

STRATEGY TO IMPROVE THE COMPETITIVENESS OF THE INDONESIAN SHRIMP INDUSTRY

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ABSTRACT

In the macro-environment faced by Indonesia, shrimp industry is getting more important as the competitiveness of the export-oriented industry is enhanced by the devaluation of Rupiah against US dollar. Amidst the crisis shrimp is regaining its role as a leading export commodity. However, similar to other important agribusiness activities, Indonesian shrimp industry only relies on the comparative advantages. Therefore most of Indonesian shrimp are exported to Japan, while the USA and the European markets were not easy to be penetrated. The USA and the European markets which impose high requirement for the products imported frequently embargoed Indonesian shrimp. The objective of this study was to formulate the strategies to find out alternatives solutions that can be applied to solve the Indonesian shrimp industry problems by the Government of Indonesia and the shrimp entrepreneurs. SWOT analysis was used to identify the environmental assessment of shrimp industry to evaluate strengths, weaknesses, opportunities, and threats. Meanwhile, in order to obtain the priority or weight for each element in internal and external factors, Analytical Hierarchy Process (AHP) was applied. Data were analyzed using Expert Choice Version 8.0. The finding of this study indicates that the position of Indonesian shrimp industry is in the average position, neither too weak nor too strong, both internally and externally. Considering SWOT analysis, Expanding the existing products into new market while maintaining the existing market using comparative advantages, is the best strategy at this moment, before the competitive advantages can be increased. Further, the improvement of shrimp pond production management in order to increase the productivity, the development of added value products through the improvement of shrimp processing, the implementation of clean technology to create green products, and the development of alternative inputs for shrimp feed industry are the other important strategies that have to be conducted to increase the competitiveness of the Indonesian shrimp industry.

Keywords : strategy formulation, global competitiveness, shrimp industry

Before the 80's Indonesian shrimp industry was mainly supplied by shrimp trawlers. After the government banned of shrimp trawlers in 1980 and the expansion of shrimp aquaculture from 1985, there has been changes in the supply structure, and the industry is now supported by two sources, sea shrimp and cultured shrimp. However, due to the heavy exploitation which affected the decrease of its stock and the US banned of sea

shrimp harvested by harmful fishing technology, the supply will most likely more rely on the farming production. As Indonesia has vast potential for the shrimp farming development, high value and high demand in the expanding world market, export oriented shrimp farming expanded rapidly in Indonesia in the last two decades.

The country is endowed with mangroves and estuaries suitable for shrimp culture. The total mangrove area are 4.3 million hectares of which for the coast balance, only 20 % can be converted into shrimp farming. It means, that as much as 860,000 hectares of Indonesian mangrove forest can be converted into shrimp farming (GAPPINDO, 1997). Traditional shrimp farming has been practiced by traditional farmers for a long time, while semi intensive and intensive types of farming were started only in the last decade by medium and large producers.

Looking closely at the Indonesian shrimp industry, most of 60 % of the value is produced by shrimp farming, while the remaining is harvested from sea (Pawiro, 1997). Culture shrimp has been contributing more to the overall shrimp production. Most of the shrimp farms are located in Java, Southern part of Sumatra, Southern part of Sulawesi and Maluku.

As one of the potential foreign exchange obtainer shrimp export has recorded a marginal growth. The export volume from 1993 to 1996 increased by 9 % from 98,569 million tons to 99,430 in 1996. By value, shrimp has recorded the significant increase in sales growth in the same period of time. During the period of 1993 - 1996 shrimp export increased by 35 % from US \$ 876.7 million to US \$ 1,186.7 million (Suboko, 1997).

Key markets for shrimp are the USA, Japan, and European Countries. In 1995 these three markets absorbed 990,750 million tons or 37 % from the total world shrimp production (FIS, 1998 in Sandaya, 1998). The USA market is a promising market with per capita consumption at 1.2 kg per year. In 1998 import is projected to increase by 7 % fueled by the growing population, strong domestic demands, and strong value of US \$. The growth of demand is also projected to increase by 2 - 3 % in 1998 in five biggest importing countries in Europe (FAR Singapore, 1998).

Meanwhile, Japanese demand is estimated to remain the same or weaken in 1998. This is due to the saturated demand, low economic growth, weak yen against US \$, and the strong international price in US \$. However its per capita consumption is relatively high, 3.3 kg per year (FAR Singapore, 1998).

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Indonesian shrimp export will face difficult prerequisite problems coming from consuming countries. Since the HACCP (*Hazard Analysis Critical Control Point*) applied by The USA effective from 18 December 1997 as a requirement to all imported fishery and sea commodities, the Indonesian shrimp industry has to prepare in anticipating its changes. Meanwhile the European and Japanese are also trying to strengthen the requirements for the food imported as a protection to their consumers. It means, in order to strengthen the Indonesian competitiveness in international market, clear strategies have to be formulated by shrimp company, the government, and institutions related.

METHODS

The Analytical Hierarchy Process (AHP) was used to determine the priority or weight for each element in internal and external factors for the analysis of shrimp industry. The tool was used to break down a complex problem into its elements, identifies the relationship among elements, measures the interaction of each element, and also determines each priority to simplify the decision problem making (Saaty, 1990). Six experts who have been interviewed in this study were entrepreneurs, lecturers, and leaders of Indonesian Fisheries Federation. The interview was held in March - April 1998 in Jakarta and Lampung.

In order to assess the strategy for shrimp industry, SWOT analysis was applied. The SWOT analysis was combined by Internal-External (I-E) Matrix. The I-E Matrix is divided into Internal Factors Evaluation (IFE) Matrix and External Factors Evaluation (EFE) Matrix. The first step to get quantitative measurement of the internal and external factors were identification of SWOT elements. To find out the relative importance among the elements, paired comparison procedure where the elements were compared each other with scoring from 1 to 9 was used. These were used as weights for the key success factors of company, since the key success factors are the elements that strongly influence the company.

In order to simplify pairing comparison, a paired comparison matrix has been developed. The matrix contents elements of SWOT both in its rows and columns that were compared their importance to each other. Using quantitative procedures as a part of the Analytical Hierarchy Process, then the elements have their priorities, represented by such numbers. Those numbers were used as a weight in the I-E Matrix. To simplify this job the computer-based software Expert Choice version 8.0 was used.

Both the IFE and EFE Matrices were developed in five steps as follows (David, 1997):

1. Make a list of critical success factors as identified in an external/internal-audit process. List opportunities/strengths first and then threats/weaknesses.

2. Assign a weight ranges from 0.0 (not important) to 1.0 (important) for each factor. The weight is resulted from quantitative analysis of AHP.
3. Assign a 1 to 4 rating for each factor. For the EFE Matrix, these ratings indicate how effectively the industry's current strategic respond to the factors, where 4 = the respond is superior, 3 = the respond is above average, 2 = the respond is average, and 1 = the respond is poor. The rating 1 to 4 is determined by comparing the current strategy and policy in catching up an opportunity or avoiding a threat. For the IFE Matrix, these ratings indicate whether represents major weaknesses (rating 1), minor weaknesses (rating 2), minor strengths (rating 3), or major strengths (rating 4). The rating 1 to 4 is determined by comparing the fact with the ideal expectation or ideal performance. However, this effort is subjective assessment.
4. Multiply each factor's weight by its rating to determine a weighted score for each variable.
5. Sum the weighted score for each variable to determine the total weighted score for the industry.

Regardless of how many factors were included in the IFE Matrix, the total weighted score ranges from a low/weak of 1.0 to a high/strong of 4.0, with the average score is being 2.5.

RESULTS AND DISCUSSION

Based on the AHP analysis and judgements in developing rating for each element, the IFE and EFE matrices for Indonesian shrimp industry are presented in Table 1 and 2.

Table 1. Internal Factor Evaluation (IFE) matrix for Indonesian shrimp industry.

Key Internal Factors	Weight	Rating	Weighted Score
<i>Strength</i>			
Price competitiveness	0.027	4	0.108
Sales growth	0.050	3	0.150
ROI and ROE	0.048	4	0.192
Asset turn over	0.036	4	0.144
Natural resources	0.082	4	0.328
<i>Weaknesses</i>			
Human resources	0.201	2	0.402
Distribution system	0.031	3	0.093
Market intelligence	0.059	2	0.118
Product line	0.027	3	0.081
Capital	0.115	2	0.230
Production management	0.096	1	0.096
Technology in production	0.051	3	0.153
Product quality	0.029	3	0.087
Industry integration	0.025	2	0.050
Production capacity	0.034	3	0.102
Facility and R. & D financing	0.061	2	0.122
Product development	0.028	3	0.084
Total	1.000		2.540

The strong point for the Indonesian shrimp industry comes from the natural resources. Indonesia has favorable agro-climate conditions, such as sparseness, in the occurrence of typhoons/cyclones, the ideal and stable water temperature, and the high clay content. Another main strength is high Return on Investment (ROI) and Return on Equity (ROE) ratios. Financially, shrimp offers a high profit margin and quick turnover ratio with a ROI achieved only after two or three harvests. The satisfactory of those financial ratios mostly due to the high shrimp price, while the production cost is relatively low.

The major weaknesses for Indonesian shrimp industry are lack of industry integration, poor product development, poor product line, low product quality and poor distribution system. These weaknesses cause difficulties in penetrating the USA and the European markets.

Table 2. External Factor Evaluation (IFE) matrix for Indonesian shrimp industry.

Key External Factors	Weight	Rating	Weighted Score
<i>Opportunities</i>			
Human resources supply	0.038	3	0.114
Foreign exchange rate	0.063	4	0.252
Wage/salary level	0.022	4	0.088
Globalization	0.038	4	0.152
Demographic	0.091	4	0.364
Competitiveness intensity	0.025	4	0.100
Substitution goods	0.016	4	0.064
Potential entrance	0.012	3	0.036
New technology	0.146	4	0.584
<i>Threats</i>			
Rate of economic growth	0.049	3	0.147
Price volatility	0.072	2	0.144
Government regulation & support	0.147	1	0.147
Infrastructure	0.070	1	0.070
Fiscal policy	0.032	2	0.064
Environmental issue	0.061	2	0.122
Consumer driven	0.038	2	0.076
Bargaining power of buyer	0.040	1	0.040
Bargaining power of supplier	0.040	2	0.080
Total	1.000		2.644

Key opportunities of Indonesian shrimp come from new technology for shrimp pond which is offered by shrimp feed producers for boosting their shrimp feed sales. Meanwhile, other key opportunities are demographic aspect and the high foreign exchange rate. The growth of population, high per capita consumption of shrimp, and high per capita income of developed countries are the opportunities for the industry. In the meantime, unattractive fiscal policy, high bargaining power of supplier and buyer, and lack of infrastructure are the key weaknesses that must be anticipated by Indonesian shrimp industry.

The IFE score for Indonesian shrimp industry was 2.540, while EFE score was 2.644. The IFE score indicates that the Indonesian shrimp industry is categorized in average, neither too weak nor too strong internally. On the other hand, in responding to external factors, the Indonesian shrimp industry has been responding in an outstanding way to existing opportunities and threats in its industry.

The average position of the industry was resulted from the key strengths, namely the availability of natural resources potential, the sales growth and the ROI and ROE ratios. In the meantime the key weaknesses that must be improved are the industry integration, product development, product quality, and the distribution system.

Externally, the opportunities to implement new technology, the changes of demographic and the foreign exchange rate are the major opportunities for shrimp industry. Meanwhile, key threats that must be anticipated are less support from the government, high bargaining power of buyer, consumer driven, and high bargaining power of supplier. Diagrammatically, the Indonesian shrimp industry position in the international shrimp industry is described in Figure 1.

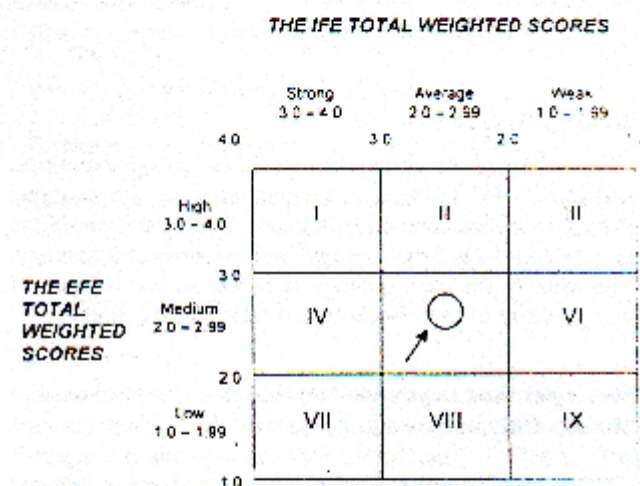


Figure 1. The Indonesian shrimp industry position.

The position of Indonesian shrimp industry is in the cell V. In other word, based on the IE matrix, the competitiveness of Indonesian shrimp industry is relatively good. There is an opportunity for the development of Indonesian shrimp industry since the competitiveness has been existing. However, in order to anticipate the future competitiveness, clear business strategy has to be formulated by producers and the government.

<p style="text-align: center;"><i>INTERNAL</i></p> <p style="text-align: center;"><i>Strength (S)</i></p> <ol style="list-style-type: none"> 1. Price competitiveness (0.108) 2. Sales growth (0.150) 3. ROI & ROE (0.197) 4. Asset turnover (0.144) 5. Natural resources (0.328) 	<p style="text-align: center;"><i>Weakness (W)</i></p> <ol style="list-style-type: none"> 1. Human resources (0.402) 2. Distribution system (0.094) 3. Market intelligence (0.118) 4. Product line (0.071) 5. Capital (0.231) 6. Production management (0.086) 7. Production technology (0.153) 8. Product quality (0.087) 9. Industry integration (0.050) 10. Production capacity (0.102) 11. Facility & R & D financing (0.122) 12. Product development (0.084) 	
<p style="text-align: center;"><i>EXTERNAL</i></p> <p style="text-align: center;"><i>Opportunities (O)</i></p> <ol style="list-style-type: none"> 1. Human resources supply (0.114) 2. Foreign exchange rate (0.252) 3. Wage/salary level (0.088) 4. Globalization (0.152) 5. Demographic (0.364) 5. Competitiveness intensity (0.100) 7. Substitution goods (0.064) 8. Potential entrance (0.036) 9. New technology (0.584) 	<p style="text-align: center;"><i>SO Strategies</i></p> <ol style="list-style-type: none"> 1. Maintain the existing products and markets using the comparative advantages (S1, S2, S5, O2, O5, O6, O7) 2. Expand the existing product into new market (S1, S2, S5, O2, O4, O5, O6, O7, O8) 	<p style="text-align: center;"><i>WO Strategies</i></p> <ol style="list-style-type: none"> 1. Develop the human resource of shrimp industry (W1, O1, O2) 2. Improve added value products with the improvement of shrimp processing (W3, W4, W8, W11, W12, O4, O5) 3. Improve shrimp pond production management in order to increase the productivity (W6, W7, W8, W9, W10, O9)
<p style="text-align: center;"><i>Threats (T)</i></p> <ol style="list-style-type: none"> 1. Rate of economic growth (0.147) 2. Price volatility (0.144) 3. Government regulation and support (0.147) 4. Infrastructure (0.070) 5. Fiscal policy (0.064) 6. Environmental issue (0.122) 7. Consumer driven (0.076) 8. Bargaining power of buyer (0.040) 9. Bargaining power of supplier (0.080) 	<p style="text-align: center;"><i>ST Strategies</i></p> <ol style="list-style-type: none"> 1. Include shrimp into one of the superior export commodities group (S2, S3, T3, T4) 2. Open up to foreign investment in the development of shrimp industry (S2, S3, S4, T3, T4, T6) 	<p style="text-align: center;"><i>WT Strategies</i></p> <ol style="list-style-type: none"> 1. Clear the land use planning (W6, W7, W8, W10, T3, T4) 2. Develop alternative input for Indonesian shrimp feed industry (W11, T9) 3. Provide suitable infrastructure (W2, W3, W11, T3, T4) 4. Implement the clean technology in order to create green technology product (W3, W4, W6, W7, W8, W11, W12, T6, T7, T8)

Figure 2. SWOT analysis on the Indonesian shrimp industry.

Strategy Suggested

Based on strengths, weaknesses, opportunities, and threats for Indonesian shrimp industry, the strategic alternatives then can be formulated. Strategic formulation is grouped into firm strategy and government strategy. The priority for each strategy is based on the number of weight score of each factor which relates to its strategy.

Strategies and Business Implications for Indonesian Shrimp Company

Based on the SWOT analysis, strategy priority suggested for the Indonesian shrimp industry is presented in Table 3, while the elements of strategy are described down below.

Expand the existing products into new market. It is important to Indonesia to expand the existing products into new market due to the saturated market and the declining economic performance of Indonesian major importing countries such as Japan, Hongkong, Singapore, and Malaysia. European Countries, Canada, and the USA are the potential market to be explored. An opportunity for Indonesia in penetrating European market is the low import tariff imposed by importing countries. The Indonesian import tariff for shrimp is 5% while others are 14.4%. However, the first requirement for its strategy is

the improvement of shrimp product quality. Quality in shrimp trading is mostly determined by consumers in importer countries. Here, the government has to ratify the HACCP agreement as soon as possible in order to convince the quality of Indonesian product. Shrimp producers have to hire quality control experts from the destination countries in order to ensure the quality of the product exported.

Table 3. Strategy priority for the Indonesian shrimp industry.

Strategy	Score	Priority
Expand the existing products into new market (S1, S2, S5, O2, O4, O5, O6, O7, O8)	1.554	1
Maintain the existing products and markets using the comparative advantages (S1, S2, S5, O2, O5, O6, O7)	1.366	2
Improve shrimp pond production management in order to increase the productivity (W6, W7, W8, W9, W10, O9)	1.072	3
Improve added value products with the improvement of shrimp processing (W3, W4, W8, W11, W12, O4, O5)	1.008	4
Implement the clean technology in order to create green products (W3, W4, W6, W7, W8, W11, W12, T6, T7, T8)	0.979	5
Develop alternative input for shrimp feed industry ((W11, T9)	0.202	6

Maintain the existing products and market using comparative advantages. As Indonesian shrimp products have been established in the Japanese market through comparative advantages, its strategy is needed in order to maintain the market. Its strategy is carried out to strengthen consumer perceive to the product. For example, Indonesian shrimp products are well known in the Japanese market because of the good taste and price. Those attributes must be maintained to keep the loyalty of consumers. In the long term its strategy is useful in order to penetrate new products as consumer is used to consume Indonesian shrimp product.

Improve shrimp pond production management in order to improve the productivity. A big problem in shrimp pond is uncertainty in shrimp production as the result of many factors, namely environmental, technological, and human resources factors, beside the production management influences the pond production. Many experts argued that environmental factor is the main factor in shrimp pond. However, through better management and also the implementation of appropriate technology, its factor can be more controlled by producers. Based on the interviewed with shrimp experts there are many choices of shrimp pond technology that can be applied.

Improve added value products with the improvement of shrimp processing. Future business is characterized by the improvement of added value through product differentiation. New products are introduced into existing markets, focuses on consumer preferences, particularly in relation to convenience, health, environmental friendly, and taste. In order to anticipate the change in consumer preferences in shrimp product, producers have to continually develop the products. In Indonesia only a big few companies have been at the best at this. They have been developing shrimp into canned product with special taste, convenience, and nutritious. Those products are received in the USA and the European markets. Universities and research institutions are responsible in conducting research to develop shrimp product as they have experts related. With regard to shrimp product development, firm can support financially the researches conducted by universities/research institutions. Further, the government has to abolish the policy to prohibit research institution in commercializing their research activities.

Implement the clean technology in order to create green products. Environmental issues are very sensitive to fishery industry. On the attitude today's of consumer which actively show environmental friendly behavior, the implementation of clean technology becomes necessary requirement. Shrimp companies have to try to implement environmental excellence in order to gain the competitive advantage through the integration of environmental factors

into the business strategy operation. For Indonesian shrimp pond business, one of the most important things is the implementation of "green" pond technology.

Develop alternative input for Indonesian shrimp feed industry. When rupiah sharp fall against US \$, shrimp feed price is also hikes. As shrimp feed constitute 50 - 60 % of the shrimp pond operational cost, its price hikes suffer shrimp producer. The increase in feed price is mainly caused by the increase of input price which is still imported. To overcome this situation, the development of alternative inputs for shrimp feed is needed.

Strategies for the Government of Indonesia

The Government has an important role in improving Indonesian shrimp industry. Based on the SWOT analysis, strategies formulated to the Government of Indonesia are presented in Table 4.

Table 4. Strategies priority for the government of Indonesia.

Strategy	Score	Priority
Open up to foreign investment (S2, S3, S4, T3, T4, T6)	0.825	1
Clear the land use planning (W6, W7, W8, W10, T3, T4)	0.655	2
Develop human resources in shrimp industry (W1, O1, O3)	0.604	3
Include shrimp into one of superior export commodities group (S2, S3, T3, T4)	0.559	4
Provide suitable infrastructure (W2, W3, W11, T3, T4)	0.559	5

Open up to foreign investment. Since shrimp industry needs high investment, the regulation to open up foreign investment is very important. Hence, this regulation has to be followed by the clear land use planning regulation, the abolishing legal and illegal levies, and also providing suitable infrastructure for shrimp industry. Attractive fiscal policy also is a point to be issued by government. Attract investor to entry its industry especially in shrimp processing industry. The success of Thailand in shrimp industry is more affected by appropriate fiscal policy issued by government. Thailand reduced up to 50 % for machinery and equipment import, free export tax for eight years for fisheries industry. Through appropriate fiscal policy, attractive business climate can be created.

Clear the land use planning. Serious threat of shrimp pond industry is coming from the unclear land use planning. Some shrimp ponds in north Java have been destroyed in early 1990s since the water was polluted from factories along the river stream. This condition also

occurred in Jambi, Bali, and South Sulawesi. The government has to clear the zoning for the industry. As shrimp ponds are located in the down stream of river, the government is suggested to prohibit the establishment of factories that potentially pollute the shrimp ponds. The zoning should not be based on the district or area as shrimp pond is depend on the environmental quality along the main stream of river which flow into more than one district.

Develop human resources in shrimp industry.

Human resources is one of the most important thing in the development of shrimp industry. In shrimp pond business, human resources determine the success of implemented advance technology. Its strategy is emphasized in training to handle the advance technology, maintaining quality of land and water, applying the best practice to keep ecological stable, and improving the quality of harvest.

Include shrimp into one of the superior export commodities group. Within the strategy, the government has to create the attractive business climate in order to improve shrimp industry. The government is advised to give special taxes and facilities to businessman in running the business activities.

Provide suitable infrastructure. The major reason why entrepreneurs have chosen Java, Bali, and Sumatra for their shrimp ponds is the availability of suitable infrastructure. Apart from them there is a shortage of infrastructures. In order to optimize all shrimp pond potentials, the government has to provide the suitable infrastructures such as electricity, street, and harbor especially in the eastern part of Indonesia.

CONCLUSIONS AND RECOMMENDATION

Indonesian shrimp industry is in average position, internally and externally. The availability of natural resources and the high return on investment are the major strengths for the Indonesian shrimp industry development. In the short term, the macro-environment is positive as the competitiveness of the export-oriented industry has been enhanced by the devaluation of Rupiah against US \$ respectively. Indonesian industry has adopted the growing strategy based on the growth in the production volume and asset capacity. Among others, the strategy is reflected by the effort to accelerate the output of farming, known as "resources based strategy".

However, considering the change in consumer trend and also the stiff competition in the future, this strategy should be changed into "market based strategy". This means that all of the comparative advantages given by the natural resources should be changed into competitive advantages. It will endeavor the shrimp farming company to fit to consumers demand, while taking into account high quality of products and competitive prices for the market.

To do that, government should give more attention to shrimp industry at first. Through clear regulation, attractive business climate, and better infrastructure, foreign investment will obviously come to Indonesia, transfer how to produce high quality products, and develop the products in order to fit the consumers demand.

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