Feasibility and development strategy of milkfish (Chanos chanos) processing at small industries in Pangkep District

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Abstract. The milkfish business has the potential to be developed; therefore, it is not only be sold in fresh condition but also processed into other products with additional value. This study aims to analyze the prospect of developed milkfish processing in Pangkep district. The research was conducted in August 2018 until August 2019 in Bungoro, Labakkang, Pangkajene, Segeri, Mandalle dan Marang districts. The sampling method was taken by purposive sampling. The analysis of economic value was used to estimate the total economic value of the milkfish processing business. The feasibility analysis was used to determine whether the type of milkfish processing business was feasible or not to run. Analytical Hierarchy Process (AHP) was used to determine the priority strategy for the development of the milkfish processing business. The results show that there are five types of milkfish products developing in Pangkep district, including shredded milkfish, thornless milkfish, presto milkfish, bale kambu, and amplang milkfish. The analytical feasibility is conducted to show that the milkfish processing business in Pangkep district is feasible to be developed; however, the five types of processed products, milkfish shredded are more profitable to run. It shows the NPV, Net B/C, and IRR values, which are higher than other milkfish processed products. The development strategy of the milkfish processing business becomes the priority on the modality and marketing criteria. Improving the quality of human resources and developing distribution channels become a priority strategy in the development of milkfish processing businesses in Pangkep district.

1. Introduction

Milkfish is one of the potential aquaculture commodities in boosting aquaculture production in Indonesia. This is due to the nature of milkfish that is easily cultivated, is very tolerant of changes in environmental quality and is resistant to disease, even in some areas how to raise milkfish without providing artificial feed, because milkfish is basically a type of herbivorous fish, which is a type of plant-eating fish. The centers of milkfish farming in Indonesia have spread across several regions. Data from the Indonesian Central Statistics Agency shows that milkfish production in Indonesia in 2017 reached 701,319 tons with a production value of Rp. 11,587,854,904. South Sulawesi is one of the provinces of aquaculture centers in Indonesia. One of the aquaculture commodities that are the mainstay of South Sulawesi is milkfish. Milkfish has now become the leading export commodity of South Sulawesi. Data from the Office of Maritime Affairs and Fisheries of South Sulawesi shows that exports...
of milkfish from South Sulawesi reached 1208.8 tons in 2017, an increase of 245% from 2016’s total exports of only 357 tons. One of the areas for milkfish producing centers in South Sulawesi is the Pangkep district, where the majority of the people earn a living as fish farmers. From the data of the Central Statistics Agency of South Sulawesi Province (2018), Pangkep occupies the fourth position of the largest milkfish production center in South Sulawesi after Bone, Wajo and Pinrang. The production of milkfish in Pangkep in 2017 reached 28,008 tons, data from the Pangkep Fisheries Office stated that 6 of the 13 districts are milkfish producing centers in Pangkep. Some processed milkfish that can be developed in Pangkep are thornless milkfish, presto milkfish, shredded milkfish and bale batter. But as one of the milkfish producing areas in South Sulawesi, Pangkep has limitations in developing a milkfish processing business, so that the fish produced can only be sold in the form of fresh fish at a relatively low price of between Rp.2,000-Rp.4500 / head depending on the size of the fish. This must be overcome, considering that milkfish production in Pangkep tends to be stable. High and stable production has not been accompanied by the development of productive milkfish processing business units that can generate added value and create jobs. This research was conducted to: (1) estimate the economic value of the milkfish processing business (2) determine the feasibility of milkfish processing business and (3) the development strategy of milkfish processing business in Pangkep by looking at certain parameters or feasibility. Milkfish processing is a process that will provide added value to the actors in it, including farmers, fish traders, the processing industry and consumers.

2. Data and Methods
The research was conducted in August 2018 until August 2019 in Bungoro, Labakkang, Pangkajene, Segeri, Mandalle dan Marang districts. The research sampling method is purposive sampling, which is the method of determining respondents to be sampled based on certain criteria. Respondents selected as samples are milkfish processing businesses in Pangkep, which have been producing for at least 1 (one) year a total of 10 (ten) companies, and 1 (one) person each from the Fisheries Office, Cooperatives and UMKM Office, Trade Office, Investment Office and PTSP, academics, and banking. The sampling method was taken by purposive sampling. The analysis of economic value was used to estimate the total economic value of the milkfish processing business. The feasibility analysis was used to determine whether the type of milkfish processing business was feasible or not to run. Analytical Hierarchy Process (AHP) was used to determine the priority strategy for the development of the milkfish processing business.

3. Result and Discussion
3.1. Estimated economic value
The results of the analysis of the economic value of milkfish processed business are Rp. 298,282,867 every year, can be compared with the economic value of fresh milkfish farming business. Of course, processed milkfish products can provide greater economic benefits (profits) than just producing fresh milkfish. According to Prasitio (2016), the profit/profit of fresh milkfish cultivation business in Karawang, West Java is Rp. 53,492,150 per year.

The estimated economic value of a fish processing business is certainly dynamic; the most influential factor is the amount of demand and supply. The level of demand can be influenced due to competition in prices of similar products, which can also be influenced by the marketing area coverage. According to Sukirno (2005), in the analysis of demand, there is only one factor that influences the number of goods demanded, namely the price of the product, while other factors such as taste, income, and factors beyond that are considered as ceteris paribus (unchanged). The law of demand states that, if the price of an item rises while other factors are considered ceteris paribus, the number of goods demanded by consumers will decrease. While the offer is the number of goods available and can be sold at various price levels, and at a certain time. Supply is influenced by the price of the goods themselves, production costs, and production levels.
3.2. Feasibility Analysis

The marketing of processed milkfish products in Pangkep is still focused on the local market; for thornless milkfish, the marketing actually goes outside the region, the local market for thornless milkfish is almost non-existent. From a technical aspect, the implementation of the milkfish processing business in Pangkep needs to consider the right location, such as access to the availability of production inputs and to have good transportation access and facilities so that transportation of production inputs or distribution of output can be done quickly with minimal costs. In the milkfish processing business, which is carried out in Pangkep, raw materials are easily obtained, where milkfish, which is the main raw material for processed products, is one of the leading commodities in the Pangkep district, besides shrimp and large oranges. As for the distribution of output, in addition to being done by direct sales, businesses also serve purchases through online chat applications. For distribution out of the region, business operators sell products wholesale by calculating the cost of transportation to the destination. The tools used in the processing of milkfish are relatively simple, but the use of these tools is not an obstacle in the process of milkfish production. From the management aspect, business management is still very simple, where the business actor acts as the owner, manager, and person in charge at the same time for the business they carry out. Generally, business actors do not have permanent workers who are tasked with assisting in managing the business. Business actors are themselves responsible for the smooth running of their business management activities, both technically and financially, as a whole. The management system carried out by business actors for the business carried out is the management and control of business activities every day as well as recording the results of production and production costs incurred every month. The control system is implemented to maintain the quality and quantity of products to be marketed. Recording the results and expenditure of production costs is done with the aim that the business actor knows for certain the benefits derived from the business that has been carried out. From the social aspect, the milkfish processing business in Pangkep district has an important role in the social life of the surrounding community. Milkfish processing business activities provide employment opportunities for the community around the business location so as to reduce the unemployment rate and increase the income of the surrounding community. In one production process, 5-7 workers are needed who are non-permanent workers. From the environmental aspect, the milkfish processing business in Pangkep has no negative impact on the community in terms of the operational environment. Waste generated from milkfish activities in the form of the entrails of fish can be used as a mixture for duck feed. There is almost no competition in the fish processing business because each business has a different type of superior product. From the customer side, each product has its own customer segmentation. While in terms of raw material suppliers, there are no significant obstacles. The supply of quality raw materials can be obtained easily. Processed raw materials, especially fresh milkfish, are obtained from local farmers around the business location. They feel that fresh milkfish from Pangkep is still the best raw material in terms of quality. From the financial aspect, with a discount factor of 7% and a project age of 5 years, the NPV value for the milkfish shredded business is Rp. 557,460,264.67. The Presto milkfish business is Rp 431,181.775. Thornless milkfish is Rp. 441,687.007. Kambu bale business is Rp. 514,443.142 and amplang bandeng business is Rp. 495,818.246. With a NPV value > 1 indicates that the five types of milkfish processed are feasible to be developed.

IRR value for shredded milkfish business is 81%, presto milkfish business is 55%, thornless milkfish business is 78%, kambu bale business is 77% and amplang bandeng is 74%. The IRR calculation value of the five milkfish processed products is greater than the interest rate on the loan used, which is 7%. It can be seen that the rate of return generated from the investment of milkfish processing business is greater in value compared to the prevailing loan interest rate.

Net B / C ratio value for the shredded milkfish business is 1.64; the presto milkfish business is 1.61, the thornless milkfish business is 1.76, kambu bale business is 1.75 and the amplang bandeng is 1.68. This shows that these five types of preparations are feasible to be developed because they have a Net B / C value > 1. The business feasibility analysis conducted on the five types of milkfish processed in Pangkep shows that the milkfish processing business in Pangkep is feasible to be developed; this can be seen from the results of the business feasibility analysis that the business feasibility criteria have been.
met. Of the five types of milkfish processing business in Pangkep, the milkfish shredded business has a Net B / C ratio higher than other milkfish processed businesses, which is 1.35, meaning the benefits received exceed the costs incurred.

Table 1. Sensitivity Analysis of Milkfish Processing Business

| No | Change Parameters                          | NPV (Rp)      | Net B/C | IRR  |
|----|-------------------------------------------|---------------|---------|------|
| 1  | 25% increase in variable costs             | 480,479,055.77 | 1.62    | 72%  |
| 2  | 10% reduction in production                | 431,994,221.09 | 0.62    | 66%  |

Table 1 shows the results of the sensitivity analysis carried out with 2 (two) parameter changes, namely: 1. It increased variable costs by 25% and 2. Decreased total production by 10%. A sensitivity analysis was performed on milkfish shredded business. The sensitivity analysis shows that business income is more sensitive to the decrease in production compared to the increase in variable costs. Sensitivity analysis is done by changing several parameters in the calculation of business feasibility. The choice of parameter changes is based on conditions that often occur at the study site. In general, it can be seen that the milkfish processing business is more sensitive to a 10% decline in production. This is usually due to lack of demand. Generally, products are made based on order quantities. For this reason, the market for processed milk products from Pangkep needs attention from the Government. A 10% decrease in sales cannot be done because it does not meet the eligibility criteria, meaning that income cannot cover the amount of expenditure. The maximum sales decline that can be done is 6%; this can be seen from the feasibility analysis conducted. Sensitivity analysis is carried out to see the effect of falling prices and rising costs that occur on the feasibility of a business; this is necessary because project analysis is usually based on projections that contain a lot of uncertainty and changes that will occur in the future (Kasmir & Jakfar, 2003).

Table 2. BEP calculation results of milkfish processed

| No | Product                    | P (Rp)  | BEP  |
|----|----------------------------|---------|------|
|    | Abon ikan bandeng          | 170,000 | 56,82|
| 2  | Bandeng presto             | 63,000  | 149,80|
| 3  | Bandeng tanpa duri         | 52,000  | 131,68|
| 4  | Kambu Bale                 | 105,000 | 78,88|
| 5  | Amplang bandeng            | 100,000 | 82,25|

Table 2 shows the calculation of the BEP value for each type of milkfish processed product. Break-even point (BEP) occurs when the revenue divided by the cost of expenditure (cost) value is equal to 1. The results obtained that income is higher than one means that the price applied per unit has exceeded the value of the BEP. Break-even point (BEP) is a condition where the company does not get profits or losses, meaning that the income obtained is able to cover the costs incurred during the production process. It is important to know to measure the ability of a company’s production capacity so that it does not experience losses. When the BEP value is reached, the NPV value is zero (close to zero).

3.3. Development Strategy for Milkfish Processing Business

The priority strategies to encourage the development of milkfish processing business are modality (32.6%), marketing (23.5%), raw materials (21.8%), products (9%), promotion (7.4%), and policies government (5.8%). While the alternative priorities for the development strategy of the milkfish processing business are the quality of processed products, the quality of raw materials, distribution channels, promotion tools, and the quality of human resources. From the results of the AHP analysis, it can be seen that the main obstacle of the milkfish processing business in Pangkep District is in terms of the modality and marketing of processed products. In terms of modality, improving the quality of human resources (HR) is an important strategy in
developing a business. Milkfish processing training is needed so that they are able to produce quality products that can compete with other products. The quality of human resources is human resources who not only have the ability to complete their work but also to develop themselves and encourage the development of their colleagues (Matindas, 2002). While in terms of product marketing, there are obstacles in the distribution channel of processed products. The marketing target of milkfish processed products is still local, among others in the nearest market, sold at home (business place), and shops in the district capital (Pangkajene district). According to Hidayat (1998), the marketing system requires the right distribution channel pattern to develop a business; the distribution channel consists of a set of institutions that carry out all marketing activities (functions) that are used to distribute products/services and their ownership status from producers to consumers.

4. Conclusion

Based on the results of research that has been done, the following conclusions can be drawn:
The estimated economic value of the milkfish processing business from 5 (five) fish processing businesses that became the research sample is Rp. 298,282,867 per year. Based on the identification of all non-financial aspects, the market aspect of milkfish processing business opportunities in marketing products is still open. Based on the technical aspects, the milkfish processing business still uses simple techniques, but during the processing activities, there were no significant obstacles found. In the management aspect, management is still very simple, where the business owner also acts as a manager. In the social aspect, the milkfish processing business can be a field of work for the surrounding community. On the environmental aspect, production waste can be used as animal feed. From the business feasibility analysis carried out on the five types of milkfish processed, with sales of 150 kg each month at a price of Rp. 170,000, the milkfish shredded business has an NPV of Rp. 557,460,264.67, Net B / C 1.64, and IRR 81%, higher than other milkfish processed products. From sensitivity analysis, business income is more sensitive to a decrease in production capacity than an increase in variable costs. The BEP value for shredded fish is 56.82 kg per month, for milkfish presto is 149.80 kg per month, for milkfish without thorns is 131.68 kg per month, for bale recurrence is 78.88 kg per month and for banding, fish is 82.25 kg per month. The priority strategies to encourage the development of milkfish processing business are modality (32.6%), marketing (23.5%), raw materials (21.8%), products (9%), promotion (7.4%), and policies government (5.8%).

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