

COMPETITIVENESS STRATEGIES OF INDONESIA PANGASIU FILLET

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ABSTRACT

Pangasius fillet industry in Indonesia that has grown in recent years will face the ASEAN regional competitiveness that began in late 2015. To face competitiveness from other countries, especially Vietnam as the largest Pangasius fillet producer, this study was carried out with regard to internal and external factors as a consideration in determining future strategies. This study aims to generate alternative competitiveness strategies of Pangasius fillet through descriptive analysis, SWOT, and AHP. The analysis result of internal forces obtains the total scores of 2.645 and external forces with the score of 2.505; this means that suggested strategy belongs to hold and maintain category. AHP analysis shows that alternative strategy with the highest score consecutively is the development of aquaculture technology for quality and efficient raw material, institutional strengthening of fish farmers and suppliers, diversification and product innovation, encouragement in investment on an integrated Pangasius fillet industry, branding of the Indonesian yellow fillet. The main objective of the strategy is focusing on the continuity of production and fulfillment of consumer preferences in order to create stability of supply and demand.

Keywords: AHP, competitiveness, Pangasius fillet, SWOT

ABSTRAK

Industri fillet ikan patin di Indonesia yang mulai tumbuh dalam beberapa tahun belakangan akan menghadapi persaingan tingkat regional ASEAN yang dimulai pada akhir tahun 2015. Dalam menghadapi kompetisi fillet patin dari negara Vietnam sebagai negara produsen fillet patin terbesar, dibutuhkan kajian dengan memperhatikan faktor-faktor internal dan eksternal sebagai pertimbangan dalam menentukan strategi ke depan. Penelitian ini bertujuan membangkitkan alternatif strategi daya saing fillet patin melalui analisis deskriptif, SWOT dan AHP. Hasil analisis kekuatan internal dengan skor 2,645 dan kekuatan eksternal 2,505 yang berarti strategi yang disarankan adalah kategori hold and maintain. Dari analisis AHP didapatkan bahwa alternatif strategi dengan skor tertinggi berturut-turut adalah pengembangan teknologi budidaya untuk bahan baku yang bermutu dan efisien, penguatan kelembagaan pembudidaya dan pemasok bahan baku, diversifikasi dan inovasi produk, mendorong investasi pada integrasi industri fillet patin, branding fillet kuning Indonesia. Tujuan utama dari strategi lebih diarahkan kepada kontinuitas produksi dan pemenuhan preferensi konsumen agar tercipta stabilitas pasokan dan permintaan.

Kata kunci: AHP, daya saing, fillet patin, SWOT

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INTRODUCTION

As the world's prospective commodity of catfish type, Pangasius fish has become a substitutive commodity from other white meat fish fillet types like channel catfish (*Ictalurus punctatus*) (Hong and Duc, 2009). According to Polanco (2011), the entrance of Pangasius fillets to the EU market influences the preferences of the fish fillet market in the EU.

Pangasius is also one of the commodities in fisheries and marine sectors in Indonesia, and its production is most likely to increase as well as has an adequately large potential for its development with high range of market opportunities, both at the local and abroad (Hayandani et al. 2013). In 2011, Indonesia was the second largest Pangasius producer in the world producing up to 16,1% of total world production of Pangasius; however, the number is still below Vietnam which contributes to

world's Pangasius production reaching up to 80,9% (CTF, 2013).

Pangasius fillets are processed products by separating the meat from thorns, skins and other unnecessary materials while maintaining an intact form of the meat which is then stored in a frozen temperature. Fillets have the advantage as easily processed and consumed food materials in which all parts of the meat can be consumed. In addition, the storage process, they need less space due to their flat shape which make them easy to stack. Value-added of Pangasius which is processed to become fillet products can also support the growth of Pangasius production. In Indonesia, Pangasius fillets have only emerged in the past recent years. Previously, the fillets were imported from Vietnam, which are mostly known as dori fillets. In 2011, the government started to ban imports of Pangasius fillet to revive the domestic Pangasius fillet industry.

Prior to the beginning of ASEAN Economic Community era, the Government, through the Regulation of the Minister of Marine and Fisheries No. 15 of 2011 concerning Quality Control and Safety of Fishery Products Entering the Territory of the Republic of Indonesia, had ever conducted control over the import of Pangasius fillet products to provide an opportunity for the Pangasius industry to thrive among the rival importers, especially from Vietnam.

The restriction of import has triggered the excitement of farmers and local industries in several locations in Indonesia, although most people eventually divert their production to other fish type commodities for a reason that it is considered to be less promising. However, the governmental support can be seen from the way it facilitates the provision of infrastructure, fishery farmer's development, technology development, and cooperation of stakeholders. The provision of infrastructure covers the breeding centers, and processing facilities and infrastructure. Meanwhile, the fishery farmers' development includes an encouragement of cultivation and processing level certifications (CBIB, HACCP, GMP, and SSOP) (Yuwono et al. 2011; Rimmer et al. 2013). The development of technology includes the species cross genetic engineering formulation, biofloc feed, fillet bleaching formulation, and so on. Facilities for the cooperation of the policy holders are also given in the forms of focused group discussions, business meetings, exhibitions and promotions.

Previous research on the Pangasius competitiveness has been conducted up to the phase of Pangasius cultivation by Handayani (2013). Conducted in Indragiri Hulu, Riau, the research showed that the types of pellets given in Pangasius cultivation hold a positive impact on the superiority of competitiveness of Pangasius. The decline in Pangasius price by 25% also causes a decline in the competitiveness, especially in the cultivation using pellet feeds. The local government also facilitates off farm activities in order to make Pangasius sold is already in the processed product form so that the added values received by the farmers become higher.

As a growing Pangasius fillet industry, it is expected to survive and be able to meet the market demands. Therefore, the efforts require an observation towards certain aspects from cultivation to consumers. One the ASEAN Economic Community started by the end of 2015, domestic production of Pangasius fillets is prepared to compete with the other Pangasius fillets, particularly those from Vietnam.

Even though the target of consumers is widely open among the ASEAN countries, domestic production of Pangasius fillets should be focused on competitiveness in fulfilling local needs before expanding to overseas markets. Consequently, a comprehensive study is required by focusing on the internal and external factors in generating alternative strategies in an effort to strengthen the domestic industrial competitiveness in the production of Pangasius fillets.

SWOT approaches (strength, weakness, opportunities and threats) are frequently used in an attempt to comprehend the interaction between internal and external factors faced by an organization. The combination of SWOT analysis with AHP (Analytical Hierarchy Process) in a strategic approach can be utilized to take an alternative decision by applying pairwise comparisons among the evaluated factors (Gorener, 2012).

The hypothesis of this study included the required strategies to maintain the development of Pangasius fillet domestic industry. Thus, the purposes of this study are to determine the categories and recommend strategies to strengthen the competitiveness of Pangasius fillet domestic production.

METHODS

This research utilized both primary and secondary data as the sources of data. The data used in this research were cross section data for the primary source and periodic data (time series) for the secondary source. The research was conducted in Jakarta (Muara Baru), Bogor, East Lampung and South Lampung. The analysis unit was focused on Pangasius fillet processing industry in Muara Baru and the farmers as the raw material suppliers.

Farmers who distribute to Muara Baru Pangasius processing industry come from South Lampung, East Lampung and Bogor. The sampling of locations was chosen to represent the national industry for the reason that the fillet processing businesses focus on one specific type of fish i.e. Pangasius fish, and they are one of the highly experienced seafood business industries in Indonesia.

The identification of internal and external force factors was conducted through in-depth interviews with some of the business agents of cultivation, processing industry as well as literature studies. The primary method of data collection was performed by doing in-depth interviews to the informants and by reviewing the existing literature. The given questions were arranged accordingly and guided by using questionnaires.

The stages of research were started from issue analysis by adopting Ishikawa diagram to generate internal and external factors that were classified into four categories: (Strength, Weakness, Opportunity and Threat). After they were arranged in reference to SWOT matrix, an assessment was performed by a group of chosen analysts consisting of 7 (seven) people i.e. a person from the bureaucracy (1), cultivation researchers (2), processing researcher (1), socioeconomic fisheries researcher (1), processing industry (1), and fisheries extension worker (1). These analysts had been selected by adopting purposive sampling with the requirement of having a competency in the respective fields in assessing Pangasius fillet industry.

The stages of SWOT matrix factor analysis consist of: 1) Preparation of internal and external factors 2) Weight Formulation; 3) Ranking Assesment (rating); 4) Score Calculation; and 5) Accumulation of the internal and external factors. The arrangement of internal and external

factors was conducted to identify the overall owned strengths and weaknesses as well as the opportunities and threats they have faced. In presenting the matrix, positive factors (strengths and opportunities) were written before the negative factors (weaknesses and threats).

The weight given to each factor was conducted through "paired comparison" method showing the relative necessity levels of one factor towards other factors in an organization or a situation with a scale of 1–3 that the weight value was obtained by dividing the total value of each factor/variable to the total value of overall factors/variables.

Rating (ranking) represents how strong a positive influential factor (and opportunity) or a negative influential factor (weaknesses and threats) in response to a situation or condition. Ratings were given on a scale of 1–4 with higher scores for the positive factor, and smaller scores for the negative factors. The scores were a result of multiplying the weight value and each factor's rank. The accumulation of score values of both internal and external factors was described in SWOT matrix analysis which then point out the cell location of strategic recommendations.

The results of SWOT analysis have not thoroughly depicted the levels of interest between factors and other elements including actors, objectives, and alternative strategies. Therefore, from the analysis of SWOT, AHP analysis was also conducted. The selected AHP analysis consisted of four people i.e. academician (1), practitioner (1), processing industry (1), and bureaucracy (1) under a condition that they had been involved in the national Focused Group Discussion (FGD) of Pangasius fillets at least within a period of two (2) years.

Steps to resolve the problems in reference to AHP approach (Saaty, 1993) (Figure 1) are as follows: a) to define issues and elaborate the intended problems; create a hierarchical structure based on the perspectives of overall management; construct pairwise comparison matrix; gain all of the necessary considerations to develop the matrix in step 3; distribute the opposite values along with number 1 within the main diagonal; implement steps 3, 4, and 5; synthesize priority to weigh the prioritized vectors, and evaluate inconsistencies for the overall hierarchy.

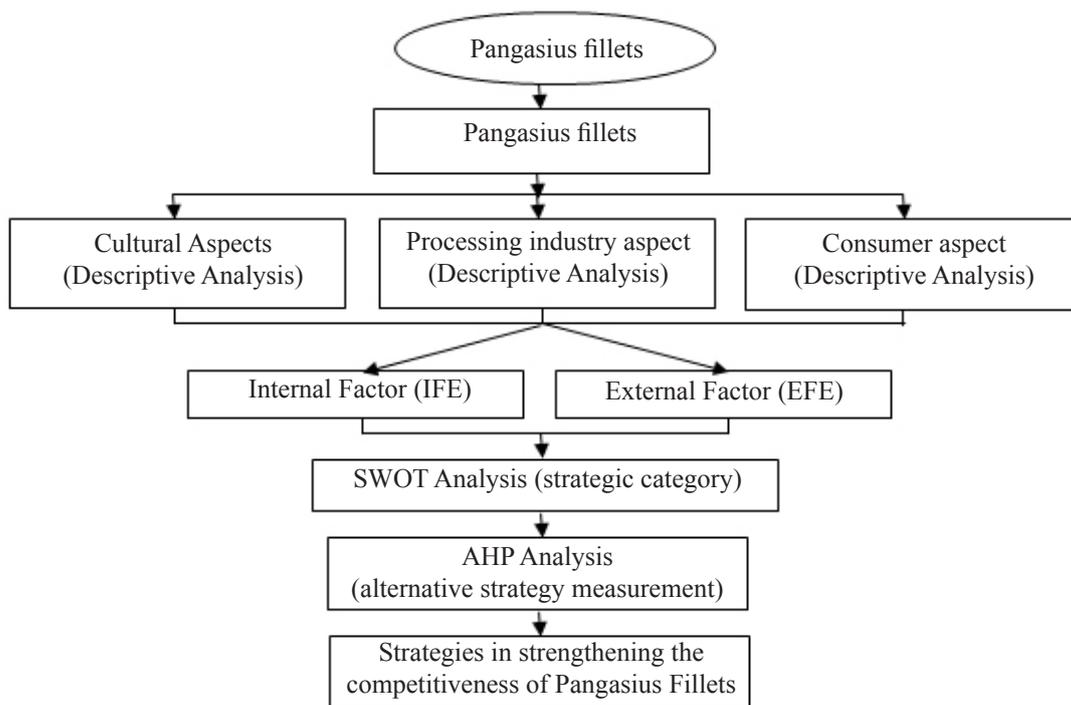


Figure 1. Conceptual framework

RESULTS

In identifying issues to strengthen the competitiveness of the domestic Pangasius fillets, the identification is required to be observed from upstream to downstream i.e. from the aspects of cultivation, industries and consumers. These aspects are parts of main supplier chains in which the flows of goods, money and information occur.

Cultivation Aspect

The Pangasius types widely used for fillet production is a Siam type (*Pangasius hypothalamus*) which is a native species of Indochina whose flesh is yellowish. The special qualities of siam Pangasius is that it is fast-growing, adaptive to the environment, more disease resistant, and more suitable for industrial purposes compared to other types of Pangasius e.g. *nasutus* Pangasius or *djambal* which have white flesh, and this type of fish is highly dependent on natural capture (Sayeed et al. 2008; Hassan et al. 2011; Mahyudin 2010; Begum et al. 2012; Malik et al. 2014).

An increase of the production rate of Pangasius cultivation in Indonesia showed an adequate prospect for the reason that there was positive growth from 2009 to 2013 with an average increase of 39,90%. Indonesia's Pangasius production in 2013 reached up to 410.883 tonnes, and this capacity to produce is strongly

depended on of the availability of wide production sites.

The waters utilized for cultivation in Indonesia cover wide areas which have not been potentially utilized. Land cultivation has only reached 650.509 hectares of the total potential area of 2.964.331 hectares, and public waters to be used in the cultivation area reaches 158.125 Ha, yet the utilized area has only covered 1.564 Ha (CTF, 2015). Pangasius farming groups and total number of members in East Lampung, South Lampung and Bogor Regency until 2016 have considerable availability as presented in Table 1.

Table 1. Human resources of pangasius cultivation in East Lampung, South Lampung and Bogor

Location	Number of pangasius cultivation group	Number of group members
Bogor	6	85
East Lampung	3	68
South Lampung	95	1,150

Source: BPSDMKP, 2016

The production capacity of the interviewed respondents of pond owners can be seen in Table 2. There were only a few number of respondents interviewed, and this is because there are only few farmers who want to produce large size fillets. Of the four interviewed respondents, only one farmer focuses on Pangasius cultivation in

the region of South Lampung, while others produce other types of fish such as catfish, carp and tilapia. The respondents in South Lampung (with an area of 200 ha) are also capable of producing large-size *Pangasius* continuously; therefore, they are able to distribute raw materials to the fillet industries.

The average price of *Pangasius* in the producer market in 2014 was Rp 15.809/kg, and the price increased every month (KKP, 2015). An increased price of *Pangasius* raw materials is correlated with an increased cost of *Pangasius* feed price which mainly follows the inflation rate, while feed is the highest cost component in the cultivation of *Pangasius*.

Table 2. The production capacity of farmers as raw material suppliers of *Pangasius* fillet

Location	Production	Production Size
East Lampung	30 tonnes/6 months	800 – 900 gram /tail
Parung panjang, Bogor Regency	30 tonnes/6 months	800 – 1.000 gram /tail
Palas, South Lampung	100 tonnes/month	1.000 – 1.500 gram/tail

The use of natural feed is more difficult because raw materials are more difficult to obtain and not practical; therefore, most farmers later switched to the mill feed. In meeting the need to achieve the size of fillets, it needs a longer period of maintenance, thus increasing cost and slowing down the capital flow. Harvest size for fillet is usually in the range of 700–1200 grams (with a yield reaching up to 30–35% range) and the required time of maintenance is around 6–8 months.

The constraints faced by the farmers in *Pangasius* cultivation include the high cost of feed with a long period of maintenance. This affects the capital flow of the farmers, particularly for the new farmers who earn profits and return on capital only after the selling. These conditions urge the farmers to have sufficient capital for the reason that raw material costs should be put into consideration when cultivating *Pangasius*.

Subsequently, farmers with less capital before producing *Pangasius* fillet size (700–1200 grams) make a purchasing agreement with the potential buyers (processing industry) due to the difficulty in selling large-size *Pangasius*. Meanwhile, the large scale farmers commonly already have their own markets as targeted size of fillet does not meet their requirements.

Processing Industry Aspect

The number of fillet processing industries in Indonesia is still small because it is difficult to obtain raw materials that conform to the fillet specifications. *Pangasius* fillet industry has just developed since the restrictions on *Pangasius* fillet imports in 2011. Some fillet industries even only perform productions several times within a month.

Respondents of the processing industry of Muara Baru (PT. CP Prima), are capable of producing the incoming raw material supply which approximately reaches up to 5 to 5,5 tonnes per day, or around 2 tonnes of fillets each day in which the materials come mostly from Lampung (80%) and the rest comes from West Java (20%). The raw material supply is obtained by forming partnerships with other farmers in the form of assistance in the maintenance and purchase process of *Pangasius*.

The freshness Yellowish raw material of fillet decreases, particularly *Pangasius* from Lampung, and this is because fish dies during the travel duration of more than 12 hours. The best condition for raw materials of fillet is that fish must be obtained in alive condition. Nevertheless, due to the far length of distance, the transportation cost of transferring alive fish is quite expensive. The other reason is that the number of *Pangasius* taken in each trip will be less, for the container also needs to be filled by water. Production Target is aimed to fulfil local needs with three different segments i.e. hotel restaurant and catering (10%), modern trade (10%) and households (80%).

Consumer Aspect

Population of Indonesia of more than 240 million people is a fairly large market share, especially when it is doubled with ASEAN consumers reaching more than 600 million of inhabitants. This potential of consumers should be able to be utilized by Indonesia so that they do not only become the market object. The advantages of fish consumption cause the government to heavily promote an act of eating fish through a movement program called Encouraging Citizen to Eat Fish Movement (GEMARIKAN) which is expected to trigger the market uptake of fishery products, especially *Pangasius* fillets.

The level of fish consumption from the period of 2009–2013 tended to increase on average of 4,9% by the year 2013 and was in the position of 35,21 kg/capita/year, and the projection number reached up to 54,49 kg/cap/year by 2019 as it is presented in Table 3 (KKP, 2015, KKP, 2015b). However, the consumption level is still far less than that of Japan reaching up to 140 kg/capita/year, while Malaysia reached the total of 70 kg/capita/year.

In 2012, the domestic demand of super class Pangasius fillets for domestic restaurants and five-star-hotels reached up to 100 tons per month, in which before the import banning policy it was dominated by Vietnam. In addition, the uptake consumption of medium class Pangasius fillet for supermarkets reached 1.000 tonnes per month. Pangasius fillet demand in the institutional markets (hotels, restaurants, offices) is constantly increasing and still unable to be fulfilled by the local producers (Anonymous, 2012).

Demand in Pangasius fillets at the international level is reasonably high, and the demand can be fulfilled by Vietnam as the world's largest producer with sales transactions in 2008 reaching up to 441.144 tonnes with a value of USD 965.509. The demand of Pangasius fillets comes from more than 60 countries with the highest consumers in the European Union, Russia and ASEAN (Binh et al. 2010; Khoi, 2010). In 2014, Asian countries, particularly Singapore, Japan, Korea, China and India have started to import Pangasius fillet with a total of 65.000 tonnes (Globefish, 2015).

Before the import restriction is applied, Vietnamese Pangasius fillets known as Dory fillets have entered Indonesia. According to the note of KPP in 2011, the Pangasius fillet imports reached up to 600 tonnes of fillets. Prior to the beginning of ASEAN Economy Society by the end of 2015, the local Pangasius fillets gain their competition back with imported Pangasius fillets particularly from Vietnam.

Yellow Pangasius fillets, in foreign consumers' preferences, have smaller commercial values compared to the white Vietnamese fillets (Khoi, 2010). In the perspective of international market, the color of Pangasius fillets have their own market segmentation. According to Khoi (2010), the international prices of Pangasius fillet in 2008 with the highest rates, respectively, were as follows: white (\$3,17/kg), pink (\$2,7), bright yellow (\$1,68) and yellow (\$1,6).

Market objectives of each kind of color of fillets, respectively, are as follows: white and pink for EU consumers, white for the Americans, bright yellow for Russians and yellow for ASEAN. The price of imported white Pangasius fillets in modern markets in December 2015 was 22% more expensive than that of the local yellow Pangasius fillets. However, the farmers of Pangasius fillets in Indonesia provide a positive and attractive depiction of yellow Pangasius fillet by labeling it as mango fish or golden fish fillet.

Fulfilling the domestic needs becomes the priority in meeting the demand in accordance with the law mandates, while exports will be conducted if production capability is adequate. Further improvements are also required to meet the desired standards and specifications of the destination country whose market is currently dominated by other producer countries such as Vietnam.

SWOT Analysis

The results of SWOT analysis as presented in Table 4 highlight the interaction of internal factors (strengths and weaknesses) with a total score of 2,645 and that of external factors (opportunities and threats) with a total score of 2,505. Positive and negative factors appearing to be balanced can occur for the reason that Pangasius fillet industry is relatively new in Indonesia along with its potential to grow in the recent years

Table 3. The trend of fish consumption level in Indonesia

Year	2009	2010	2011	2012	2013	2014	2015*	2016*	2017*	2018*	2019*
Fish Consumption Level (kg/cap)	29,08	30,48	32,25	33,89	35,21	38,14	40,90	43,88	47,12	50,65	54,49

* Projection Number

Table 4. IFE and EFE Matrixes

Internal factors	Bobot	Rating	Skor
Strength			
Availability of wide production sites with the untapped potential of 2.964.331 hectares of ponds and 156.561 hectares of public waters (CTF/KKP 2015)	0,105	3	0,315
Large production of Pangasius of 410.883 tonnes in 2013 (CTF/KKP 2015)	0,133	3	0,399
The availability of human resources (104 KUB Cultivation by 1.150 the number of members)	0,105	2	0,210
Government's support	0,133	3	0,399
Weakness			
The low competitiveness of local raw materials	0,152	3	0,456
Lack of application standard of Pangasius fillet Indonesia	0,124	3	0,372
High production cost of raw material	0,133	2	0,266
Inadequate infrastructure	0,144	2	0,288
Total of scores			2,645
External factors			
Opportunity			
Large demand (local horeka reaching up to 600 tonnes)	0,270	3	0,810
Potential domestic consumers (increase in the projection of fishery consumption level up to 54,19 kg/cap/year in 2019)	0,231	3	0,693
Threat			
Competition with competitors/Vietnam importers	0,270	2	0,540
Inflation level	0,231	2	0,462
Total of scores			2,505

IE Matrix Analysis

This stage is the matching stage by incorporating the results of the weighing of the EFE and IFE matrixes into IE matrix. IE matrix has a nine-cell matrix of strategies that can be classified into three main cell strategies i.e. Grow and Build located in the cells of I, II, and IV; Hold and Maintain located in the cells of III, V and VII; Harvest or Divest utilized for cells of VI, VIII, and IX. IE analysis showed that the Pangasius fillet industry is in the V cell as listed in Figure 2; therefore, the chosen strategy is the category of Hold and Maintain (David, 2011).

Furthermore, the recommended strategies are employed by pairing each internal factor to external factor. Each strategic design covers: SO Strategy (Strengths - Opportunities) which adopts the internal strength to seize the opportunities outside the company; WO Strategies (Weaknesses - Opportunities) which aims to minimize internal weaknesses to exploit external opportunities; ST Strategy (Strengths – Threats) which avoids or reduces the impact of external threats; and WT Strategies (Weaknesses - Threats), a tactical and survival strategy which is performed by reducing internal weaknesses and by avoiding threats. The SWOT analysis results are compiled in Table 5.

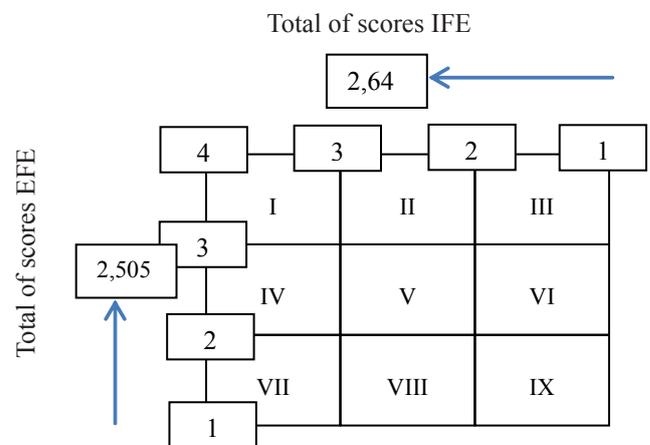


Figure 2. SWOT matrix analysis

AHP Analysis

The goal of this analysis is the strategy of strengthening the competitiveness of Indonesian Pangasius fillet in reference to the successive hierarchical structures consisting of some elements i.e. factors, actors, objectives and strategies, as presented in Figure 3 and Table 6.

From the results of the conducted analysis, a number of consecutive strategies i.e. the development of technology for the cultivation of efficient raw

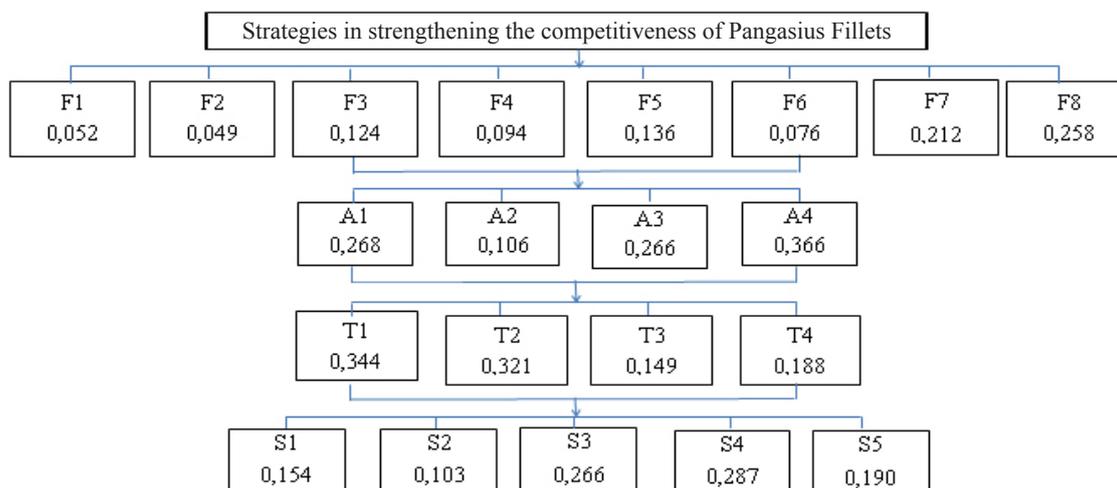
materials, strengthening of cultivator institutions and raw materials suppliers, product diversification and innovation, encouragement in investment in Pangasius fillet industrial integration and branding of Indonesian yellow Pangasius fillet.

relatively high raw material requirements, but they are not balanced with the farmers' interests. The amount of capital required as a result of the use of feed is assessed to be risky for most farmers. The development of technology in the form of high quality and cheap fish feed and seed is able to stimulate the interest of farmers, especially with substantial demand from the processing industry.

The strategy of cultivation technology development for efficient raw materials (weight of 28,7%) is driven by

Table 5. Strategic results of SWOT analysis

	Strengths 1. Availability of wide production areas 2. Large scale national production of raw materials of Pangasius fillets 3. Availability of human resources 4. Government support in the local fillet development	Weaknesses 1. Low competitiveness of local raw materials 2. Lacking of standardized implementation of Indonesian Pangasius fillet 3. High cost of raw material production 4. Inadequate infrastructure
Opportunities 1. Large scale demand 2. Potential domestic consumers	S-O Strategy 1. Strengthening farmer institutions and suppliers of raw materials (S1, S2, S3, S4, O1, O2)	W-O Strategy 1. Development of cultivation technology for raw material quality and efficiency (W1, W3, O1, O2) 2. Encouraging investments in the integration of Pangasius fillet industries (W2, W4, O1, O2)
Threats 1. Competition with competitors/ Vietnam importers 2. Inflation Rate	S-T Strategy 1. Branding of Indonesian yellowish fillet (S1, S2, S3, S4, T1, T2)	W-T Strategy 1. Diversification and product innovation (W1, W2, W3, w4, T1, T2)



Note:

F = the influencing factors (F1. Availability of widespread cultivation areas, F2. Production of large size Pangasius, F3. Low competitiveness of local raw materials, F4. Lack of standardized implementation on cultivation and processing aspects, F5. High costs of raw materials, F6. Inadequate infrastructure, F7. High demand in Pangasius fillet, F8. Imported Pangasius fillets)

A = Actors (A1. Government, A2. Researchers, A3. Farmers/Cultivators, A4. Processing industry)

T = Interest (T1. Continuity of production, T2. Fulfilment of consumer preferences, T3. Increasing profits, T4. Market development)

S = Strategies (S1. Encourage investment in the Pangasius fillet industry integration, S2. Branding of Indonesian yellowish fillet, S3. Strengthening of the cultivator institutions and raw material suppliers, S4. Development of cultivation technology for high quality and efficient raw materials, S5. Diversification and product innovations)

Figure 3. AHP analysis result

Table 6. Result of the weighing of the relationships among the hierarchies

Code	Weight	Priority	Relationship between hierarcies				
			Factor and Actor				
	Factor		A1	A2	A3	A4	A5
F1	5,20%	7	25,60%	10,80%	36,30%	27,20%	-
F2	4,90%	8	22,30%	15,20%	41,10%	21,50%	-
F3	12,40%	4	20,20%	15,80%	22,10%	41,80%	-
F4	9,40%	5	20,90%	14,20%	35,40%	29,40%	-
F5	13,60%	3	44,40%	19,70%	17,60%	18,40%	-
F6	7,60%	6	51,50%	12,90%	19,10%	16,50%	-
F7	21,20%	2	32,10%	8,40%	20,80%	38,70%	-
F8	25,80%	1	52,60%	8,10%	15,90%	23,50%	-
	Actor		Actor and Interest				
			T1	T2	T3	T4	T5
A1	26,80%	2	38,50%	22,20%	15,00%	24,30%	-
A2	10,60%	4	22,10%	42,60%	13,40%	21,90%	-
A3	26,60%	3	38,10%	14,70%	27,20%	20,00%	-
A4	36,60%	1	41,20%	21,20%	19,50%	18,00%	-
	Interest		Interest and Strategic Alternatives				
			S1	S2	S3	S4	S5
T1	34,30%	1	12,80%	13,80%	28,40%	28,60%	16,50%
T2	32,10%	2	14,40%	17,20%	12,80%	29,60%	26,20%
T3	14,90%	4	20,40%	12,00%	14,60%	26,80%	26,20%
T4	18,80%	3	13,60%	12,20%	15,70%	33,60%	24,90%
S1	15,40%	4					
S2	10,30%	5					
S3	26,60%	2					
S4	28,70%	1					

The partnership program between the processing industry and farmers is the beginning of an institutional strengthening strategy of cultivators and raw materials suppliers (weighing 26,6%). Farmers need market certainty, for if they do not meet the requirement by the industry, the farmers will meet difficulty to market their large size fish in the local market. Two main strategies are supported by a prioritized objective i.e. the sustainability of production (weight of 34,30%), for the fillet industry requires continuous raw material supplies to maintain the market trust in their capacity to supply fillets.

The goal in fulfilling the interest of consumer preferences (weighing 31,10%) depends on the availability of variety of choices offered to consumers. Processing industry is the most influential actor contributing in

strengthening the competitiveness (weighing 36,6%) as the spearhead of Pangasius fillet production that needs to be encouraged by supportive regulations and guidances provided by the government (weight 26,80%).

The beginning of MEA era will result in the re-entry of Pangasius fillet imports, especially from Vietnam as the most influential factor (weighing 25,80%). According to Orban et al. (2008), the success of Pangasius fillet industry competition requires to observe the modern production by suitable control system in accordance with market specifications including taste, color, nutrient content to ensure that the demand remains high. Besides, the production cost needs to be suppressed and the production chain must be run efficiently (REHBEIN, 2008; Binh, 2009; Khoi, 2010).

Managerial Implication

Managerial Implications which can be conducted are encouraging the guarantee of the availability of raw material supplies by paying attention to the quality in accordance with market demand. The government can stimulate the interest of farmers to produce fillet-size Pangasius (700–1.200 grams) with capital assistance or feed subsidies, as well as infrastructure development in the potential fields.

Governmental facilities to establish institutional coordination of fillet-size Pangasius cultivators can also strengthen coordination in providing supplies. In addition, research and development on cultivation aspects should also be able to provide a breakthrough in order to create accelerated growth of Pangasius fillet industry.

For the processing industries, price competition is a crucial factor; therefore, they are required to survive with a small margin and increase their volume of production. Processing industry is also required to have a competitive advantage by improving management and operational standards as well as introducing fish fillet without bleaching. Awareness of the importance of consuming local products needs to be carried out by the government and industry processing by cooperating with the catering, restaurant and hotel associations in promoting Indonesian signature of Pangasius fillets.

CONCLUSION AND RECOMMENDATION

Conclusion

An effort to strengthen the competitiveness of Pangasius fillet in Indonesia still encounters a number of obstacles, in particular in terms of the quality and quantity of raw materials. Revamping the cultivation sector to the processing sector is required to be performed in order to support the domestic Pangasius fillet in being prepared to face ASEAN free trade. Internal and external factors contribute in implications in determining the strategic policy direction, which are classified, based on the research, into hold and maintain category. This functions to highlight that the positive and negative elements of the same factor have an equally strong influence. Recommendation from the strategy is to put more emphasis on the cultivation technology development in pursuing the goal of production sustainability by

the processing industry in facing the rival competition, especially from Vietnamese imported fillet.

Recommendation

Awareness in the potential of Pangasius fillet industry is essential to be concerned by all domestic stakeholders. The period of the ASEAN economic community can be seen from two sides i.e. the spread of potential customers and also the growing number of competitors. In the future, it is necessary to conduct studies on the impact of ASEAN free trade to the development of Pangasius fillet industry. Indonesia is considered to be a newcomer in the Pangasius fillet industry compared to other ASEAN countries, particularly Vietnam as the prior and leading market of Pangasius in a number of countries. A range of studies through a systemic approach in reading the direction of regional competition that has already begun is expected to result in better planned and anticipative policies.

REFERENCES

- Ahmed GU, Chakma A, Shamsuddin M, Minar MH, Islam T, Majumdar MZ. 2013. Growth performance of thai pangus (*Pangasianodon hypophthalmus*) using prepared and commercial feed. *International Journal of Life science and Pharma Reviews* 2(3): 92–102.
- Anonim. 2012. Impor dilarang, patin lokal digadang. *Trobos Aqua* 5 :14–16.
- Begum M, Akter T, Minar MH. 2012. Analysis of the Proximate Composition of Domesticated Stock of Pangas (*Pangasianodon hypophthalmus*) in Laboratory Condition. *Environ. Sci. & Natural Resources* 5(1): 69–74. <http://dx.doi.org/10.3329/jesnr.v5i1.11555>.
- Binh TV, D'Haese M, Speelman S, D'Haese L. 2010. The influence of changes in the market environment on economic production characteristic of pangasius farming in the Mekong Delta (Vietnam). *Marine Resource Economics* 25 : 373–390. <http://dx.doi.org/10.5950/0738-1360-25.4.373>.
- BPSDMKP. 2016. Aplikasi simluhdayakp. <http://www.bpsdmkp.kkp.go.id/> [1 April 2016].
- David FR. 2011. *Strategic and Management Concept and Cases. Thirteenth Edition*. New Jersey: Prentice Hall.
- [KKP] Kementerian Kelautan dan Perikanan. 2013.

- Laporan Tahunan Direktorat Produksi Tahun 2013 Direktorat Jenderal Perikanan Budidaya.* Jakarta : KKP.
- [KKP] Kementerian Kelautan dan Perikanan. 2015. *Kelautan dan Perikanan dalam Angka 2014.* Jakarta: Pusat Data Statistik dan Informasi KKP.
- [KKP] Kementerian Kelautan dan Perikanan. 2015b. *Peraturan Menteri Kelautan dan Perikanan Republik Indonesia Nomor 25/PERMEN-KP/2015 Tentang Rencana Strategis Kementerian Kelautan dan Perikanan Tahun 2015-2019.* Jakarta : KKP.
- Globefish. 2015. Pangasius - June 2015. <http://www.fao.org/in-action/globefish/market-reports/resource-detail/en/c/336904>. [21 Agustus 2015]
- Gorener A, Toker K, Ulucay K. 2012. Application of Combined SWOT and AHP: A Case Study for a Manufacturing Firm. *Procedia - Social and Behavioral Sciences* 58: 1525–1534. <http://dx.doi.org/10.1016/j.sbspro.2012.09.1139>.
- Hassan A, Ambak MA, Samad APA. 2011. Crossbreeding of Pangasianodon hypophthalmus (sauvage, 1878) and Pangasius nasutus (bleeker, 1863) and their larval development. *Journal of Sustainability Science and Management* 6(1): 28–35.
- Khoi LND. 2010. *Quality standards for fish supply chains the case of organic pangasius in the Mekong River Delta, Vietnam.* CAS Discussion Paper No. 67. Antwerp, Belgium: University of Antwerp.
- Khoi LND. 2012. Global value chains and market access of small-scale farmers in the Mekong River Delta. *Journal of Science Hue University* 70 (1): 99–110.
- Hayandani S, Firdaus M, Rindayati W. 2013. Daya saing usaha budi daya ikan patin di Kabupaten Indragiri Hulu Provinsi Riau. *Jurnal Manajemen & Agribisnis* 10(3): 137–145.
- Hong TTK, Duc NM. 2009. Competition between us catfish and imported fish: a demand system analysis. *Journal of Agricultural Science and Technology* 11: 111-118.
- Rehbein, H. 2008. New Fish on the German Market: Consumer Protection against Fraud by Identification of Species. *Journal für Verbraucherschutz und Lebensmittelsicherheit* 3:49–53. <http://dx.doi.org/10.1007/s00003-007-0301-9>.
- Malik A, Kalhoro H, Shah SA, Kalhoro IB. 2014. The effect of different stocking densities on growth, production and survival rate of pangas (Pangasius hypophthalmus) fish in cemented tanks at fish hatchery Chilya Thatta, Sindh-Pakistan. *International Journal of Interdisciplinary and Multidisciplinary Studies* 1(10): 129–136.
- Mahyudin K. 2010. *Panduan Lengkap Agribisnis Patin.* Depok: Penebar Swadaya.
- Orban E, Navigato T, Di Lena G, Masci M, Casini I, Gambelli L, Caproni R. 2008. New trends in the seafood market. Sutchi catfish (Pangasius hypophthalmus) fillets from Vietnam: nutrition quality and safety aspects. *Food Chemistry* 110:383–89. <http://dx.doi.org/10.1016/j.foodchem.2008.02.014>.
- Polanco JF. 2011. *Study: Pangasius Effect Frozen Fish Fillet Imports In European Union.* Portsmouth: Global Aquaculture Advocate.
- Rimmer MA, Sugama K, Rakhmawati D, Rofiq R, Habgood RH. A review and SWOT analysis of aquaculture development in Indonesia. *Reviews in Aquaculture* 5: 255–279.
- Saaty TL. 1993. *The Analytical Hierarchy Process: Planning, Priority Setting, Resource Allocation.* Pittsburgh: University of Pittsburgh Pers.
- Sayeed MAB, Hossain GS, Mistry SK, Huq KA. 2008. Growth performance of thai pangus (pangasius hypophthalmus) in polyculture system using different supplementary feeds. *Univ. j. zool. Rajshahi Univ* 27:59–62.
- Yuwono B, Zakaria FR, Panjaitan NK. 2012. Faktor-Faktor yang Mempengaruhi Penerapan Cara Produksi yang Baik dan Standar Prosedur Operasi Sanitasi Pengolahan Fillet Ikan di Jawa. *Manajemen IKM* 7(1): 10–19.