

## Formulating and Choosing Strategy of Processed Catfish Product Development Using the SWOT Matrix and QSPM; a Case Study in Boyolali Regency

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**Abstract:** The purpose of this research are the development of a strategy for processed catfish products in Boyolali Regency and choosing strategies that can be used to develop Agro-industry of processed catfish food products. The basic method is descriptive analytical study. The data used primary and secondary data were collected through observations, interviews and recording. Data analysis using the SWOT matrix and QSPM. The results using the SWOT matrix analysis tools provide several alternative strategies, the shredded product formula development, Market Development (geographic) products of processed catfish, Innovation Program of the Government of the create processed catfish Agro-industry, strengthening human capital offender agro catfish processed based creative economy, continuous improvement throughout the product formula to increase the competitiveness of products, marketing products that highlight the benefits to society of processed catfish, catfish Dissemination of processed products to the public and Catfish feed making independently. From 8 alternative strategies are the determination of strategic priorities by considering the factors that have formulated strategies denn attractiveness of each strategic factors by the use QSPM. The result is a government Boyolali recommended is Strengthening human capital for Agro-industry based creative economy actors.

**Key words:** Boyolali • Catfish • Catfish Processed Food • SWOT • QSPM

### INTRODUCTION

Food is a basic need which is the right of every human being and is one of the determining factors that affect the quality of human resources. Diversification of food consumption has a very important role in improving the quality of human resources through improved nutritional status. Martianto [1] states that to be able to live an active and healthy, people need a variety of nutrients that are found in various types of food and it all can be met through diversification of food consumption. Studies conducted by Hardinsyah [2] suggests that diversification can increase the consumption of a variety of anti-oxidant food, fiber consumption and lower risk of hypercholesterolemia, hypertension and coronary heart disease. In this regard, diversification became one of the main pillars in improving the quality of human resources of a nation.

In a "twin-track approach" FAO [3] explicitly stated that diversifying agriculture and employment is one of the most important option is the establishment of food security stability. Referring to the problems and challenges faced as well as the empirical circumstances of Indonesia's food security, the diversification is needed as one of the pillars towards food security. In addition, diversification can encourage increased food production, improved farm income, as well as adaptation and mitigation of climate change.

Various food policy either directly or indirectly been rolled out by the government. For example, the Food and Nutrition Literacy Movement issued by the Ministry of Health, Food and Nutrition Diversification Program by the Department of Agriculture (1993-1998), PP 68/2002 on Food Security Section 9, which states on food diversification, among others by increasing public awareness for consume a variety of foods with balanced

Table 1: Target Food Consumption in the group Animal Food

Animal Food	Year (Kg/Cap/Year)				
	2010	2011	2012	2013	2014
Ruminant meat	2,7	2,9	3,0	3,1	3,3
poultry	5,9	6,2	6,5	6,8	7,1
Egg	9,1	9,6	10,0	10,5	10,9
Milk	2,1	2,2	2,3	2,4	2,5
Fish	27,7	29,1	30,4	31,8	33,2
	47,6	50,0	52,3	54,7	57,0

Sources: Ministry of Agriculture Strategic Plan 2010-2014

nutrition principles. In the realization of food security in general and in particular diversification also stated in Law No. 25 Year 2000 on National Development Program through the Food Program Increased resistance. These programs are aimed at increasing food production and consumption are more diverse [4].

The increasing role of agricultural commodities to meet the nutritional adequacy and meet the demands of the purchasing power of the people has been the driving factor increasing public demand for agricultural products [5]. One source of a nutrient that is essential for the fulfilled is protein (is used in addition to the growth process, the protein also functions and the regeneration of body cells). Source of animal protein can be obtained by eating meat, eggs and milk. One agricultural commodities as a source of animal protein is fish. Based on Table 1 is known that the consumption of fish from the 2010-2014 period is expected to increase to 33.2 Kg/Cap/year. To realize these targets needed efforts to diversify consumption of animal food. One type of fish that are easy to obtain and popular society is catfish. Over the last five years of catfish production continues to increase. In 2005 the national production of 69.386 tonnes of catfish, in 2006 amounted to 77.332 tons, in 2007 was 91.735 and in 2008 increased to 114.371 tons in 2009 and further increased to 144.755. In 2010, preliminary figures published production of farmed catfish at 273 554 tonnes [6].

Central Java is one of the catfish producers in Indonesia. Among the centers of catfish farming in the province of Central Java is Boyolali Regency. Potential local commodity is worth to be developed to support the animal food supply so hopefully will be able to support increased consumption of animal food especially catfish in Boyolali Regency and surrounding areas. However, so far some people are reluctant to consume catfish in fresh form as disgusted and do not like the fishy smell catfish. To that end, the development of processed catfish products should be the focus of

attention in order to increase the consumption of animal protein so that more and more people who are interested to consume catfish. To develop the diversification necessary to have a system of production-Agro-industry-consumption synergistic. Looking at the function, it can be said that the development of strategic diversification node is processed food agro-industry. According Acquah and Masanzu [7] and Kusnandar, *et al.* [8] agro-industry can become a locomotive in increasing value-added agricultural products. Thus, in an effort to diversify the development of animal food (catfish) is through the development of food agro-industry made from raw catfish. In particular, this study aims to formulate development strategies processed catfish agro-industry in Boyolali.

## MATERIALS AND METHODS

Implementation methods in this study is the survey method, which takes a sample of the population of processed catfish agro-industry actors in Boyolali. Method performed descriptive explanation, namely a combination of descriptive and analytical methods [9]. Descriptive methods or intends to describe the situations or events in a systematic, factual and accurate about the facts and the nature of the population. While Winarno [10] describes descriptive method as the method focuses on solving the problems that exist in the present, the actual problems. Data were collected at first arranged, described and analyzed [11].

Site selection study done purposive, the determination of the location taken deliberately by certain considerations in accordance with the purposes of research [11]. The research was conducted in Boyolali because it is fresh catfish-producing region is very popular in Indonesia. Agro-industry as one of social engineering in improving the welfare of rural people into the alternative [8]. It is necessary for optimizing the role of agro-industries in the Regency of Boyolali. Agro-industry is the alternative welfare society because many agro-industry sector to absorb labor in the countryside. But the fact that there has not been functioning agro-industry in delivering optimal agro-industrial actors towards a prosperous life. Agro-industry in Boyolali which is expected to rapidly growing processed catfish agro-industry.

The data used in this study is primary data and secondary data. Primary data sourced from interviews, observation and recording of associated systems involved processed catfish agro-industry. Collection of secondary data that serve as the information was done

by recording [12]. Identification of strategic factors is done through in-depth interview techniques to understand the structure of a key informant processed catfish agro-industry in Boyolali. Secondary data is used as a reinforcement of the primary data collected. In-depth interviews are intended to identify strategic factors both internal (strengths and weaknesses) and external (opportunities and threats) is used as the basis for formulating alternative strategies in the implementation matrix SWOT analysis [13, 14] and Quantitative Strategy Planning Matrix (QSPM) according to the model of David, *et al.* [15] and David [14].

Results of in-depth interviews to the key informant obtained the information regarding the factors internal and external to identified the strengths, weaknesses, opportunities and threats in the development of processed catfish agro-industry in Boyolali. To determine effective strategies applied in the development of processed catfish agro-industry used Quantitative Strategy Planning Matrix (QSPM). QSPM analysis consists of a column of external factors and internal key obtained from the identification of SWOT, weight, top row consists of alternative strategies to be selected, which is divided into columns where each column contains attractive score and total attractiveness scores, as well as the bottom line mentions total attractive score value [14].

For the weight column is filled according to the value of its interests in the overall strategic factors were identified, while the value of the attraction strategy is filled with importance be compared strategies with other strategic alternatives. Attractive score value required is different for each factor for each alternative strategy strategy [16]. Total attractive score value is the product of the weight and value columns in each row attractive score. Total attractive score value indicates the relative pull each alternative strategy to consider only the impact of the strategic factor of the line. The higher the total value of attraction, the more attractive the alternative strategy. Total number of highest attractive score value reveals which strategies are most effectively implemented. Weight values obtained from the three elements of which include: researchers, entrepreneurs and officials of processed catfish Bappeda using triangulation of data analysis techniques/sources [17], while the value obtained from the results of the appeal to the perpetrators interview strategies [14] which in this case the elected officials of Bappeda Boyolali.

## RESULTS AND DISCUSSION

A strategy according to David [14] had to be built from the results of an environmental assessment (internal and external) that are associated with the objectives to be achieved in the future. To that end, the development of agro-industry strategy processed catfish in Boyolali formulated from the analysis of the internal environment and the external environment. Formulated strategies will be recommended as a strategy to be implemented Boyolali Government.

**Alternative Formulation Strategies:** Based on the results of investigation of internal factors and external above, then drafted a SWOT matrix to formulate an alternative strategy in the development of processed catfish agro-industry in Boyolali Regency, in Table 2.

Based on Table 2 is known that there are 8 alternative strategy do Boyolali Government to develop a system of processed catfish agro-industry. The next step after acquired 8 alternative strategy is to determine the priority strategies using analytical tools Quantitative Strategic Planning Matrix (QSPM). In accordance with the methodology of using QSPM, then from 8 alternative strategies selected three alternative strategies most likely to be implemented. The third alternative strategy is:

- Continuous improvement of the product formula to enhance competitiveness.
- Marketing of processed catfish products highlight the benefits to society.
- Strengthening human capital for Agro-industry based creative economy actors.

**Determination of Priority Strategies with QSPM:** From the analysis of SWOT Matrix has obtained alternative strategies that can be applied Boyolali Government in developing processed catfish agro-industry. To determine the most appropriate strategic priorities and feasible, then the QSPM analysis for decision making [16, 18, 19]. QSPM gives an overview of the relative advantages of each strategy further provides an objective basis to be able to choose one of alterantif strategy has been formulated. Alternative priority processed catfish agro-industry development strategy that can be implemented by the Boyolali Government is: Strengthening human capital for Agro-industry based creative economy actors

Table 2: Development of Processed Catfish SWOT matrix in Boyolali Regency

		Eksternal	
		-----	
Internal		<i>Opportunities</i>	<i>Threats</i>
			1. Increased demand 2. Extensive marketing 3. Better knowledge of nutrition 4. Expensive price of competitors' products 5. New product development 6. Many tourist attractions
<i>Strengths</i>			
1. The raw material is assured continuity	1. Continuous improvement of the product formula to enhance competitiveness (S1, S2, S3, S4, O1, O2, O3, O5)	1. Continuous improvement of the product throughout to enhance competitiveness (S2, S4, T3, T4)	
2. Many varieties of catfish			
3. Complete infrastructure			
4. Trained human resources	2. Market development (geographic) products processed catfish products (S1, S3, O1, O2, O3, O4, O5)	2. Marketing of processed catfish products highlight the benefits to society (S4, T1, T2)	
5. Cheap raw materials			
<i>Weaknesses</i>			
1. Malaise	1. Government Program Innovation oriented processed catfish agro-industry birth (W1, W2, W4, O4, O5)	1. Dissemination of processed catfish products to the public (W1, W2, W3, T1, T2, T3, T4)	
2. Packaging is simple			
3. Strange product texture	2. Strengthening human capital for Agro-industry based creative economy actors(W4, O3, O6)	2. Catfish feed making independently (W4, T5, T6)	
4. Catfish Agro-industry litle			

Source: Analysis of primary data

Table 3: Determination of Processed Catfish Agro-industry Development Strategy in Boyolali Regency with Quantitative Strategic Planning Matrix

		Alternative Strategies					
		Strategy I		Strategy II		Strategy III	
		-----		-----		-----	
KEY FACTORS	Weight	AS	TAS	AS	TAS	AS	TAS
<i>Internal Key Factors</i>							
1.The raw material is assured continuity	0,1250	1	0,125	2	0,015625	4	0,5
2.Many varieties of catfish	0,0893	2	0,178572	3	0,267858	4	0,357144
3.Complete infrastructure	0,0714	2	0,142858	3	0,214287	1	0,071429
4.Trained human resources	0,0893	2	0,178572	1	0,089286	3	0,267858
5.Cheap raw materials	0,1071	2	0,214286	3	0,321429	1	0,107143
6.Malaise	0,1429	3	0,428571	1	0,142857	2	0,285714
7.Packaging is simple	0,1607	3	0,482142	1	0,160714	2	0,321428
8.Strange product texture	0,1250	3	0,375	1	0,125	2	0,25
9.Catfish Agro-industry litle	0,0893	2	0,178572	1	0,089286	3	0,267858
Total	1						
<i>External Key Factors</i>							
1.Increased demand	0,1053	2	0,210526	4	0,421052	3	0,315789
2.Extensive marketing	0,0921	3	0,276315	4	0,36842	2	0,18421
03.Better knowledge of nutrition	0,0921	3	0,276315	4	0,36842	2	0,18421
4.Expensive price of competitors' products	0,0789	1	0,078947	2	0,157894	4	0,315788
5.New product development	0,0789	2	0,157894	3	0,236841	4	0,315788
6.Many tourist attractions	0,1053	3	0,315789	2	0,210526	4	0,421052
7.Competitors' products varies	0,0921	2	0,18421	1	0,092105	3	0,276315
8.Competitor product first received public	0,0789	3	0,236841	2	0,157894	1	0,078947
9.Competitor's product quality is stable	0,0921	3	0,276315	1	0,092105	2	0,18421
10.Good texture competitor products	0,0921	3	0,276315	1	0,092105	2	0,18421
11.Number of businesses fishing	0,0921	1	0,092105	2	0,18421	3	0,276315
Total	1						
Sum Total Attractive scores		4,685145		3,807914		5,165408	

(Total Attractiveness Score = 5.165408). This strategy was chosen as a priority because the strategy is a strategy which is seen as the basis of achieving development goals processed catfish agro-industry. With the increase in human capital, the offender processed catfish agro-industry will not only serve as human resource developers processed catfish agro-industry, but processed catfish agro entrepreneurs can simultaneously maximize all potential and existing resources to maximize the strengths and opportunities as well as to reduce and avoid the threat of weaknesses which can interfere with the development of processed catfish agro-industry in Boyolali Regency. Quantitative analysis of the election strategy Strengthening human capital for Agro-industry based creative economy actors as a priority strategy can be seen in Table 4.

**Conclusions and Suggestion:** Based on the analysis of the internal and external environment, SWOT matrix and QSPM be obtained the Boyolali government recommendation the should choose a strategy Strengthening human capital offender Agro-industry based creative economy with Total Attractiveness Score of 5.165408. This strategy was chosen as a strategic priority because it is seen as the basic strategy of achieving development goals overall of catfish Agro-industry.

Strengthening human capital is a concept that explains that the man in the organization and businesses are an important asset and substantive, which has contributed to the development and growth, as well as physical assets [20]. For the Government should formulate the programs appropriate of strengthening the human capital [20-21].

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