

International Cooperation Relations and Supply Chain of the Republic of Korea in the Conditions of the Global Economic Crisis

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Abstract- This prime aim of this study is to investigate the relationship between imports, exports, supply chain management and international relations along with mediation effect of import & export policies. The Republic of Korea is one of the states whose participation in the system of international economic relations remains noticeable, despite the unfavorable background of external factors. The article sets the task of determining the sustainability of international cooperation relations of the Republic of Korea in the conditions of the global economic crisis.

Keywords: Export, Import, Foreign Trade, International Cooperation Zone, Core of the International Cooperation Zone

1. Introduction

The basis of modern international economic relations is international trade. Historically, international trade originated in the early stages of the global economy. Modern international trade continues to evolve, create new forms and mechanisms of exchange. Therefore, interest in various aspects of international trade remains in the focus of attention of both foreign and Russian researchers. The answer to the question of why countries participate in international commodity exchange was given in due time by the founder of economics, Adam Smith. He wrote: "If any country can supply us with any goods at a cheaper price than we are able to manufacture it, it is much better to buy it from her for some part of the product of our own labor, applied in the area in which we possess some advantage".

In international law enforcement practice, foreign trade is understood as trade between countries, consisting of the export and import of goods and services. Foreign trade is performed mainly through commercial transactions drawn up by foreign trade contracts [1]. Export of goods is the export of goods for sale on the foreign market. Import is the action by which goods are imported into the customs territory or which leads to the arrival of goods into the customs territory [2, 3].

Together, exports and imports from foreign trade. In modern economic science, there are various methods for assessing foreign trade. However, they do not allow

considering the process of international economic cooperation from the point of view of the sustainability of existing trade and economic ties [4].

However, the global crisis hit its economy as well. According to the data of the Bank of Korea in 2015. The country's GDP exceeded 1.5 trillion US dollars, but next year it decreased by almost 9%. The data in table 1 allow us to conclude that the South Korean economy is in a state of recession. According to the Statistics Korea in 2017 production capacities of South Korean enterprises were only 71% full, which became the lowest indicator since 1998. The IMF predicts disappointing forecasts regarding the prospects for the South Korean economy. According to his experts, in 2020 - 2.8%, in 2021 - 2.7%. IMF experts believe that the country's potential growth rate in the 2020s will drop to 2.2% per year [5].

Table 1. Republic of Korea GDP dynamics (2014-2017)

Years	GDP trillion dollars USA	Growth rate % to the level of 2014
2014	1,486	100
2015	1,558	104,8
2016	1,420	95,5
2017	1,460	98,3

But, despite the crisis, the country maintains a strong position in world trade. Possessing a critical situation in the worldwide economy, the Republic of Korea is a functioning member in joining forms in the Asia-Pacific district. Eleven states structure the center of its global participation zone on the medium-term interim. According to the data recorded by the World Trade Organization statistical service, the share of the Republic of Korea in world exports from 2013 to 2018 did not fall below 3%, and its share in world imports varies from 2.7 to 3.3 percent.

Table 2. Republic of Korea share in world exports and imports

Year	Share in world exports	Share in world imports
2013	3,0	2,7
2014	3,0	2,8
2015	4,0	3,3
2016	4,0	3,3
2017	3,2	2,7
2018	3,1	2,7

Occupying a significant position in the global economy, the Republic of Korea is an active participant in integration processes in the Asia-Pacific region. Eleven states form the core of its international cooperation zone on the medium-term interval [6]. It is quite stable, especially for export commodity flows. Export counterparties consistently account for 62 to 66% of South Korean exports. The gap between the maximum and minimum indicators is insignificant and makes up to 1.06. Obviously, in the complete absence of volatility, this indicator is 1.00. In this case, we can talk about the absolute stability of the core of the international cooperation zone. True, in a real situation, this state of affairs is unlikely and can be considered rather a theoretical circumstance [7, 8].

Literature proposed that competitive edge help out the company in survival. This competitive edge based on the effective production line of the firm. Firms with effective supply chain management succeed to satisfy their customer by supplying requisite standard goods within the stipulated timeline by timely producing the goods. Effective supply chain management system increase the production capacity of any organization which ends with high sale and bring more profit in the company [9]. There must be a balance between the import and exports of the country. The lowest the gap in between these will results stability of the economy but in any case export always stand ahead the imports.

The economic condition of any country can be verified from its export sector. The export industry of any country support the country. Export is to produce the goods or deliver the services outside the country boundary. The firm deals in export consider every aspect of their production line in order to meet the client's requirement. A single mistake in the organization production line will left its effect on the entire export process [10-12].

In terms of import, the stability of the core of the international cooperation zone is less durable. The gap between the maximum and minimum indicators is slightly larger and amounts to 1.17. In both export and import commodity flows, there is an increase in the core weight of the international cooperation zone between the Republic of Korea [13]. But more actively it was growing

due to imports. During the study period, South Korean imports grew faster (growth rate 113.66%) than exports (growth rate 10.39%), the advancing coefficient 1.099. This is partly due to the strengthening of the protectionist policies of the main partners in economic cooperation (USA, Japan), while maintaining a high degree of dependence of the country on imported raw materials and energy [14].

Moreover, the core structure of the international cooperation zone of the Republic of Korea is characterized by imbalance. According to export commodity flows, a group of leaders stands out in it - China, the USA and Japan. In terms of import commodity flows, the leaders are China and Japan. Other counterparty states are noticeably behind the lead group. Based on the system of international economic relations prevailing in the Republic of Korea, it is not difficult to conclude that trade relations with the triad China – the USA - Japan will be of key importance for maintaining this position in the world market for this country [15, 16]. The center structure of the worldwide participation zone of the Republic of Korea is described by awkwardness. As indicated by send out ware streams, a gathering of pioneers hangs out in it - China, the USA and Japan. Regarding import ware streams, the pioneers are China and Japan. Other counter gathering states are recognizably behind the lead gathering. Other participants in the core of the international cooperation zone of the Republic of Korea demonstrate the relative stability of their contacts.

Table 3. The core of the international cooperation zone of the Republic of Korea

	Export	2013	2014	2015	2016	2017	2018
1.	Australia	1,7	1,8	2,0	1,5	3,5	1,5 8
2.	Vietnam	3,7	3,9	5,3	6,6	8,3	8,0 3
3.	Germany	1,4	1,3	1,2	1,3	1,5	1,5 3
4.	Indonesia	2,0	2,1	1,5	1,3	1,5	1,4 5
5.	China	26, 0	25, 4	26,0	25, 1	24, 8	26, 8
6.	Malaysia	1,5	1,3	1,5	1,5	1,4	1,4 7
7.	Singapore	4,0	4,1	2,8	2,5	2,0	1,9 3
8.	USA	11, 0	12, 3	13,2	13, 4	12	12, 01
9.	Taiwan	2,8	2,6	2,3	2,5	2,6	3,4 2
10	Thailand	1,4	1,3	1,2	1,3	1,3	1,4
11	Japan	6,2	6,1	4,8	4,9	4,7	5,0

							4
12	Total	63,7	64	61,8	62,85	64,8	65,86
	Import						
1.	Australia	4,0	3,9	3,8	3,7	4,0	3,86
2.	Vietnam	1,4	1,5	2,2	3,1	3,4	3,66
3.	Germany	3,7	4,0	4,8	4,6	4,1	3,88
4.	Indonesia	2,5	2,3	2,0	2,0	2,0	2,07
5.	China	16,1	17,1	20,6	21,4	20,4	19,9
6.	Malaysia	2,2	2,1	2,0	1,8	1,8	1,9
7.	Singapore	2,0	2,2	1,8	1,7	1,9	1,49
8.	USA	8,0	8,6	10,0	10,6	10,6	10,99
9.	Taiwan	2,8	3,0	3,8	4,0	3,8	3,12
10	Thailand	1,0	1,0	1,1	1,1	1,1	1,02
11	Japan	11,6	10,2	10,5	11,7	11,5	10,2
12	Total	57,5	58,9	65,5	67,8	67,1	65,36

2. Literature Review

Foreign trade, as you know, is the main form, although not the only one, of the country's participation in international economic relations. However, foreign trade turnover, although it is a basic indicator reflecting the nature of the country's participation in the system of international economic relations, nevertheless, taken by itself, does not allow to determine the quality side of international cooperation relations of the state participating in foreign trade, namely their stability [17]. The essence of the proposed methodology is that all operational territorial units (states of the world) involved in trade interaction with the state-object of study are divided into groups, depending on the intensity of their participation in the turnover [18]. The first group includes those states which, in terms of export and import in the commodity circulation of the state-object of study, have a specific gravity of one or more percent; the second group includes countries that have a share of more than one percent only in exports or only in imports in the turnover of the state-object of study. The third group includes countries with a share of less than one percent in exports and imports in the turnover of the state of the research object. The fourth group includes countries with less than one percent in export or import of goods in the country of

the research object and, do not participate in export or import turnover, respectively [19].

Supply chain is one of the organization operational factor which is connected almost all the sections [20]. Clients are too much conscious about their demands. They consider every single factor. The most consider factors are quality and delivery of the product. Organizations deals in export avoid tom compromise on their supply chain section. Supply chain management ensures the timely production with superior quality. As the business has no boundaries, with the passage of time the competition between the companies in increasing. The sole way of survival in such a competition is competitive edge. Those firms who succeed to have this edge stay alive in the competition [21]. Many of the time your export linked with the imports. An organization at a single time acts as importer and exporter. In order to meet the export demands a balance between both the sections is necessary. The improvement in standard of living of any country is the ultimate cause of any nation like to provide the goods and services according to the international standards [22, 23]. Not only export but also the import has an effect on the standard of living of any nation. Export support the nation with financing and import results in provide the international standard products in order to meet the world standards. Likewise, export supply chain also plays an important role. Supply chain is involved in all the steps to pick the raw material from vendor to supply the finish product to customer [24].

It is quite natural to assume that the first group of counterparty states is the most significant trading partner for the state-object of study, the second group of counterparty states is less significant than the first, but more significant compared to the third and fourth groups and so on in decreasing order [25, 26]. Assigning an appropriate annual significance score to each group (from 4 to 1), we find that all states of the first group in this year have a rating of four points, the second group - three points, the third group - two points, and the fourth - only one point [26]. The coefficient (conditional rating of the region) is determined by the formula 1:

$$YPP = X_1 + X_2 + \dots X_N$$

If we consider the participation of the state-object of study in the international trade system as a process, and divide the time periods within which this process occurs for a short-term period (three years), medium-term period (five years) and long-term period (ten years). Then it is easy to notice that all countries that fall into the first group will have a rating of 12 points in the short term, 20 points in the medium term, and 40 points in the long term. So, we can calculate the significance rating for each the country with which the research object state has registered foreign trade turnover at any time interval. For example, short-term (at three years), medium-term (at five years)

and long-term [27]. The states that fall into the second, third and fourth groups will have floating ratings of significance for the state being the object of study.

A substantial clarification is needed. When analyzing the nature of foreign trade relations of the subject of international economic relations of the state-object of study, it is not the share of any country in the foreign trade partner's turnover that is taken into account, but the location of this country in the specified range throughout the entire time lag accepted for analysis [28]. Therefore, not all countries with a high share in the foreign trade of the country, in our case, the Republic of Korea, are included in its core zones of international cooperation relations, but only those whose indicator in a given interval has never dropped below the established value [29].

Due to the prevailing division of labor and specialization of production, each state, through trial and error, forms around itself an international cooperation zone. Under the international cooperation zone between the state-object of study, we mean a group of countries - counterparty with which it has a certain level of trade and economic ties. The international cooperation zone is heterogeneous in its structure. It can distinguish the core, center and periphery. The core is a group of countries, characterized by the most dense and stable trade relations with the state-object of the study. Only those counterparty states that fall into the first group should be included in the core of the international cooperation zone [30]. A center is a group of counterparty states that have tight, but less stable trade relations with the state-object of the study. This group should include countries that fall into the second group.

Peripherals are a group of counter-states that have weakly expressed and unstable trade relations with the state-object of the study [31]. This includes states that find themselves in the third and fourth groups according to the selected evaluation criterion. Based on the above methodology, the authors conducted a study whose purpose was to establish the presence (or absence) of stable foreign trade relations of the Republic of Korea in the medium term [32].

For the purposes of this article, the Republic of Korea has been selected as the state-object of the study. This choice is not accidental. It is dictated by the potential for foreign economic interaction that this state possesses. The Republic of Korea is one of the most developed countries in the modern world economy, which has managed to overcome economic backwardness and enter the 21st century along with the leading economies of the world. The hypotheses proposed from the above debate are:

Hypothesis 1: These is positive association among imports and International Relations.

Hypothesis 2: These is positive association among Supply Chain Management and International Relations.

Hypothesis 3: These is positive association among exports and International Relations.

Hypothesis 4: Country import and export policies has positive mediation among the links of imports and International Relations.

Hypothesis 5: Country import and export policies has positive mediation among the links of Supply Chain Management System and International Relations.

Hypothesis 6: Country import and export policies has positive mediation among the links of exports and International Relations.

3. Research Methods

To study the place of a country in the system of international economic relations, the authors rely on the methodology developed by them that allows to identify the stability of foreign trade relations of the state, that is the object of study (hereinafter the state-object of study). The quantitative method of data collection was adopted by the study and for this purpose 540 questionnaires were distributed among the respondents out of them only 420 were returned that have repose rate around 77.77 percent. The imports (IM) has 12 items, supply chain management (SCM) has 9 items, exports (EX) has 5 items, imports and exports policies (IEP) has also 5 items and international relation (IR) has 4 items. These are presented in figure 1.

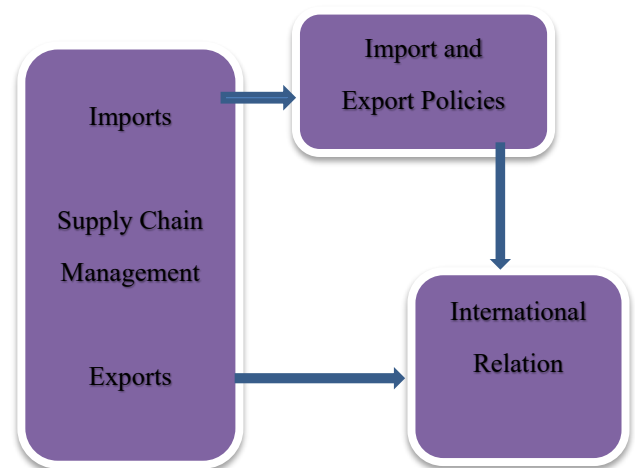


Figure 1. Theoretical framework

4. Findings

The findings firstly expose the relationship among the items and statistics show that items are extensively correlated because loadings and AVE are not less than 0.50 while CR and Alpha values are not lower than 0.70. These are presented in Table 4.

Table 4. Convergent validity

Items	Loadings	Alpha	CR	AVE
EX2	0.666	0.746	0.810	0.589
EX3	0.843			
EX5	0.783			
IEP1	0.929	0.877	0.913	0.679
IEP2	0.879			
IEP3	0.682			
IEP4	0.734			
IEP5	0.869			
IM1	0.683	0.918	0.929	0.524
IM10	0.712			
IM11	0.776			
IM12	0.778			
IM2	0.753			
IM3	0.678			
IM4	0.699			
IM5	0.700			
IM6	0.686			
IM7	0.722			
IM8	0.742			
IM9	0.747			
IR1	0.740	0.798	0.868	0.623
IR2	0.754			
IR3	0.836			
IR4	0.822			
SCM1	0.761	0.898	0.915	0.547
SCM2	0.727			
SCM3	0.753			
SCM4	0.708			
SCM5	0.660			
SCM6	0.707			
SCM7	0.791			
SCM8	0.823			
SCM9	0.711			

The results secondly expose the association among the constructs and statistics show that constructs are not extensively correlated because the values of Heterotrait Monotrait ratios are not more than 0.90. These are presented in Table 5.

Table 5. Heterotrait Monotrait ratio

	EX	IEP	IM	IR	SCM
EX					
IEP	0.404				
IM	0.240	0.511			
IR	0.344	0.749	0.708		
SCM	0.306	0.725	0.594	0.747	

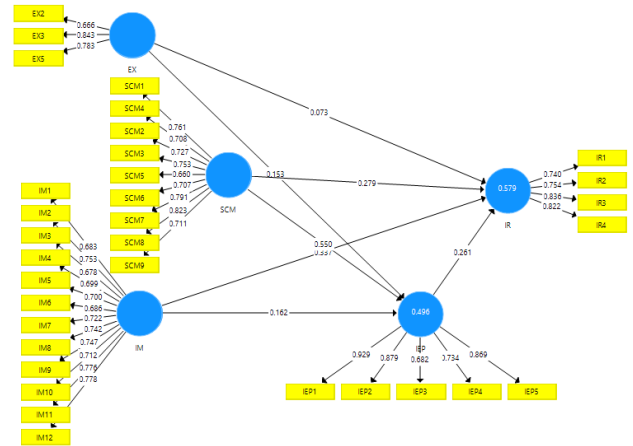


Figure 2. Measurement model assessment

The path analysis of the existing study expose the positive association among the imports and international relation, exports and international relation and supply chain management and international relation and accept H1, H2 and H3. Furthermore, the results also show that imports and exports polices have positive mediation among the links of imports and international relation, exports and international relation and supply chain management and international relation and accept H4, H5 and H6. These are presented in Table 6.

Table 6. Path analysis

	Beta	S.D.	t-values	p-values
EX -> IEP	0.153	0.044	3.502	0.001
EX -> IR	0.073	0.035	2.082	0.038
IEP -> IR	0.261	0.050	5.262	0.000
IM -> IEP	0.162	0.051	3.154	0.002
IM -> IR	0.337	0.041	8.282	0.000
SCM -> IEP	0.550	0.050	10.971	0.000
SCM -> IR	0.279	0.052	5.330	0.000
EX -> IEP -> IR	0.040	0.013	2.986	0.003
IM -> IEP -> IR	0.042	0.015	2.885	0.004
SCM -> IEP -> IR	0.144	0.034	4.250	0.000

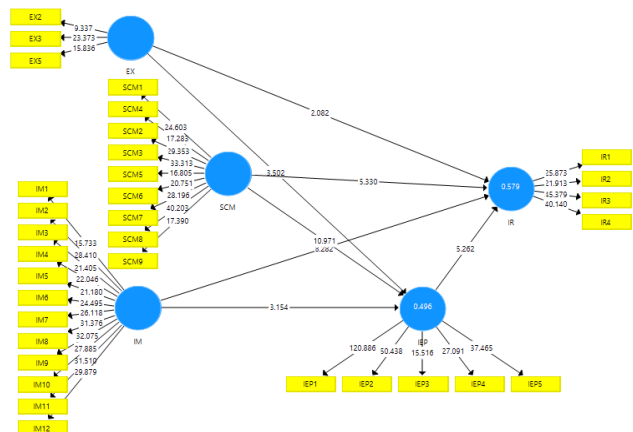


Figure 3. Structural model assessment

5. Discussions and Conclusion

The study allows us to draw the following conclusions:

The global economic crisis had a braking effect on the foreign trade of the Republic of Korea, but did not fundamentally affect the structure of its international trade relations; The Republic of Korea has formed around itself the core of the international cooperation zone, consisting of eleven counterparties. For the studied period [33], no new counterparty states were eliminated from it or any new counterparties appeared in it, which allows us to draw a conclusion about the stability of international cooperation relations of the Republic of Korea [34].

The weight of the core of the zone of international cooperative interaction in the foreign trade turnover of the Republic of Korea for the studied period increased, which indicates the concentration of the country's international economic ties around significant partners and the weakening of economic ties with the peripheral zone of the world economy;

The core of the international cooperation zone of the Republic of Korea has a "short shoulder" and is territorially closed by the Asia-Pacific region [35].

In research literature there is an appositive trend recorded in between exports and relation between the nations. The results concludes that there is a positive association between imports, exports, supply chain and international relations. The results also proposed that import and export policies of any nation's acts as mediator in the relationship between imports, exports, supply chain and international relations.

In many of the investigation it is proposed that supply chain is one of the factors which effect the import and export industry which ultimately having association with relations between the countries. More research is needed in this regards to strengthen the results received from this investigation. Although import and export are key players in strengthen the international relations but there are many other factors which needed to be investigate.

REFERENCES

- [1] J. Moon and H. Lee, On the internal correlates of export stage development: an empirical investigation in the Korean electronics industry, *International marketing review*, Vol pp. 1990
- [2] M. K. Westermann-Behaylo, K. Rehbein, and T. Fort, Enhancing the concept of corporate diplomacy: Encompassing political corporate social responsibility, international relations, and peace through commerce, *Academy of Management Perspectives*, Vol 29, 4, pp. 387-404, 2015
- [3] C. Jourde, The international relations of small neoauthoritarian states: Islamism, warlordism, and the framing of stability, *International Studies Quarterly*, Vol 51, 2, pp. 481-503, 2007
- [4] A. Heinrich, *Large corporations as national and global players: the case of Gazprom*, in *Explaining Post-Soviet Patchworks*. 2017, Routledge. p. 97-115.
- [5] S. Fuller, H. Bello, and O. Capps, Import demands for US fresh grapefruit: effect of us promotion programs and trade policies of importing nations, *Journal of Agricultural and Applied Economics*, Vol 24, 1, pp. 251-260, 1992
- [6] P. Kumar Narayan* and S. Narayan, Are exports and imports cointegrated? Evidence from 22 least developed countries, *Applied Economics Letters*, Vol 12, 6, pp. 375-378, 2005
- [7] T. A. Kokodey, A composite technique for modeling and projecting food consumer behavior, *Journal of international food & agribusiness marketing*, Vol 24, 3, pp. 231-249, 2012
- [8] S. Smith, Paradigm dominance in international relations: The development of international relations as a social science, *Millennium*, Vol 16, 2, pp. 189-206, 1987
- [9] P. K. Narayan and S. Narayan, Is there a long-run relationship between exports and imports? Evidence from two Pacific Island Countries, *Economic Papers: A journal of applied economics and policy*, Vol 23, 2, pp. 152-164, 2004
- [10] S. Sidenko, The Socio-economic Dimension of Modern Globalization, *International Economic Policy*, Vol 1, pp. 71-93, 2004
- [11] N. R. C. P. o. U. T. P. w. P. E. Value and U. S. A. f. I. D. O. o. Science, *Underexploited Tropical Plants with Promising Economic Value: Report of an Ad Hoc Panel of the Advisory Committee on Technology Innovation, Board on Science and Technology for International Development, Commission on International Relations*. Vol. 16. 1975: National Academies.
- [12] R. J. Snyder, *Custom, Power and the Power of Rules: International Relations and Customary International Law*. By Michael Byers. Cambridge: Cambridge University Press, 1999. Pp. xxii, 250. US \$19.95 (paperback); US \$54.95 (hardback.), *International Journal of Legal Information*, Vol 28, 1, pp. 153-155, 2000
- [13] J. S. Barkin and B. Cronin, The state and the nation: changing norms and the rules of sovereignty in international relations, *International organization*, Vol 48, 1, pp. 107-130, 1994
- [14] P. Wilson, Exchange rates and the trade balance for dynamic Asian economies—does the J-curve exist for Singapore, Malaysia, and Korea?, *Open economies review*, Vol 12, 4, pp. 389-413, 2001
- [15] T. O. Awokuse, Causality between exports, imports, and economic growth: Evidence from transition economies, *Economics letters*, Vol 94, 3, pp. 389-395, 2007
- [16] M. Weiner, The Macedonian syndrome an historical model of international relations and political development, *World Politics*, Vol 23, 4, pp. 665-683, 1971
- [17] Z. Pastuszak, The philosophy of supply chain management in the new economy: net readiness in the net supply chain, *Managing Global Transitions*, Vol 2, 1, pp. 15, 2004

- [18] A. K. Tiwari and A. Ludwig, The export-led growth hypothesis for India: examining causality by a new approach in the time–frequency domain, *Applied Economics Letters*, Vol 21, 18, pp. 1297-1301, 2014
- [19] P. Schott, US manufacturing exports and imports by SIC or NAICS category and partner country, 1972 to 2005, *Notes*, Vol pp. 2010
- [20] L. E. Jraisat, *Information sharing in an export supply chain relationship: The case of the Jordanian fresh fruit and vegetable export industry*. 2010, Brunel University Brunel Business School PhD Theses.
- [21] L. Ling-yee and G. O. Ogunmokun, Effect of export financing resources and supply-chain skills on export competitive advantages: implications for superior export performance, *Journal of World Business*, Vol 36, 3, pp. 260-279, 2001
- [22] J. Wagner, Exports, imports and firm survival: First evidence for manufacturing enterprises in Germany, *Review of World Economics*, Vol 149, 1, pp. 113-130, 2013
- [23] K. Matin, Uneven and combined development in world history: The international relations of state-formation in premodern Iran, *European Journal of International Relations*, Vol 13, 3, pp. 419-447, 2007
- [24] C. Carrere and V. Strauss-Kahn, Exports dynamics: raising developing countries exports survival through experience, Vol pp. 2012
- [25] J. Baek, Does the exchange rate matter to bilateral trade between Korea and Japan? Evidence from commodity trade data, *Economic Modelling*, Vol 30, pp. 856-862, 2013
- [26] W. G. Tyler, The anti-export bias in commercial policies and export performance: Some evidence from the recent Brazilian experience, *Weltwirtschaftliches Archiv*, Vol 119, 1, pp. 97-108, 1983
- [27] G. M. Gallarotti, The limits of international organization: Systematic failure in the management of international relations, *International Organization*, Vol 45, 2, pp. 183-220, 1991
- [28] A. Genovese, et al., Sustainable supply chain management and the transition towards a circular economy: Evidence and some applications, *Omega*, Vol 66, pp. 344-357, 2017
- [29] Z. S. Davis, China's nonproliferation and export control policies: boom or bust for the NPT regime?, *Asian Survey*, Vol 35, 6, pp. 587-603, 1995
- [30] C. L. Mann, Supply chain logistics, trade facilitation and international trade: a macroeconomic policy view, *Journal of Supply Chain Management*, Vol 48, 3, pp. 7-14, 2012
- [31] J. Chen and B. Dong, A nonparametric estimation on the effects of import and export trade to economic growth in China, *Procedia Engineering*, Vol 29, pp. 952-956, 2012
- [32] F. Altemöller, Towards an international regime of supply chain security: an international relations perspective, *World Customs Journal*, Vol 5, 2, pp. 21-34, 2011
- [33] S. H. Jeh, *Russian Far East development and directions for improvement in Korean-Russian cooperation: Korea's perspective*, in *International cooperation in the development of Russia's Far East and Siberia*. 2015, Springer. p. 144-163.
- [34] S. Schmidt, To order the minds of scholars: The discourse of the Peace of Westphalia in international relations literature, *International Studies Quarterly*, Vol 55, 3, pp. 601-623, 2011
- [35] J. Cotton, The Rajin-Sonbong free trade zone experiment: North Korea in pursuit of new international linkages, Vol pp. 1996