the national level, it is necessary to implement the "the belt and road initiative" initiative. All states in Northeast Asia can combine their basic national conditions, and in the process of their own economic development, Continue solidly advocates docking, and gradually realize the goal of regional economic cooperation in Northeast Asia with effective initiatives to ensure the good implementation of the "the belt and road initiative" initiative;[4]

(2) Because Japan in Northeast Asia is a developed country, North Korea's economic system is a planned economy, and it attaches significance to research and growth of nuclear weapons in the process of improving its international influence, which affects the stability of regional development. Therefore, beneath the "the belt and road initiative" initiative, that is necessary to further promote the scientific guidance of North Korea in the regional economy of Northeast Asia and actively strive for Japan, so as to enhance the level of district economical collaboration in Northeast Asia and dig deep into the economical growth potential of different countries in the area;

(3) During the development of the "the belt and road initiative", countries in Northeast Asia shall take more notes of the importance of carrying out regional economic cooperation activities under the influence of this initiative, and vigorously support the corresponding economic cooperation activities, so as to diversify the ways of regional economic cooperation in Northeast Asia under the implementation of national initiative.

4.2. Attach importance to local Continue solidly

Beneath the influence of "the belt and road initiative" initiative, in order to promote local economic cooperation in Northeast Asia and optimize its cooperation mode, it is also necessary to attach importance to local Continue solidly. The specific performance is as follows:

(1) Attention should be paid to Continue solidly in Northeast China. As an important node of "the belt and road initiative", Northeast China shall seize the new development opportunity, reform the state-owned enterprises, industrial structure and economic system, bring into full play the market role and stimulate vitality. In practice, under the guidance of national policies and guidelines, we should pay more attention to the economic development of Northeast China, improve its infrastructure, and gradually improve the attractiveness of overseas investment in this region, so that the overall development level of Northeast Asian economic cooperation areas can be continuously improved;

(2) Pay attention to Continue solidly in other border areas. In the procedure of implementing the "the belt and road initiative" plan, we shall combine the specific conditions of economic development in different countries in Northeast Asia, establish a local government cooperation mechanism, vigorously develop the economy of land border areas in Northeast Asia countries, and set up an open front line, thus forming a new pattern of driving the development of the whole Northeast Asia region by border areas;[5]

(3) Actively guide the cooperation between enterprises in different Northeast Asian countries in the application of the "the belt and road initiative" plan, so as to provide guarantee for the formation of industrial clusters and the realization of economic scale in Northeast Asian countries.

4.3. Make effective use of the development opportunities provided by the "AIIB"

With the support of "AIIB", the infrastructure of Northeast Asian states under the "the belt and road initiative" initiative can be improved, thus laying a foundation for the realization of the goal of regional economical cooperation in Northeast Asia, further integrating and utilizing various resources in the area, and realizing the sustainable growth of complementary commerce. Therefore, it is necessary to make effective use of the development opportunities provided by the Asian Investment Bank in promoting district economical application in Northeast Asia beneath the role of "the belt and road initiative", so as to improve the overall economical growth level of Northeast Asian countries.[6]
Figure 6. Flowchart for constructing significantly differentially expressed networks with sparsity

5. Conclusions
To sum up, doing a good job in the research of regional economic cooperation between the belt and road initiative and Northeast Asia has important practical reference significance, which is conducive to the scientific treatment of the cooperation between them, finding out and using new ways of regional economic cooperation, and gradually realizing the interconnection and intercommunication in regional economical growth. Therefore, it is significant to take note of the research on the regional economic cooperation between the belt and road initiative and Northeast Asia in combination with the development requirements of the times and the actual circumstance of China's economic development, so that the application of the "the belt and road initiative" initiative can achieve the expected results and meet the actual requirements of the economic development in Northeast Asia.

Acknowledgments
General Research Project of Higher Education Teaching Reform of the Department of Education of Heilongjiang Province; Project No. SJGY20190574.

References
[1] Minjie Hu, Ruzi Li, Wanhai You, Yaobin Liu, Chien-Chiang Lee. Spatiotemporal evolution of decoupling and driving forces of CO₂ emissions on economic growth along the Belt and Road [J]. Journal of Cleaner Production, 2020, 277, .
[2] Xu Jianying, Chen Jixing, Liu Yanxu. Partitioned responses of ecosystem services and their tradeoffs to human activities in the Belt and Road region [J]. Journal of Cleaner Production, 2020, 276, .
[3] Bo Gao, Junjiang Li, Benye Shi, Xiaojuan Wang. Internal conflict and Bank liquidity creation: Evidence from the belt and Road initiative [J]. Research in International Business and Finance, 2020, 53, .
[4] Sannie Siaw Foong Chong, John C. W. Lim, Toshiyoshi Tominaga. Developing key performance indicators to measure the progress of regional regulatory convergence and cooperation in Asia Pacific Economic Co-operations (APEC) [J]. AAPS Open, 2018, 4(1), 1-8.
[5] Yongrok Choi. Regional Cooperation for the Sustainable Development and Management in Northeast Asia [J]. Sustainability, 2018, 10(2), .
[6] Hyungmin Kim. On the Relationships among Economic, Diplomatic and Military Cooperation in Northeast Asia, 1950-2000 [J]. Korean Political Diplomacy Discussion, 2017, 39(1), 113-146.