

## **Business Analysis on Seaweed Processing and Marketing (Case Study in Ambon City and sub District of Western Southeast of Maluku-Indonesia)**

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**Abstract:** Short-term objective is the business development based on local wisdom, which is implemented through development of seaweed processing and marketing that is equally spread out on research units, while long-term objective is to make an effective strategy in the development of sustainable competitiveness on seaweed processing and marketing business. This study used explorative method. The approach of data analysis in this study is a mixed research methods or by combining the data analysis using quantitative method and qualitative methods. State of the art of this study is the competitive processing and marketing that provides the benefits on prosperity increment for seaweed processor in coastal people-based islands. The survey results shows the location and data Inventory as well as description of determination on strengths, weaknesses, challenges and opportunities for the management of seaweed cultivation. The researcher conducted research on sweet seaweed processing. The analysis results were taken by measuring the texture, aroma, flavor, and color of the sweet seaweed. As a result, from 150 panelists, there are 87.5% panelist stated that sweet seaweed is good/acceptable/preferred. For economic analysis, business on sweet seaweed processing is very decent to be proved by the calculation of Revenue Cost Ratio, Break Event Point, Return on Investment, and Economy Profitability.

**Keywords:** seaweed, value added, financial value chain.

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### **I. Introduction**

Social economy development needs development methods and approach that are suitable with the geographical conditions where the community lives and do their activities as well as the culture that guide their social life. Maluku that is an archipelago area dominated by 90% sea water is expected to be able to utilize the sea as the basis of social economy development. It is applied within the framework of archipelago province planned by the local government of Maluku province.

Majority of Maluku society in general and especially the people in Ambon City and Western Southeast Maluku Regency focus their economic activities on the sector of agriculture and fishery, characteristic of those two sectors are relatively based on the season. In contrast, activities that do not count on the season is the seaweed cultivation that is marine resources and can be managed by the Maluku society.

in general, The advantage of seaweed cultivation for people in Ambon and Western Southeast Maluku Regency is their economic activity is no longer count on season and climate. Seaweed tends to be commodity, which has high economic value because the current velocity in the waters are enough for seaweed cultivation, which is approximately between 20 to 40 cm/sec and the temperature, which is around 20-28 °C is also suitable for the growth of seaweed (Blueprint Advanced Maluku, 2008). Water quality is good (sanitary aspects), brightness, pollution-free with high salinity, currents sea water which is not heavy create great potential in optimizing seaweed production process. As a result, the number of farmer increases and the area of seaweed cultivation is also getting wider, as well as its distribution also increase to various villages. In fact, every farmer has seaweed cultivation with various capital, means of production and postproduction. Consequently, due to this condition, the seaweed production cannot be produced optimally and evenly.

Ambon city and Western Southeast Maluku Regency do not have any seaweed processing factory because the geographical condition, which has many island causing high costs to build distribution chain to factories in Java island. The market price of dried seaweed is in the range of Rp.14.000, - while the collectors who take the seaweed directly from seaweed farmer only quote the price only around 5,000, - to 8,000, -. This price is far from the market price. Therefore, the researcher directed the seaweed farmers to process their dried seaweed into sweet seaweed with price of Rp.70.000, - per Kilogram. The problem of this research is how does the business analysis increase the added value of seaweed processing and the preference level of the production of seaweed cultivation, as well as the flow of financial value chain for the case of seaweed-based islands in Ambon and Western Southeast Maluku?.

## **II. Review of Literature**

Analysis on seaweed business consists of (Ministry of Natural resources and Tourism, 2005): Analysis of Operating Revenues, Analysis of Revenue Cost Ratio (R/C), Analysis of Break Event Point, Analysis of profits, Analysis Economic Profitability, and Analysis of Period Returns.

1. Analysis of Operating Revenue Analysis of Operating Revenue ( $\pi$ ) is obtained from total revenue (TR) minus total cost (TC), with criteria; if the amount of revenue is greater than the total cost, then the business is profitable. If the amount of revenue is equal to the total cost, then the business is paid off or return of principal. If the amount of revenue is less than the total cost, then the business suffers from losses.
2. Analysis of Revenue Cost Ratio (R/C) This analysis aims to determine the extent of the benefits obtained from business activities for a certain period (1 year) whether profitable or not. R/C is obtained from TR compared to TC, with the criteria; if the revenue cost ratio greater than one ( $> 1$ ), then the business is profitable. If the revenue cost ratio is less than one ( $> 1$ ) then the business suffers from losses.
3. Analysis of Break Event Point Break Event Point is a condition in which all capital have returned or expenses is the same as income. Besides, the state of the breakeven point is a situation in which the total revenue (TR) of the company is same with total costs (TC), or  $TR = TC$ . BEP in kilograms is obtained from Total Cost compared to the selling price per Kilogram.
4. Analysis of Profit Opportunities for business development cannot be separated from economic considerations such the profits amount and the period of Return on Investment. Return on Investment (ROI) is the value of the benefits obtained from a number of capital, ROI is obtained from Operating Profit compared with production capital.
5. Analysis of Economic Profitability It is used to look at the feasibility, which is obtained from the presentation of operational profit compared to venture capital and operational costs. If the result is above 19% then the business can be categorized as feasible.

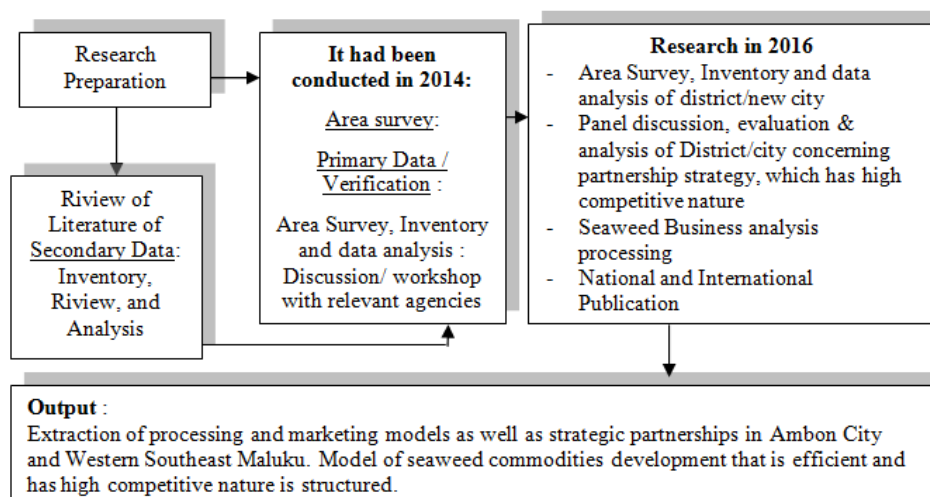
The added value is value added of a commodity due to the processing, storage, transportation in a production process. (Henny Malini and Selly Oktarina, 2014). Hypothesis: Seaweed processing will provide added value for seaweed farmers and it will be maximized by financial value chain for the case of seaweed-based islands.

## **III. Roadmap of Research**

The concept of development with various dimensions applied to an area often finds the fact that the concept requires modification or adjustment to local characteristics. The area development in general covers various development dimensions that are carried out gradually. As one of approaches in preparing the concept of regional development, regional resource endowment theory holds that the regional economic development heavily count on natural resources that are owned and associated with the demands on commodities produced from natural resources. The assumptions used by resource endowment theory is long term regional ability to conform and adapt to marketing demands by changing natural resources into goods and services that are needed.

The concept of regional development on leading commodity-based emphasizes that driving force of regional development considered commodities could be superior, both at domestic and international level. Superior commodities in a region have linkages with other regions (complementarity), both in terms of market (consumer) and the supply of raw materials. There for, the researcher focused on the business development of coastal communities that have superior commodity, especially seaweed, which is raw materials for food products, cosmetics (beauty), and herbal medicines. So, this reseach only focuses on the sweet seaweeds processing.

The researcher has experienced in the study of fisheries and marine science to increase seaweed quality, in addition, the researcher also has the ability to develop Small and Medium sized Enterprise and even Big sized Enterprise both in terms of human resource development, management efforts, and sales increment of superior commodity. Based on the definition of the added value that has been delivered, thus the researcher wants to analyze the added value as well as combine seaweed cultivation with cultivated seaweed processing. The researcher also uses the financial value chain to maximize the cultivated seaweed processing. Here is a roadmap of the reseracher's research process.



**Picture 3.1:** Methodology of Program Preparation

## IV. Result

### 4.1. Analysis of Seaweed Added Value

#### 4.1.1. Analysis of Business Revenue of Seaweed Cultivation

In order to obtain comprehensive results concerning the analysis of the added value from seaweed processing, the researcher probes the result of research team regarding the seaweed cultivation that had been done in 2014. Method used for seaweed cultivation in District of Western Southeast Maluku is Long Line method, with a length of ris rope is 200 m. The average of planted land area for long-line method is in area of 15 x 200 m/unit. There are 4 ris ropes that has length of 200 m with distance between ris ropes is 5m in each unit. it is menat to be unrelated between taliris when there is current or wave. At the end of each unit is mounted an anchor made from rock and there are also buoys made from unused bottles on the ris ropes. Seeds that are equired for each land/unit (15 x 200 m) are 320 kg to 3,200 clumps/point. Besides, there are 4 ris ropes and 1 ris ropes has 800 clumps with range of 25 cm between the clumps and each clumps are planted 100 grams seeds. The sales price of dried seaweed is Rp.14,000 / kg.

Based on survey results, the average of wet seaweed harvest for each clump is 1.250 gr / clump. Therefore, a total of wet seaweed harvest is 4,000 kg. From the survey result of harvested seaweed, there are 1 kg of seaweed that is dried out then it produces dried seaweed of 700 g or 0.7 kg with price for dried seaweed is Rp.14.000,- From the survey results, the group of seaweed cultivation for once harvest obtains Rp.39.200.00, - that is obtained from 2,800 kg of dried seaweed multiplied by Rp.14.000, - the selling price of dried seaweed per kilogram. Based on these results, it is found that the first harvest of seaweed cultivation already cover the capital investment and operational costs for once harvest for the terms of 45-50 days. If in one period (1 year) there are 7 times of harvest, the farmers will get Rp.274.400.000, - obtained from Rp.39.200.00, - then multiplied seven times the harvest for one period (1 year).

#### 4.1.2. Analysis of Business Revenue of Seaweed Processing

The team conducted training on seaweed processing from 100 grams of dried seaweed that are soaked and cleaned can produce 1 kg of ready-to-process wet seaweed. Besides, from 1 kg of ready-to-process wet seaweed can produce of 600 grams seaweed that is ready to be consumed or sold with the assumption that it has already included additional supplementary ingredients other than seaweed. If it can be produced as much as 1 kg of dried seaweed that is soaked and cleaned can get 10 kg of ready-to-process wet seaweed, then from 10 kg of ready-to-process wet seaweed may obtain 6 Kg of sweet saeweed that is ready to be consumed or sold, also with the assumption that it is already included additional supplementary materials other than seaweed.

Analysis of Business Revenues on seaweed processing is very promising if the farmer wants to pursue this field, for example, there are successful seaweed farmers in Lombok. Most of them are successful because they has two functions as cultivator and seaweed processor, who process seaweed into sweet seaweed. Then, that sweet seaweed also becomes typical food as souvenir from Lombok. That is why, the team want to adopt this concept to cultivate seaweed cultivation in Ambon and Western Southeast Maluku because it simultaneously will improve their welfare.1 Kg of Dried seaweed can produce 6 kg of sweet seaweed by the assumption that it is already contained additional supplementary ingredients. The selling price of dried seaweed in the market is Rp.12,000, - per 1 kg. The selling price of 1 kg of sweet seaweed in the market is Rp.70.000, - Kg. if we assume that we process 1 kg of dried seaweed may produce 3 Kg of sweet seaweed by not accumulating the supplementary ingredients, then the added value of processed dried seaweed into sweet

seaweed will be obtained by seaweed farmers. It is proved by 3 Kg of processed sweet seaweed may obtain Rp.210.000, - reduced by selling price of dried seaweed, so that farmers get more added value of Rp.198.000, - per 1 kg of dried seaweed into sweet seaweed. For the calculation of the feasibility, the researcher assumed the processing of 100 kg of dried seaweed, so that the total revenue from sweet seaweeds is Rp.7.000.000, -

**Tabel 4.1.** Analysis Seaweed Business

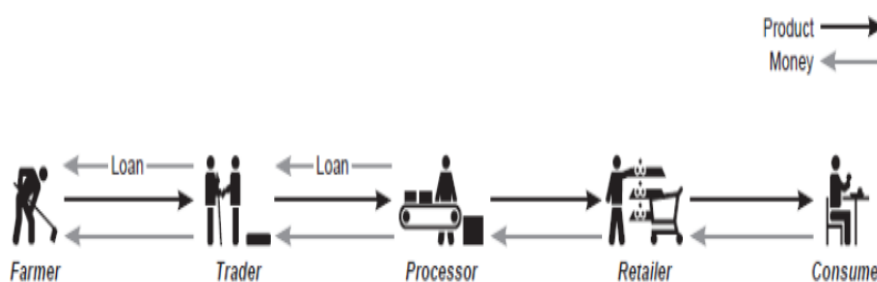
Ratio Analysis	Cultivation	Processing
Revenue Cost Ratio	10,36	2,05
Break Event Point	1.892,5 Kg	48,87 %
Return on Investment	9,36 %	104,62 %
Economic profitability	9,02 %	94,11

Based on analysis calculation results of Revenue Cost Ratio (R / C), it is obtained (R/C) value for the sale of dried seaweed, which is 10,36. Based on the criteria of Revenue Cost Ratio (R/C), it is obtained  $R/C > 1$ , so that it can be interpreted that the seaweed business for the sale of dried seaweed is already profitable, and based on the criteria of Revenue Cost Ratio (R/C), it is obtained  $R/C > 1$ , so it can be interpreted that the seaweed processing business for the sale of sweet seaweed is already profitable. The result of BEP (kg) above means, breakeven point will be achieved when the seaweed cultivation produce seaweed seeds as much as 1892.5 k, and the break-even point will be reached when the seaweed processing is able to produce sweet seaweed as much as 48.87 kg.

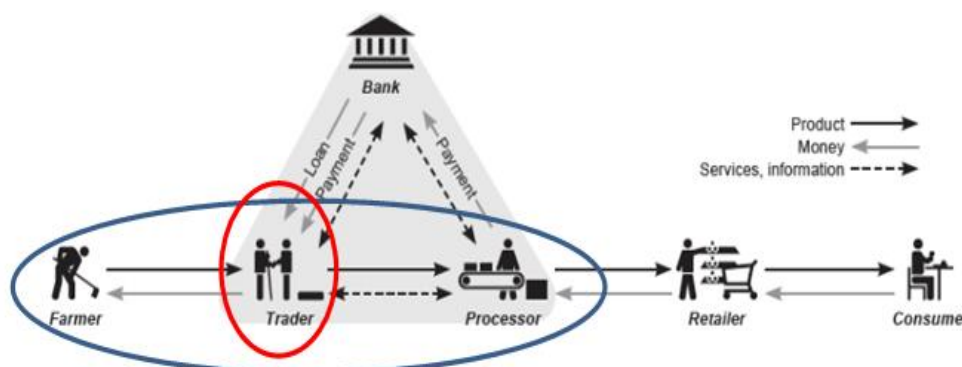
According to the comparison between profit and capital production, it is obtained ROI value of 9.36%, which means that the profit amount that is obtained compared to the cost for business is "good", it means that every capital of Rp100 obtained a profit of Rp.9,36. Then seaweed processing business is also "good", which means that any capital of Rp 100 for sweet seaweed processing will earn profit of Rp.104,62. The result economic profitability written above is  $9.02\% > 9\%$ , so it can be considered as feasible for businesses, and the result for processing shows the percentage of 94.11% that is more than 9%, thus it can be said that dried seaweed processing into sweet seaweed may be carried out as business.

**4.2. Value Chain Finance of seaweed processing result**

The sales of cultivated seaweed can be seen in figure 4.1. wherein, the cultivated dried seaweed that should be valued in accordance with market price that is Rp.14.000, - per Kg must go through a small and big collectors before come in the big production companies, then farmers can only sell the dried seaweed at a price of Rp.6.000, - up to Rp.9,000, - per Kg. The result of the distribution chain shows that collectors can get more benefits from the chain of sales value of dried seaweed than the farmers.



**Gambar 4.1.** The Value Chain of Cultivated Seaweed



**Gambar 4.2.** Value Chain Finance of Seaweed Processing Result

The concept of value chain finance on seaweed processing in Figure 4.2 shows that there are three main sections to note, which are: supply of financial services by financial institutions, processing result of seaweed. However, the results of our research for the case in Western Southeast Maluku and Ambon shows that financial institutions only interested in funding the collectors rather than the seaweed farmer to directly go to the seaweed processing factory because the collector has lower loss risk and they also has collateral to obtain funds from financial institutions.

The second section is demand for financial services by commodity value chain actors of seaweed result processing. As described in the first section that by the funding from the financial institutions, the collector can create a market from small collectors to large collectors then arge collectors to processing factory. Then the result from the identification of research team; the large-scale processing plant is located in Surabaya so it will requires substantial funds for seaweed farmers to be able to directly market their product to the factory. The solution offered by the researcher is that, the seaweed farmer requires to conduct a seaweed processing by involving micro finance institutions to obtain funding. The third section is supply of financial services by value chain actors of seaweed processing. If the seaweed farmers is able to convince the financial institutions that they are able to market their seaweed processing result, so the the financial istitutions will be interested in supplying large funf for seaweed farmer. Besides, they also can cut the chain of distribution.

## V. Conclusion

Seaweed is a promising commodity spread out in almost all Maluku islands. These results show that the problems faced by each islands are different from each other. The title of this review resulted in the analysis of seaweed management in terms of fishery processing results technique, strategy management analysis involves a partnership pattern that has competitiveness and financial analysis of the seaweed management. However, this study limits the research on financial analysis only. The results of processed seaweed prove the increase of added value from just sells the cultivated seaweed in the form of dried seaweed, and if the seaweed farmers can cut the distribution chain, they will get better results. Field identification results found that farmers face financial difficulties to market their product either dried seaweed or the processing result, so that they can only sell their product in their house. Therefore, the resercher propose the solution by involving funding from financial institutions so that they can cut their distribution chain.

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