THE STRATEGY TO IMPROVETHE COMPETITIVENESS OF INDONESIAN SEAWEEDS IN GLOBAL MARKET

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Abstract

This research is aimed to know the position of Indonesian seaweedsexports'competitiveness in global market, as well as the strategy to improve it. The research uses a quantitative approach, which specifically employs time series type that has been done within 10 years period (2003-2012). The data used are the data of seaweed product by the code product of HS 121220 Seaweeds and other algae (fresh or dried), HS 121221 Seaweedsfit for human consumption, HS 121229 Seaweeds and other algae unfit for human consumption. The data includes the value of Indonesian seaweeds exports commodity, the total of Indonesian exports, the value of seaweeds in global exports, thetotal of global exports, Indonesian seaweeds imports, Indonesian seaweeds production, and Indonesian seaweeds exports. The data is analyzed using Revealed Comparative Advantage (RCA), Import Dependency Ratio (IDR), Specialized Trading Index (ISP), Commodity Concentration Index (CCI), alongside with Strengths, Weaknesses, Opportunities, and Threats. The result shows that: (1) The RCA of seaweeds commodity though fluctuating but relatively increasing; (2) The Import Dependency Ratio of Indonesian seaweeds though fluctuating but relatively increasing, the fluctuation is due to their inability to produce plus value of ferments; (3) Index of Specialized trading appears to be positive; (4) Commodity Concentration Index of exports and imports though fluctuating but relatively increasing; (5) Indonesia can employ Rapid Growth Strategy. The result recommends Indonesian government to improve the quality of seaweeds products specifically using distribution improvements from farmers to consumer both in industrial scope and domestic consumer.

Keywords: Competitiveness, Indonesian Seaweeds, Global Market
JEL Classification: G30, O130

1. Background

Indonesia is an archipelagic country that has17.504 islands and has length of beaches of around 81.000 km. Its marine and fishery potential reaches 3.000 trillion per year, but only 7,5% of the potential is being utilized. The result of fishery sector gives contribution of 2,15% - 2,77% towards PDB (Gross Domestic Product) based on the price during the year period of 2004 – 2008 (Kementrian Kelautan & Perikanan, 2008).

The vast potential shown by the seaweeds commodity is approximately 2,6 million hectare with more than 2 million hectare considered very potential. It can be seen by the dried seaweeds production potential that can reach roughly about 17,774 million tons per year. Given the average price of seaweeds product is Rp. 9.000/kg, the income will reach about Rp. 159.970 trillion.

On the other side, the demand of seaweeds increases alongside with the increase

of people, industrial development, and the world community's tendency to go back to natural products (Anggadiredja et al., 2006). Approximately, seaweeds' potential in global market increases around 10 percent each year, specifically for ferments SRC jelly and algaefor industrial grade.

Table 1. Indonesian Seaweeds Exports Data

Year	Exports	
	Tons	**Value (US$ 1000)**
2007	94.073	57.522
2008	99.949	57.522
2009	94.003	87.773
2010	123.074	135.940
2011	159.075	157.587

Source: Kementrian Kelautan & Perikanan , 2014

The improvement of seaweeds exports shown by its increased volume brings Indonesian seaweeds to international market. Indonesian seaweed is considered first based on its exports quality but second based on its exports value. The total and value of 5 leading countries of seaweeds commodity can be seen on Table 2 and 3.

Table 2. Five Leading Countries for Seaweeds Exports Quantity (Based on Tons)

Countries	2005	2006	2007	2008	2009	2010	2011
Indonesia	69.226	95.588	94.073	99.949	94.003	123.074	159.075
Chile	46.997	41.498	51.953	55.622	56.194	65.173	67.770
China	49.114	46.998	41.710	35.725	30.353	33.053	36.268
Republicof Korea	30.294	19.909	13.371	17.625	14.616	20.547	27.879
Philippines	21.402	18.948	12.032	13.423	10.734	17.150	26.272
Peru	5.587	6,494	8.979	21.835	12.327	22.783	25.257

Source: Food and Agricultural Organization, 2014

Table 3. Five Leading Countries for Seaweeds Exports Value (Based on US %1000)

Countries	2005	2006	2007	2008	2009	2010	2011
China	108.945	119.545	119.812	124.322	120.004	141.818	188.689
Indonesia	35.555	49.586	57.522	110.153	87.773	135.940	157.587
Republic of Korea	87.857	88.486	74.415	95.486	79.561	96.919	136.847
Chile	35.604	33.604	41.500	54.603	60.811	71.211	81.161
Philippines	28.629	25.327	21.635	25.361	12.710	38.237	56.070
Peru	2.177	2.595	4.003	14.085	8.578	14.831	16.814

Source: Food and Agricultural Organization, 2014

This research is objected to know the competitiveness of seaweeds in international market and to develop a strategy to improve it. Hopefully, the result gained is able to contribute in terms of idea and information for the policy makers.

1.1. Literature Review

The demand of particular commodity is highly influenced by its price. The lower the price, the more products will be requested, on the contrary, the higher the price, the lesser product will be requested.Beside the price of the products,

other factors that may influence the demand of particular products are income, the price of other similar products, preference, and expectation.

On the other side, the quantity of the promoted products also has positive relationship with the market price. Beside price, the promoted products will also be influenced by the production cost and the price of similar products. The production price depends on several factors which are the availability of technology, price, and input quantity demanded by the corporation. A country is better to produce the most efficient products that are considered better than the other countries. In terms of technology, emphasize on the importance of technology in determining the industrial factor and trading pattern of a particular country.

Furthermore, the important function of exports component to the country's economy is that the particular country gets national income, thus will increase the total output and the rate of economic growth. A country can export its products to other countries if the products are demanded by other countries, or if other countries are unable to produce or its production is not sufficient to fulfill the domestic need.

The result of the research done by Erizal Mahatma and Miftah Farid (2013) shows that the cultivation of Indonesian seaweeds has a high competitiveness, though farmers do not have input subsidiary and protection facilities from the government. Farmers are able to reach directly to the exporters. The network that ends in the exporters' party is a very superior and efficient network.

The research done by Rajagukguk, Mark Majus (2009) which analyze the competitiveness of Indonesian seaweeds in international market also shows that Indonesian seaweeds do have international market. The potential of the rich natural resources of Indonesia supports Indonesia as worlds' producer and exporters of seaweeds. The exchange value and GDP (Gross Domestic Product) per capita of the destined country also influences Indonesian seaweeds market.

Business of seaweed aquaculture in Kupang Regency is conducted by home industry, where the whole family members can actively play role in every business stages, starting from preparing cultivation area to harvest delivery. The average of total working hours for women is 210.47 and for men is 218.77, while the children does not overwork with total time of 68.13 (Sunadji, 2008)

Most of seaweed farmersin Indonesia had two main livelihood activities, namelyseaweed farming mainly *Eucheuma cottonii* and sustenance fishing activity with seaweed farming giving bigger contributions to household income. They were usually supported by particular middlemen to meet the capital and marketing requirements of their production of dried seaweed. Fishermen couldusually get capital investment and daily operational funds through a quick process from the middlemen, without any interest payment. Thus, the middlemen occupy a crucial position in the production and marketing dynamics of the seaweed trade in the study area (Zamroni A and Masahiro Yamada, 2013).

2. Research Methodology

This research employs quantitative approach. The data used is the secondary data during 10 years period (2003 – 2012) that includes: (a) The value of Indonesian seaweeds commodity export; (b) The total of Indonesian exports value; (c) The value of world's seaweeds exports; (d) The total value of world's exports; (e) Indonesian seaweeds imports; (f) The production of Indonesian seaweeds; (g) The exports of Indonesian seaweeds; and (h) Indonesian total exports.

The data is analyzed using Revealed Comparative Advantages (RCA), Import Dependency Ratio (IDR), Index of Specialized Trading (ISP), Commodity Concentration Index (CCI), and SWOT analysis. Revealed Comparative Advantage (RCA) is used to discover whether particular product hascompetitiveness with similar products from another country.

X_{IK} : The exports value of productIcountry K

X_{MT} : The total exports of country K

X_{WK} : The exports value of product I in the world

X_{WM} : The total of world's exports value

If RCA index is more than 1, it shows that particular product in particular country has a strong competitiveness. On the contrary, RCA index of less than 1 shows that the product has no competitiveness.

$$IDR = \frac{Imports}{Production + Impors - Exports} \; x \; 100 \quad (1)$$

Import Dependency Ratio (IDR) is used to discover Indonesian dependency toward seaweeds imports.

$$ISP = \frac{(X_{in} - M_{in})}{(X_{in} + M_{in})} \quad (2)$$

X_{in} = Exports value of product I in particular country

M_{in} = Imports value of product I in particular country

The ISP value:

ISP = -1,0 (does not have exports value at all)

ISP = -1,0 s/d 0 (particular commodity has a weak competitiveness due to imports > exports)

ISP = 0-1 (particular commodity has a strong competitiveness due to exports > imports)

ISP = 1   (Particular country does not have imports for particular commodity)

Commodity Concentration Index is used to discover the prospect on whether the product will be concentrated in one type of market or spreading.

$$C_{jx} = 100. \; \Sigma(\frac{X_{ij}}{X_j})^2 \quad (3)$$

C_{JX} = Concentration index of exports group concentration commodity

X_{IJ} = Exports value of country j for commodity groupi

X_j = Total value of exports of country j

Commodity Concentration Index of imports is as follow:

$$C_{jm} = 100. \; \Sigma(\frac{M_{ij}}{M_j})^2 \quad (4)$$

C_{Jm} = Concentration index of imports of commodity group

M_{IJ} = Imports value of country j for group commodityi

M_j = Total value of imports of country j

SWOT analysis is the analysis of both internal and external organization which thus be used as the foundation to develop a strategy and working program. Internal analysis includes the assessment towards Strengths and Weaknesses, while external analysis includes Opportunities and Threats factors assessment.

2.1. Result and Analysis

There are three types of seaweeds that are cultivated in Indonesia, which are *Gracillaria sp.*, *Euchema sp. , and Sargasum*. The *Sargasum*type is a rare type and thus protected. In Indonesia, *Gracillaria sp.* and *Euchema sp.* are the types of seaweeds which have high economic value since it produces jellies and ferments. Seaweeds are also needed in food industry, cosmetics, and pharmacy (Kementrian Kelautan & Perikanan, 2013). The following graph is the result of Indonesian seaweeds cultivation result dates in 2003 until 2012.
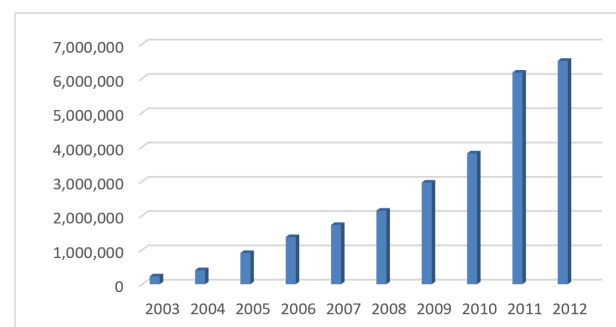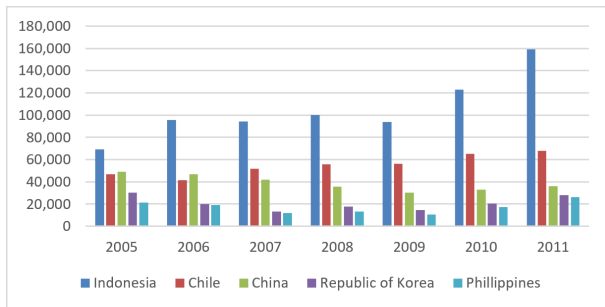

Figure 1. Indonesian Seaweeds Production
Source: Kementrian Kelautan & Perikanan, 2013

The position of Indonesian exports alongside other big seaweeds producer countries (calculated based on tons) shows that Indonesia is in the first position followed by Chile and China as the second and the third place.


Figure 2. Five Leading Countries of Seaweeds Exporters (based on tons)
Source: Kementrian Kelautan & Perikanan, 2012

Indonesia becomes the first position as exporter of seaweeds in the world. Indonesia is superior in terms of quantity though is not followed by the trading position in international market based on unit value. In terms of unit value exports, Indonesian is in the second place after China.
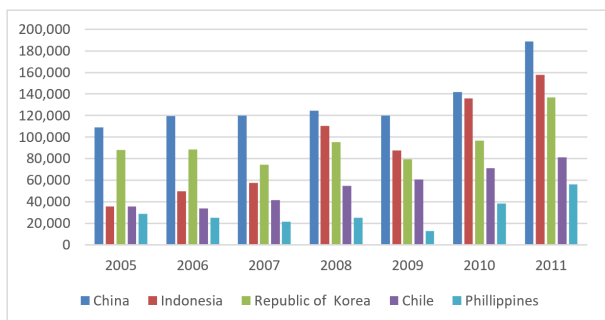

Figure 3. Five Leading Countries in Seaweeds Exports Value (based on US $1000)
Source: Kementrian Kelautan & Perikanan, 2012

The calculation of RCA seaweeds commodity in the year 2003 – 2012 is as follow:
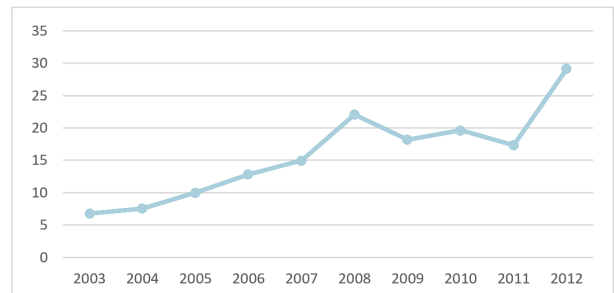
Figure 4. *Revealed Comparative Advantage* **of Indonesian Seaweeds 2003-2012**

The improvement of Indonesian seaweeds' competitiveness keep increasing from 2003 to the number of 22.06 in 2008, while in 2009 decreases to 18.18 and keep fluctuating and increases again in 2012 to 29.16. The improvement of the dependency value of Indonesian seaweeds within the period of 2003 – 2012 is as follow:
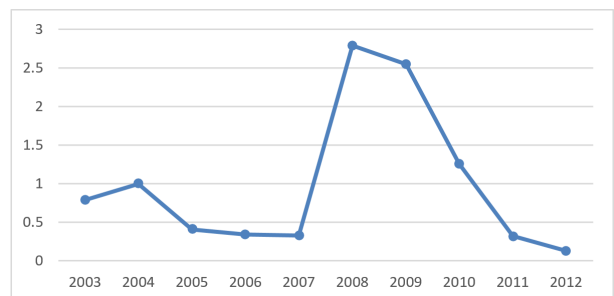
Figure 5. The Dependency Ratio of Indonesian Seaweeds Imports by 2003 – 2012

The Index of Specialized Trading is used to analyze the position or step of particular product's development. If the value of Specialized Index Trading is positive (0<ISP≤1), the particular commodity has a strong competitiveness or has the tendency as the commodity exporters. On the contrary, if the competitiveness is considered weak or the country relatively acts as the importer, the value of the index will appear negative (-1≤ISP<0). The result analysis of Indonesian Specialized Trading Index regarding

their seaweeds commodity by 2003 – 2012 is as follow:
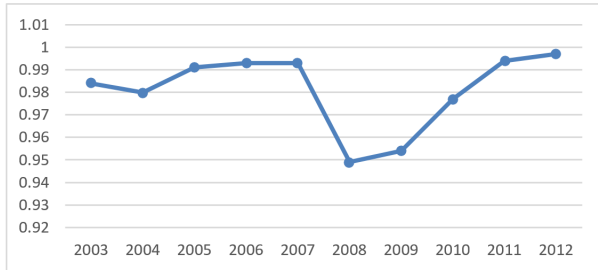
Figure 6. The Index of Specialized Trading for Indonesian Seaweeds by 2003 – 2012

The index shows that Indonesia has positive value, thus means that Indonesian seaweeds have a strong competitiveness in the market. Commodity Concentration Index is used to know the prospect of seaweeds in global market. The figure bellow shows the result of Commodity Concentration Index for Indonesian seaweeds exports by 2003-2012
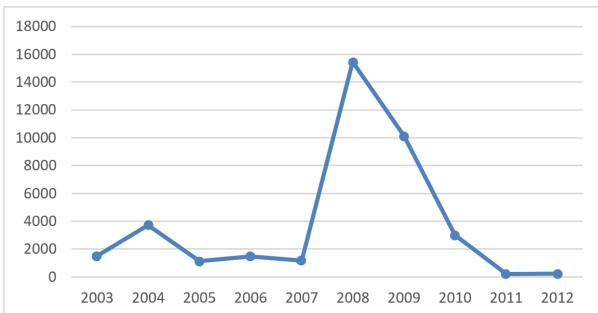
Figure 7. Commodity Concentrated Index for Indonesian Seaweeds Exports by 2003 – 2012

The Commodity Concentration Index of Indonesian seaweeds export is high due to the value of index above 100. However, the meaning of the value index of commodity concentration on imports and exports is different. The bigger the Commodity Concentration Index of Indonesian seaweeds export the better it is for Indonesia. However, the bigger the Commodity Concentration Index of Indonesian seaweeds import the worse it is for Indonesia.

3.   Discussion

Indonesian seaweeds has competitiveness since the index value of comparative advantage is above 1 (RCA>1). However, it appears that each year the value is fluctuating, thus shows the decrease of its competitiveness quality. The overall cause of decrease in competitiveness quality is based on Indonesian ability to trade their seaweeds products that can be seen by its total production. Indonesian seaweeds have comparative advantage that is more efficient than other countries. It is believed that Indonesian seaweeds havecompetitiveness due to some supporting factors such as: the length of Indonesian sea, Indonesian climate that matches with seaweeds cultivation, a shorter harvesting period of Indonesian seaweeds, and the quality of Indonesian raw seaweeds product.

The dependency ratio of Indonesian imports is also fluctuating and it is once increased when Indonesia is contributing in ferments imports. The increase is caused by the increasing of local demands to ferment products due to industrial needs in local industries. The imports dependency based on Hecker-ohlin justifies that it is caused by the lack of processing technology that Indonesia has specifically to produce ferments product.

The Index of Specialized Trading for Indonesian seaweeds shows that Indonesia has competitiveness since the index shows during the period of 2003 – 2012 is positive (0<ISP≤1). However, the competitiveness of Indonesian seaweeds based on the index is also seen to be fluctuating. Overall, Indonesia is a country with surplus value in terms of seaweeds trading within the year 2003-2012 based on the index of specialized trading.

The Exports Concentration Index of Indonesian seaweeds also appear to be fluctuating due to the lack of demands in the global market and the lack of local production sufficiency. Indonesia also has the competitiveness of raw seaweeds exports but cannot perform well in terms of ferments due to the unavailability of technology to produce it. The index of imports

concentration of Indonesian seaweeds is also fluctuating, though Indonesia used to increase its imports due to the insufficiency of local production and unavailability of seaweeds plus value (ferments). However, though fluctuating, based on the Commodity Concentration Index, Indonesia has competitiveness since the overall exports are always increasing and imports are always decreasing. However, the increased exports are always based on raw seaweeds commodity while the imports are always ferments product.

3.1. SWOT Analysis

The SWOT analysis studies on the phenomenon qualitatively which is based on the logic in maximizing the strengths and opportunities while at the same time minimalizing weaknesses and threats. The following table shows the details of strengths, weaknesses, opportunities, and threats both internally and externally. The strategy to improve Indonesian seaweeds' competitiveness is also determined.

Table 3. Internal and External Factors of Indonesian Seaweeds Commodity

Internal Factors	External Factors
Strengths	**Opportunities**
1. The country consists of 17.504 islands with its sea border lengths of 81.000 km thus it has maritime potential that can be developed	1. The use of seaweeds are highly varied
2. Indonesian seaweeds has the best nutrients	2. The worlds' demand fulfillment opportunity on seaweeds are widely open
3. The harvesting period of Indonesian seaweeds is very short (45 days of harvest period)	3. The demand of world market to seaweeds products increases each year alongside with the development of seaweeds-based industry
4. Indonesian seaweeds has high competitiveness based on two analyses (RCA and Index for Specialized Trading)	4. The tendency of people to go green (back to natural products)
Weaknesses	*Threats*
1. Indonesian seaweeds does not have competitive advantage, since they could not produce plus value	1. The unstable price since seaweeds are tertiary products
2. Logistic system of Indonesian seaweeds products makes the products cannot be distributed well	2. Ships activity close to the seaweeds plantation causes the lack of sunlight got by seaweeds
3. The policy made by government is not suitable since the government does not comprehend the real condition of Indonesian seaweeds	3. A material that can replace the advantage of seaweeds consumption is available
4. Indonesia is still depended on imports of seaweeds	4. Seaweeds-related disease disturbs the production

Based on the SWOT mapping of Indonesian seaweeds, the weights and ratingdeterminer for competitive strategies based on the questionnaire and interview are as follow:

The weights is determined by the following description:

0,20 = very strong

0,15 = above average

0,10 = average

0,05 = bellow average

The rating is determined by the following description:

4 = *major strength*

3 = *minor strength*

2 = *minor weakness*

1 = *mayor weakness*

After the mapping, the following step will be the analysis using SWOT that can create possibility of alternative strategies of competitiveness. Beside looking at the internal and external factors, Indonesian seaweeds' competitiveness strategies also can be determined by Internal Factor Analysis Summary (IFAS) and External Factor Analysis Summary (EFAS).

Table 4. The result of Internal Factor Analysis Summary (IFAS) Calculation

Internal Factors	Weights	Rating	Score	Description
Strengths (S)				
1. The country consists of 17.504 islands with its sea border lengths of 81.000 km thus it has maritime potential that can be developed	0,10	4	0,40	1. Archipelagic country and its marine potential is the foundation of seaweeds commodity growth
2. Indonesian seaweeds has the best nutrients	0,15	4	0,60	2. The nutrients contained by seaweeds influenced its competitiveness.
3. The harvesting period of Indonesian seaweeds is very short (45 days of harvest period)	0,10	3	0,30	3. Short harvesting period with quality
4. Indonesian seaweeds has high competitiveness based on two analyses (RCA and Index for Specialized Trading)	0,15	4	0,60	4. Seaweeds has competitiveness based on its comparative advantage and become the exporters country
Sub Total	0,50		1,90	
Weaknesses (W)				
1. Indonesian seaweeds does not have competitive advantage, since they could not produce plus value	0,15	4	0,60	1. The competitiveness has comparative and competitive advantage
2. Logistic system of Indonesian seaweeds products makes the products cannot be distributed well	0,10	3	0,30	2. Seaweeds producer usually comes from rural area with limited access.
3. The policy made by government is not suitable since the government does not comprehend the real condition of Indonesian seaweeds	0,10	3	0,30	3. The cultural and social condition of each seaweeds producer area is different 4.
4. Indonesia is still depended on imports of seaweeds	0,15	4	0,60	5. Inability to produce plus value based on seaweeds raw material.
Sub Total	0,50		1,80	
Total	1,00		3,70	

Furthermore, the calculation of EFAS is structured using the same method as the table above. The result of EFAS calculation is as follow:

Table 5. The Result of External Factor Analysis Summary (EFAS) Calcullation

	External Factors	Weights	Rating	Score		Description
	Opportunities (O)					
1.	The use of seaweeds are highly varied	0,10	3	0,30	1.	The uses of seaweeds as the supplementary material are varied
2.	The worlds' demand fulfillment opportunity on seaweeds are widely open	0.15	4	0,60		
3.	The demand of world market to seaweeds products increases each year alongside with the development of seaweeds-based industry	0,15	4	0,60	2.	Opportunities are widely open but has not yet been put to use
4.	The tendency of people to go green (back to natural products)	0,10	2	0,30	3.	Opportunity to increase production and quality
					4.	Challenges and opportunities in products versification
	Sub Total	0,50		1,80		
	Threats (T)					
1.	The unstable price since seaweeds are tertiary products	0,15	4	0,60	1.	Threats for supplementary materials
2.	Ships activity close to the seaweeds plantation causes the lack of sunlight got by seaweeds	0,10	2	0,20	2.	Difficulty in cultivation
3.	A material that can replace the advantage of seaweeds consumption is available	0,15	4	0,60	3.	Threats if price is too high
4.	Seaweeds-related disease disturbs the production	0,10	3	0,30	4.	Difficulty in cultivation
	Sub Total	0,50		1,70		
	Total	1,00		3,50		

Based on IFAS table, the Strengths factor has 1,90 score while Weaknesses has 1,80 score. It can be seen that Indonesian seaweeds has higher score in Strengths compared to its Weaknesses thus revealed its competitiveness. Moreover, the EFAS table provides information that Opportunities gain score of 1,80 while Threats receive 1,70 score meaning that the opportunities of Indonesian seaweeds are relatively high than its threats.

In conclusion, the result internal and external factors calculation provides these following series of score:
- Strengths (S) = 1,90
- Weaknesses (W) = 1,80
- Opportunities (O) = 1,80
- Threats (T) = 1,70

Based on the score, a recap table of IFAS and EFAS score can be concluded as follow:

Table 6. Final Recap of EFAS and IFAS Score Calcullation

Internal Score	External Score	*Strategy choices*
S >W (+) 1,90 > 1,80	*O >T* (+) 1,80 > 1,70 (+)	*GROWTH*
S <W (-)	*O <T* (-)	*SURVIVAL*

Internal Score	External Score	*Strategy choices*
S >W (+)	*O <T* (-)	*DIVERSIFICATION*
S >W (-)	*O >T* (+)	*STABILITY*

To determine the strategy that is more specific based on the score, a diagram can be drawn to give better view on strategy choices. The table shows that the strategy choice falls to Growth strategy, thus the matrix will show related to Growth Strategy more specifically. The weights and score above shows that Strengths factor is bigger than Opportunities. The result can be seen in the following matrix:
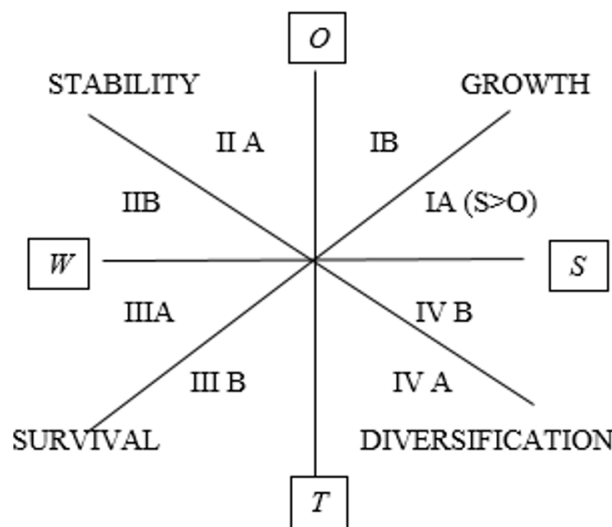

Figure 9. Strategy Choices Matrix

The explanation following the matrix can be seen in the table below:

Table 7. Explanation of the Matrix Result

Strategy techniques	Score	Quadrant	Strategy choices
Growth	*S >O*	I A	Rapid Growth
	S <O	I B	*Stable Growth*
Survival	*W >T*	III A	*Turn Around*
	W <T	III B	*Guerilla*
Diversification	*S >T*	IV B	*Conglomerate*
	S <T	IV A	*Concentric*
Concentric	*O >W*	II A	*Aggressive Maintenance*
	O <W	II B	*Selective Maintenance*

The SWOT analysis shows that the Strengths of Indonesian seaweeds are greater than the Opportunities (S>O), thus it can be concluded that the strategy to strengthen its competitiveness is Rapid Growth Strategy. Rapid Growth Strategy is a strategy that is designed to achieve growth in selling gross, assets, profit or the combination of three. The Strength means

the high production growth that cannot utilize Opportunities available. The Rapid Growth Strategy is employed by achieving growth in some factors that supports Indonesian seaweeds' competitiveness, such as total production, the cultivation land availability, exports growth, and post-harvest processing technology.

The Rapid Growth Strategy needs to be synergize with policies made by government that are suitable for the condition on the field. For example, if the weakness lies in the logistic system due to inaccessible area of the seaweeds plantation (since usually seaweeds are cultivated in rural area of the Eastern part of Indonesia), thus the government need to facilitate farmers in distributing their production results to the consumer or related industries.

To strengthen the seaweed industry and carrageenanbusiness in Indonesia, a number of key issues need to seriously be addressed, such as improvement of seaweed quality (use of good seedlings, harvest at sufficient cultivation age, reduction of impurities), provision of financial sources with good accessibility by the seaweed farmers, establishment of strong mutual cooperation between the farmers, processing industries and exporters, and establishment of an industrial standard for seedlings, cultivation and harvest methods, and postharvest handling in order to minimize the variability in the seaweed quality. It is also necessary to regulate the marketing mechanism of seaweed raw materials as to establish a healthy competition among the seaweed collectors, processors and exporters. By doing so, it is expected that better carrageenan yield and quality will be resulted and, therefore, supporting the development of good and competitive seaweed industry as well as the carrageenan industry and business in Indonesia (Djusdil Akrim. 2014)

4. Acknowledgement

5. Conclusion

The result and the discussion that employs RCA, IDR, ISP, CCI, and SWOT analysis provides these following conclusion: (1) Indonesian seaweeds has good competitiveness before it is appointed as superior commodity or after being appointed as superior commodity (2007) since the RCA commodity value is above 1 (RCA>1) ; (2) Import Dependency Ration of Indonesian seaweeds shows that Indonesia still depends on imports due to their inability to produce ferments products while the need of ferments for industries keep increasing; (3) Indonesia is one of the exporter countries in the world. The Index of Specified Trading by the period of 2003 – 2012 shows positive value (0<ISP≤0); (4) Commodity Concentration Index for imports and exports is fluctuating but keeps showing improvements; (5) The strategy to improve Indonesian seaweeds' competitiveness can be done using Rapid Growth Strategy, which means Indonesia need to improve its product quality and utilize the opportunities factor available

6. Suggestion

Based on the conclusion, the suggestions that are probable to be done are as follow: (1) Indonesian government is hoped to improve Indonesian seaweeds' quality both by making policy or creating better distribution network from farmers to consumers (both industrial and domestic). It is hoped that government enables ferments industries since it is the plus value of seaweeds commodity; (2) Seaweeds farmers are expected to produce high quality of seaweeds product periodically; (3) Any stakeholder in seaweeds market is expected to coordinate well in terms of increasing the products' competitive advantage alongside with its comparative advantage, hence Indonesian seaweeds product will have high and strong competitiveness in global market.

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