Compiling Variables of Development on Shrimp Export Competitiveness Index

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Abstract. This study aims to compile the variables for the development of the shrimp export competitiveness index. The existence of a shrimp export competitiveness index is very important to measure the ability of shrimp products to compete in the international market. The shrimp export competitiveness index can be used by policy makers to identify Indonesia's challenges and strengths in designing Indonesia's shrimp export strategy. The high demand for shrimp from developed countries, coupled with the level of consumption that continues to increase, is an opportunity for Indonesia to increase the competitiveness of its shrimp products exports. The method used in this research is a qualitative method with literature review. The results of this study are the variables that build the shrimp export competitiveness index which are formed from 6 dimensions, namely Geographical Advantage, Human Resources Advantage, Business Environment Advantage, Sectoral Advantage, Market Advantage, and Political Economy Advantage.

Keywords: shrimp · export · Competitive · index · variables

1 Introduction

Shrimp is one of Indonesia's leading products which is included in the list of ten main Indonesian products released by the Ministry of Trade [1]. In 2021, Indonesia's shrimp exports reached 8,243.4 tons, with details of 2,328.7 tons of wild shrimp and 5,914.7 tons of cultured shrimp [2]. The export value of shrimp commodities reached 69,087.8 thousand USD, with details of 27,845.8 thousand USD of wild shrimp and 41,242.0 thousand USD of cultured shrimp [2]. If we look only at cultured shrimp, in 2021, Indonesia's shrimp exports increased by 56.91 percent from the previous year [2]. Indonesia ranks fourth as the largest shrimp exporter in the world, with a value of USD 1.4 billion or about 8.7 percent of the total world export value. The difference between Vietnam, which is right above it, is around 500 million USD and Argentina, which is right below it, 570 million USD [3]. The consumption of shrimp in several developed countries such as the United States, Europe, Japan, and China continues to increase by around 4 to 6 percent per year, so it becomes an opportunity for Indonesia to increase shrimp exports
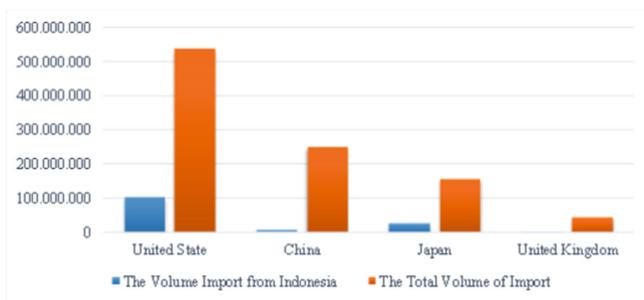
Fig. 1. The Comparison of Frozen Shrimp Import Volume from Indonesia and Total Frozen Shrimp Imports in 2018 (kg) [a.] Source: KKP, UN Data
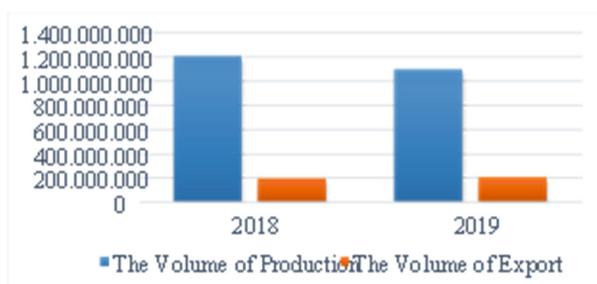

Fig. 2. The Comparison of Production and Export Volume of Indonesian Cultured Shrimp (kg) [b.] Source: KKP (processed)

to these countries [4]. According to Kementerian Kelautan dan Perikanan (KKP) data, the main export destinations for Indonesian shrimp are the United States, Japan, China, the European Union, and ASEAN countries. However, if we look at the contribution of Indonesian shrimp to the shrimp demand of the main destination countries, Indonesia is still unable to supply most of the domestic demand of these countries. This is a graph of shrimp imports from destination countries and the contribution of Indonesian shrimp imports in these countries Fig. 1.

The graph above presents the contribution of Indonesian shrimp has not been able to supply most of the shrimp imports from the main export destinations of Indonesian shrimp, especially frozen shrimp. Indonesian frozen shrimp have not been able to dominate the shrimp market in these countries. Because shrimp consumption increases every year, Indonesia has the opportunity to increase shrimp exports, especially to the main destination countries for Indonesian shrimp exports. When viewed from the export volume, there is a fairly large difference between the volume of national cultured shrimp production and its export volume in 2018 and 2019. This is a comparison of Indonesia cultured shrimp production and exports chart Fig. 2.

Based on the graph above, in 2018 Indonesia only exported 16.3 percent of the total national shrimp production, as well as in 2019, only 18.9 percent of shrimp production was exported. There are many opportunities for Indonesia to increase their exports, it

supported by the large volume of Indonesian shrimp production. Increasing of the exports have to be supported by the increasing of competitiveness.

Competitiveness was defined as the ability of a country to compete effectively at the global level [5]. Export competitiveness is very important for a country to survive in the global market. A country that has advantage than the other countries, it can be in the form of competitive advantage, absolute advantage or comparative advantage. Competitive advantage shows that a country has more value than other countries, absolute advantage shows that a country has specialization in production, which other countries do not have, while comparative advantage shows that a country has advantages that can be built more effectively, compared to other countries. In summary, export competitiveness shows that a country has more value, specialization, and advantages than other countries.

For example, the Porter's diamond model uses four variables to determine competitiveness, namely factor conditions, demand conditions, related and supporting industries, strategy, company structure and competition (firm strategy, structure, and rivalry). In addition, there are supporting variables that determine competitiveness such as the opportunity factor and the government factor.

The importance of measuring the competitiveness of shrimp exports is expected to describe the condition and ability of Indonesian shrimp products to compete in the global market. This shrimp export competitiveness index can be used by shrimp-producing regions in Indonesia to measure the success of shrimp sales in the international market. The results of these measurements can be used by policymakers to identify the challenges and strengths of shrimp exports in designing shrimp export strategies in the global market, especially for the main destination countries for Indonesian shrimp exports.

This study tries to initiate the compiling of the variables for the development of the export competitiveness index, especially in the shrimp commodity. The compiling of the main components adopted the Porter's Diamond model, Revealed Comparative Advantage (RCA), Gravity Model, and several components taken from literature reviews. The purpose of compiling this component create a common perception regarding the competitiveness of shrimp exports in the international market so that a comprehensive and appropriate policy can be drawn up.

2 Methodology

Export competitiveness is a country's ability to generate an export surplus [6]. According to the World Bank if global exports increase and the country's exports increase beyond global exports, in other words the country has competitiveness [7]. This study tries to compile indicators from various instruments that can be used to measure the competitiveness of the country's shrimp exports.

This study uses a literature review method, involving 11 instruments used to measure a country's competitiveness. The 11 instruments are Technologically Advance Domestic Value Added (TADVA), Measuring Export Competitiveness.

(MEC) by the World Bank, Export Competitiveness by International Trade Center (ITC), Porter Diamond Model, Global Competitiveness Index, Revealed Competitiveness Advantage (RCA), Gravity Model, Relative Trade Advantage (RTA), Constant Market Share (CMS), Trade Specialization Index, and Export Dynamic Product.

Each instrument will have an indicator installed on the instrument. Then, the writer tries to make a categorization based on all indicators. This categorization is a new instrument, which the author tries to offer to be used in measuring the competitiveness of the country's shrimp exports. Then, the existing indicators were tested using KMO Test, Bartlett's Test and Anti Image Correlation.

3 Discussion

3.1 Competitiveness and Indtrument of National Trade Competitiveness

In the cheapest context. Productivity in this framework can ensure the mutual sustainability of the industry and people's living standards in the long term.

Instruments of state competitiveness in international trade are growing, one of which results from the contribution of various studies which see that the superiority of trade performance and productivity is not enough. State competitiveness exists when the state can stimulate development and ensure growth both in terms of production inputs, trade performance, and the productivity of the industries in it [8]. It is also necessary to calculate the growth and share of the country in these elements. Indicators such as market share, for example, can be involved because they describe the share and relative position of a country in the country's ability to produce and trade a commodity.

Competitiveness instruments also need to consider the basic logic of competitiveness, the scope of competition, and the level of analysis. Instruments at the country level, in particular, must be able to accurately measure and represent: the country's development, the ability to control resources and capital, the attractiveness of the country as a center for operations and production, cultural and political compatibility that is appropriate for the business climate, the ability to grow and control the portion of the trade, as well as the bargaining position and interdependence of countries in the international trading system [9].

A competitiveness instrument focused on international trade has been developed by Vahalík and Staníčková. In the second logic, trade competitiveness is the ability of a country to position itself in the international market and its ability to increase or maintain various supporting factors. This instrument locates two main factors. Input and output factors are built from various indicators, including: the share of country trade to GDP and global trade, concentration and diversification indices, and the value of technology intensity and human resources; all of which can be used to see the competitiveness of imports or input factors and exports or output factors. This instrument also adds several factors that are taken into account as input factors as the state capital, including: inflation and interest rates, political stability and government effectiveness, as well as conditions for technological adaptation and availability of transportation infrastructure [10]. This instrument was built by performing factor analysis on data sourced from the World Bank's trade competitiveness diagnostic toolkit.

An instrument that focuses on discussing competitiveness in specific aspects such as technology, one of which was built by M. Markaki and G. Economakis. The competitiveness instrument represents the structural relationship between the actual condition of the country's economy and the ability to grow that economy. This is built from the level of diversification and production strength that focuses on a leading industrial sector

of the country that cannot be separated from the development and implementation of technology for production in an industry. This technology also plays a role in determining the output of production for both domestic and export trade. This competitiveness instrument offers a Technologically Advanced Domestic Value Added (TADVA) model, which is a measurement of the superiority of a country's technology compared to export revenues [11]. The value of the technological advantage is the accumulation of technology level values in a country's industrial sector obtained from Eurostat, and only takes into account the value of industrial technology at high and medium levels.

Porter's Diamond Model (PDM) is also an instrument for measuring country competitiveness which is often used for analysis at the country level. This theory explains 4 variables of competitive advantage in ensuring the creation of ideal conditions for companies and industries, namely:

a. Conditions of factors of production include:
- human resources (skills, number of workers, education, wages)
- natural resources (variant, number of reserves, geographic area)
- knowledge resources (development of science, literacy level, technology, research, and educational institutions)
- capital resources (cost of capital, accounts payable, receivables, investments)
- infrastructure (quality, quantity, transportation, and communication systems).
b. Demand conditions, in the form of:
- demand composition (variant, market segment) - amount of demand and growth - internationalization needs.
c. Related industries, namely:
- the advantages of related and supporting industries
- related industry innovations and supporting industries.
d. Strategy, structure and competition also include the vision, values, and goals of the industry as well as in the domestic and international context. There are 2 additional variables involved with the assumption that they have the potential to drive the overall performance of the above variables, namely the change and government variables. Variable change is a condition of extraordinary events at the international level, such as crises, wars, technological inventions and extinctions, international financial movements, and changes in the political attitudes of other countries. Meanwhile, the government variable is the birth of policies and subsidies in various aspects of community and state life [12].

The development of the competitiveness index is also a concern of international organizations such as the World Bank which issued the Measuring Export Competitiveness (MEC). This instrument was built from the results of research by Gaulier et.al [13] which involved five main factors, namely export performance, export market share, geographical specialization, sectoral specialization, and nominal and effective exchange rates (NEER and REER). The study mapped the conditions of 228 countries and territories in 5,300 world trade products from 2005 to 2013. This instrument places export performance as the main factor. For Gaulier et.al [13] the measurement of export performance by many researchers by measuring the value of exports is too simple and can lead to misinterpretation because this concept is a measurement at one time. The growth

value which is considered to be more representative of competitiveness is then involved, namely, the aggregate means a value of export value growth and the growth of the export market share of all state products.

In the logic of Gaulier et.al [13], market share control is a representation of the country's competitiveness in trade and is one of the key factors. This factor in the MEC instrument is measured by the value of trade, trade volume, and the country's ability to maintain the selling price of various export products. The advantage of the Gaulier et.al [13] instrument is the involvement of compositional effects factors, one of which is the sectoral specialization factor. This factor is built by looking at the aggregate value of the skill level and education of the country's human resources, the level of technology implemented in the industry, and the level of output of the products produced. This factor also summarizes the country's overall trade products into 4 commodity levels and 14 commodity categories. Other factors are also involved, namely other compositional effects in the form of geographical specialization. This factor measures the level of suitability of a country to produce trade products.

The measurement of the country's competitiveness is also the concern of various other international organizations, namely the World Economic Forum which issued the Global Competitiveness Index (GCI 4.0) Instrument, which contains 4 main variables, namely:

a. Enabling Environment – contains the pillars of institutions, infrastructure, adoption of information and communication technology, and macroeconomic stability of the country.
b. Human Capital – consists of the pillars of health and skills.
c. Market – built on the pillars of product market, labor market, financial system, and market size.
d. Innovation Ecosystem – dynamic business and innovation capabilities.

The GCI 4.0 instrument involves a total of 98 indicators which is also an improvement from the GCI instrument issued by the World Economic Forum in previous years [14]. The International Trade Center (ITC) has also built an instrument that measures the competitiveness of countries specifically in the trade aspect. This instrument consists of 3 main variables, namely:

a. Exporter profile – consists of: indicators of export value, export growth, export and import portion of the country's overall trade, trade balance, and relative value of trading units.
b. Actual trade performance – consists of: net export value, exports per capita, the country's share of total exports compared to the world, commodity diversification value, product concentration level, market diversification value, and market concentration level.
c. Changes in the world market share – consist of: the value of competitive effects, the value of geographic and production specialization, the value of the adjustment effect, and the value of changes in production and market concentration. These instruments can be used and utilized to show a comparison of the overall competitiveness of

countries individually, as well as in one or a group or even the entire country's export commodities [15].

3.2   Shrimp Sector International Competitiveness Instrument

The development of specific competitiveness instruments in certain sectors such as the performance of the shrimp sector has been carried out by many researchers, one of them by Yusuf, et.al. The Diamond Porter Model (DPM) was modified by involving measurements of 10 variables referring to the 6 main variables of the previous DPM. The variables in the instrument consist of: natural resources, human resources, science and technology, domestic demand conditions, export demand conditions, related industry conditions, supporting industry conditions, competition strategy, trade structure, competitive conditions, government factors, and other factors. Change. This study uses qualitative and quantitative data which then becomes a consideration for researchers to determine the scale value (between 1 to 10) of the conditions of each variable. Specifically, in the trade variable, 7 export products were involved, namely with HS codes 030616, 030617, 160521, 160529, 030635, 030636, and 030695 [16].

Similar to before, the development of country competitiveness instruments, especially in the shrimp sector trade, has also been carried out a lot. One of these instruments is Constant Market Share (CMS), which was built on Fathima and Salim's research to see India's competitiveness against its partner countries, amid various trade challenges facing the Indian shrimp sector. This CMS takes into account the sum of:

a. The export growth effect is the average change in exports (India) to partner countries.
b. The market effect is the difference between the effect of import growth (India) to a partner country and the total effect of import growth.
c. Market competitiveness effect, a residual result of reduction of import growth effect and market effect of a total change in exports (India). The data used in calculating the CMS is data on trading volume, trade value, and trade unit value (price). This CMS model adopts the model initiated by H. Tyszynski and previously developed by JD Richardson [17].

Another instrument that has also been used to measure the trade competitiveness of the shrimp sector is a Relative Trade Advantage (RTA). One of the RTA models used in Ismail and Abdullah's research was the background of the Malaysian shrimp sector, which experienced demand growth but decreased production. The RTA model originally developed by B. Balassa and further developed by T. Vollrath was modified in this study. The RTA is built with previously seen values:

a. Relative Export Advantage (RXA), is a comparison of the export value of a country's shrimp (Malaysia) to the overall exports of the country's food commodity group (Malaysia) divided by the ratio of the export value of shrimp exports to the country's group divided by the total export of food commodities from the country's group.
b. Relative Import Advantage (RMA), is the comparison of the value of shrimp imports of a country (Malaysia) to the total imports of the country's food commodity group

(Malaysia) divided by the comparison of the value of shrimp imports of the country group divided by the total imports of food commodity groups of countries.

RTA itself is the difference between RXA and RMA. The group of countries involved in the study were: Malaysia, Indonesia, the Philippines, Thailand, and Singapore. The shrimp trade in question involves three commodities with HS codes 030613, 030623, and 160520. Another instrument is also used, namely the Balance of Trade (BoT) which is the difference in the value of exports and imports of a country or group of countries in one or a period [8].

Other trade competitiveness of the shrimp sector can involve Revealed Comparative Advantage (RCA) instruments. RCA itself is an RTA building instrument. The RCA model was used in the research of Wati, Wen-I, and Mustadjab which tried to see the advantages of Indonesia's shrimp export partners. And Thailand. This research is motivated by the rich natural conditions of Indonesia and the availability of large sources of seafood, but with the fact that Indonesia's position as an exporter is declining compared to several other Asian countries. The RCA model explains the comparison of the export value of a product to the total export value of product groups from a country to a group of countries, which is divided by the total export value of a product to the total export value of product groups from the world to a country or group of countries. The RCA model in this study was modified by taking into account the following elements:

a. The volume of export of an Indonesian shrimp product to partner countries
b. The value of export of an Indonesian shrimp product to partner countries
c. The total value of export of Indonesian shrimp products to partner countries.
d. The value of export of a shrimp product from the world to partner countries
e. The total export value of shrimp products from the world to partner countries.

RCA is very appropriate to do in measuring the comparison of the condition of a pair of countries, as well as seeing the pattern of exports and imports. This study also raised three commodities in the shrimp sector as in previous studies [19].

The competitiveness instrument, which is relatively different from the previous one, can be seen in the research by Sanny, Kusuma, and Willyanto. This instrument is built on a similar background to the previous one, where Indonesia is the largest shrimp exporter to the United States and Japan, but has begun to face competition from ASEAN countries and India. The model built in this study examines the effect of the country's currency exchange rate variables compared to the dollar, the country's GDP, population, and economic distance; partially and simultaneously to RCA, which is similar to previous studies. The new measurement involved is the economic distance calculated using the Gravity Model (GM). GM is a step-by-step calculation that sees the economic relationship of countries with an equation involving: the product of a constant multiplied by the value of a country's economic strength and the value of the economic strength of a partner country, which is divided by the total distance value of the two countries. Distance measurement itself is built from:

a. Distance is the geographical proximity of two countries
b. The total of an economic element in a given period

c. The value of an economic element at a time.

The economic elements in question can be GDP, supply of export goods, production results, and others. This study also attempts to map the position of 7 countries using the Boston Consulting Group (BCG) matrix. The BCG matrix contains two axes of reference, namely: industry growth rate and relative market share value, both of which map countries into 4 quadrants [20]. Instruments for measuring the competitiveness of the country's shrimp exports can also use the Trade Specialization Index (TPI) and Export Dynamic Product (EDP). This instrument was involved in the research of Rian Destiningsih et.al, who saw the challenges of the shrimp sector from the implementation of cooperation and agreements between countries. The TSI instrument describes the country's position concerning it as an exporter and importer. This logic is built by referring to the fact that trade prevailing at the industry level as a whole is recorded as a country's trade performance. In this case, the state may tend to have a position as an exporter or importer. This TSI uses an equation in the form of the difference in the value of exports and imports of a country or group of countries at one time or group of time and product, compared to the total value of exports and imports of a country or group of countries at one time or group of time and product. Meanwhile, the EPD instrument is a measurement instrument as well as a mapping of the country's position in a matrix that refers to the following variables:

a. Share of Product Export (SPE), namely the growth of the export market share of a commodity from one or a group of countries
b. Share of Country Export (SCE), namely the growth of the export market share of all export commodities of one or a group of countries,

Both were measured in the last five years [21].

The EPD instrument is similar to the BCG model and then maps the position of the country in 4 quadrants consisting of:

a. Rising star, when the country's SPE conditions grow and SCE is competitive
b. Faling star, when the country's SPE conditions are stagnant and SCE is competitive
c. Lost opportunity, growing country SPE conditions and non-competitive SCE
d. Retreat, when the country's SPE conditions are stagnant and the SCE is non-competitive.

The position of the state in mapping the EPD can be used as a tool for the formulation of alternative policies that the state can use in the future [21]. The last instrument that uses a different pattern from previous studies is used by Khan, et.al. The development of this instrument is based on the view that in shrimp trading, many researchers do not care about variables such as cooperation, institutions, and commitment to market openness. The Revealed Symmetric Comparative Advantage (RSCA) instrument in the early stages was used to see the value of Bangladesh's shrimp trade competitiveness compared to partner countries. The RSCA value is calculated by the following equation: the comparison of the RCA value of Bangladesh with a partner country plus 1 point to the RCA value of Bangladesh with a partner country minus 1 point. A positive RSCA

value indicates positive competitiveness and vice versa. The calculation of the RSCA value involving.

RCA is followed by a correlation analysis based on Dynamic Autoregressive Distributed Lag (ARDL), to see the relationship between RSCA and the following variables:

a. GDP per capita country
b. Trade and money flow index
c. Shrimp trade price index against partner countries
d. Government institutional quality index
e. Market openness index
f. Number of trade agreements
g. and the free-market commitment index. The results of the study found that non-trade problems have a high degree of connectedness so it should be taken into account [22].

3.3   Compiling of Shrimp Export Competitiveness Instruments

Various instruments for measuring the competitiveness of the country's economy, the competitiveness of the country's trade, and the competitiveness of the shrimp sector that have been described previously; show the concept of competitiveness until now still needs to be studied to find a more ideal and appropriate formulation. This study tries to build an instrument for measuring the competitiveness of the country's shrimp sector which are not only describe the trade in the shrimp sector alone; but also, able to represent the country's advantages in encouraging the industry in it. This study offers a new instrument to measure the competitiveness of individual countries derived from 6 main dimensions:

a. Geographical Advantage
b. Human Resources Advantage
c. Business Environment Advantage
d. Sectoral Advantage
e. Market Advantage
f. Political Economy Advantage

Each dimension contains several factors and indicators of country performance. Geographical advantage in this study is placed as a dimension that describes the physical superiority of a country or its natural resources. In the shrimp sector, in particular, physical conditions and natural resources cannot be separated because they are the main source or input of production. This variable also summarizes the production factors of DPM [12], exporter profile variables [15], and all production input factors in the context of absolute advantage and comparative advantage of previous researchers [23, 24]. Geographical advantages in this instrument consist of:

a. The variable portion of the country's water area compared to the world's waters (seas, rivers, ponds) – this variable represents the country's superiority because it describes

the vastness of the place as well as the potential of shrimp farming. Countries that have this capital have a higher chance of producing shrimp commodities.

b. Location and climate variables – these variables measure how far away the whole country is from the equator. Countries that have locations with warm waters have the potential to have higher production yields because of the suitability of the country's climate for shrimp farming.

The next dimension is the Human Resources Advantage dimension. In this study, human resources are positioned as input as well as the main key to the production process, as well as being a determinant of productivity. This is also an attraction for investors and other countries to cooperate, partner, and trade with or from that country. This dimension adopts production factors from DPM [12], exporter profile factors [15], and GCI 4.0 human capital factors [14]. Variables derived from this dimension consist of:

a. Education and skills variables – a combination of various indicators, namely the education level index and the GCI 4.0 skill index. The education and skills of the state's human resources enable all industries in the country, including the shrimp sector, to have the potential to be more productive and capable of producing excellent quality products and services.

b. Health variable – is a combination of human health conditions within the country, as well as the country's ability to maintain a healthy environmental climate, and prevent and provide health facilities. Good variable conditions guarantee resources to remain productive and minimize non-production costs. This variable involves the Global Health Index (GHI) indicator.

c. The labor market variable – is a combination of various indicators in the form of the GCI 4.0 labor market index which summarizes: the level of employment policy, wage rates, index of hiring and firing practices, labor taxes, and the condition of the relationship between workers and companies. A high index value on this variable has the potential to guarantee the creation of a better environment and quality of life from the existence of a balanced relationship between labor conditions and industrial interests.

The Dimension of Business Environment Advnatage is the country's advantage to provide and become a place of production, as well as a place for investment and business in the shrimp sector. The business environment is not the input of production that determines productivity. The ideal business environment will be able to facilitate trade and create economic benefits. This dimension refers to production factors from DPM [12], exporter profile factors [15], and GCI 4.0 enabling environment factors [14]. The derived variables in this dimension are:

a. The infrastructure variable – is a composite of various indicators from the GCI infrastructure index. This variable summarizes the condition of land, sea, and air transportation infrastructure, including the utility infrastructure of industry. Countries with good infrastructure provide guarantees for industries to distribute goods effectively and efficiently.

b. The information communication technology variable – is a combination of various ICT adoption indicators in the GCI. This variable shows the ability and high implementation of information and communication technology in the country's society. This variable is a measure of the state's ability to provide or facilitate the running of business processes in various production sectors, including for product marketing purposes.

c. Innovation variable – is a combination of various innovation capability indicators containing indicators of collaboration index, research and development spending, publication and patent ratio per capita, as well as other indicators. Although this high value does not necessarily represent high innovation in the shrimp sector, the high innovation value shows the country's potential to encourage the growth of innovation is also large. In addition, innovations born in a country will sooner or later be implemented in various sectors in the country.

d. The business dynamics variable – a combination of indicators that measure the country's ability to provide convenience for the running of business and industry.

Sectoral Advantage is a dimension that describes how the production capability and productivity performance of the shrimp sector in a country. This dimension also describes the position of the shrimp sector in and for the country's economy. This research is based on this logic to reduce 10 variables including:

a. Shrimp sector exports per capita
b. Shrimp sector imports per capita
c. The portion of the export value of the country's shrimp sector compared to the world
d. The portion of the import value of the country's shrimp sector compared to the world
e. A portion of the export volume of the country's shrimp sector compared to the world
f. A portion of the volume of imports of the country's shrimp sector compared to the world
g. The average export price of the country's shrimp sector
h. Average import price of the country's shrimp sector
i. The difference in the trade value of the country's shrimp sector
j. The difference in the trade volume of the country's shrimp sector.

The market advantage is a country's ability to expand its international market, as well as its ability to dominate the world's shrimp sector trade portion. This dimension describes the country's position in the market, as well as the breadth of the country's trading partners. This study reduces 6 variables including:

a. Number of export destination countries for the shrimp sector
b. Number of import countries of origin for shrimp sector
c. Relative Export Advantage (RXA)
d. Relative Import Advantage (RMA)
e. 5-year average export growth
f. The average import growth is 5 years.

The Dimension of Political Economy Advantage describes the government's ability to maintain the economic and political system and stability of the country. This dimension

refs to production factors from DPM [12], exporter profile factors [15], and GCI 4.0 institution and macroeconomic factors [14].

a. The institutional variable – is a composite index of indicators regarding the ability of the state to maintain political stability, and legal justice, and ensure public order and state security.
b. The macroeconomic stability variable – is a composite index that describes the strength of the country's economy such as inflation conditions and state debt.
c. The financial system variable – is a composite index of indicators that describe the country's financial system, and the condition of financial institutions, including credit and investment for capital.

Further factor analysis tests were carried out on the 28 variables above to be taken into consideration in the mapping of variables and factors of this instrument. Testing is done through KMO Test, Bartlett's Test and Anti Image Correlation involving 24 indicators. The correlation test results in the correlation matrix table show that this model is able to form 276 pairs of indicators, of which 183 or some of them 66.30% pairs of indicators are significantly related (sig 0.500) which percentage is from the results of the previous test. The test value of KMO and Bartlett's Test is 0.838 (sig 0.00). This shows that the overall indicators in the model are worthy of being the basic instrument for developing international competitiveness in the country's shrimp sector. The anti-image correlation test shows that the value of each indicator is between 0.527 (the portion of the volume of shrimp exports compared to the country's exports) to 0.950 (the index of macroeconomic conditions). The anti-image correlation value of all indicators that are above 0.500 indicates that the data for each indicator is worthy of consideration and calculation in the formation of institutional factors for competitiveness of the international shrimp sector. The instrument can later be used as part of the research model to propose its effect on other variables such as: the country's economic growth, and welfare. The follow-up effect test is useful to show whether or not the competitiveness of the country's shrimp sector effects on the country's economy and people's welfare. Further analysis can also be carried out in the form of mapping the competitive position of the world's shrimp sector against other variables, to develop appropriate policy alternatives for countries to respond to the conditions of their country's shrimp sector industry.

4   Conclusion

The using of instruments to measure export competitiveness of the shrimp sector is very necessary, because there is no a special instrument for measuring export competitiveness of shrimp sector. This instrument helps countries to develop their market strategies, so shrimp commodities could compete other countries in the international market.

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