Man In India, 97 (24) : 439-447

STRATEGY FOR INCREASING ADDED VALUE BY SEAWEED PROCESSING AND MARKETING BUSINESS (A CASE STUDY IN WEST MALUKU TENGGARA REGENCY-INDONESIA)

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The implementation of seaweed processing and marketing development was the short-term purpose of this study and relevant with local wisdom-based business development in the research units. Meanwhile, making effective strategy to improve sustainable competitiveness of seaweed processing and marketing business in West Maluku Tenggara Regency was the long-term purpose and general purpose of this study. The special target of this study was obtaining a strategic partnership model of seaweed processing and marketing business in Maluku region. This study used explorative research method. The data analysis method was mixed methods research of combining quantitative data analysis method and qualitative data analysis method with Triangulation model analysis design approach.

Designing strategy for increasing added value of competitive seaweed processing and marketing which improves the welfare of seaweed processors in island-based coastal communities was the State of the art of this research.

The researcher performed this study for three years. The researcher has surveyed the location and inventoried the initial data and described the determinations of strengths, weaknesses, challenges and opportunities of seaweed processing. Therefore, in the first and second years, the research was focused on the study of seaweed processing extraction and strategic partnership in West Maluku Tenggara Regency. In the third year, this study also formulated a comprehensive model for seaweed processing business in small islands to be an island economic sub-model.

Keywords: Seaweed Processing, Valle Added, Financial Value Chain

I. INTRODUCTION

1.1. Background

Economic growth of the society is a process of increasing economic production capacity in the form of increasing national income. Every region, whether in national or local context, tries hard to grow. As a consequence, there are competitions in technology, local commodity, skill and investment, as well as marketing. Due to the competition, the development of a region demands the creation of sustainable leading competitiveness to enable the region to consistently increase its prosperity and maintain it.

Moluccas is dominated by islands (90% of it is sea), so it's expected that sea becomes the basis of economic growth of the society. This is applied in the island

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province framework established by Moluccas Provincial Government. However, the geographic location and condition of Moluccas have been used to justify the ambivalence to the success of development in the region. In the context of island and coastal economic growth, according to Marsuki (2006:38), the basic matter which should be improved is production agencies, whether private, public or belonging to society in other ways, in large, medium and small scales. Strategically, the format of coastal economic growth is mentioned in the island province framework established by Moluccas Provincial Government and the development of Moluccas Province which is oriented toward the sea. The people of Moluccas, generally focus their economic activities on agriculture and fishery. The characteristic of the sectors is they're seasonal. Activity which doesn't depend on season is seaweed cultivation.

In my previous paper, I have mentioned that the general advantage of seaweed cultivation for the people of West Maluku Tenggara Regency is it's not related with season or climate. Seaweed tends to have high economic value because the current velocity for seaweed cultivation is 20- 40 cm/second and the right temperature for growing seaweed is 20–28 ºC. Good water quality (sanitation aspect), brightness, lack of pollution with high salinity, seawater current which isn't too strong are potential for optimal seaweed production. These cause the number of seaweed farmers and cultivation area to increase and spread to many villages. The farmers have different capitals, production method and post-production processing, causing uneven seaweed products optimization (Blueprint Advanced Maluku, 2008 in Stenly Jacobus Ferdinandus et al., 2016).

This research consists of three people with different specifications: the leader with expertise in Fishery Product Technology, who focused on leading seaweed processing; first member with expertise in human resources management, who focused on community empowerment and competitive partnership patter; and the author, who focused on financial management study. Therefore this paper only discusses the analysis of value added of seaweed processing and the creating of financial value chain plot for island-based seaweed case in Moluccas.

1.2. Research Purpose

The purpose of this research was to describe the value added of seaweed processing and formulate effective strategy in developing sustainable competitiveness for seaweed marketing of West Maluku Tenggara Regency by increasing the added value of seaweed processing, analysis of financial value chain of island-based seaweed case.

1.3. Outcome

The outcome of this research was extraction model in the development of seaweed processing based on local wisdom and strategic partnership in small islands,

description of local leading commodity potential in West Maluku Tenggara Regency, and publication of the research result in reputable international journal.

II. REVIEW OF LITERATURE AND HYPOTHESIS DEVELOPMENT

2.1. Review of Literature

The added value is value added of a commodity due to the processing, storage, transportation in a production process. (Henny Malini and Selly Oktarina, in Stenly Jacobus Ferdinandus *et al.,* 2016)

Analysis on seaweed business consists of (Ministry of Natural resources and Tourism, in Stenly Jacobus Ferdinandus et al., 2016); 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 (ð) 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 importance of Value Chain financing context Agriculture is at the heart of the economic development and poverty reduction in developing countries. Millions of actors in the agribusiness arena – farmers, processors, traders, transporters, input suppliers- have difficulties to run their businesses.it's mean financial Constraints. However, "financial constraints in agriculture remain pervasive, and they are costly and inequitably distributed, severely limiting smallholders' and other actors ability to compete" (World Bank, 2008 in Yeray Saavedra, 2015).

2.2. Hypothesis Development

From initial identification, it was suspected that seaweed processing would give added value for seaweed farmer compared with selling dried seaweed and it was maximized by financial value chain for island-based seaweed case

III. RESEARCH METHOD AND ROADMAP

3.1. Research Approach

Reduced poverty rate and improved economy of the society in coastal areas and small islands are targeted by the government. Therefore, the researchers with the aid of MP3EI (Master Plan of Acceleration and Expansion of Indonesian Economic Growth) of the Ministry of Research, Technology, and Higher Education tried to perform a study to increase the income of the society by seaweed processing nad marketing in Lermatang Village, West Maluku Tenggara Regency. Previously, we have studied seaweed cultivation in Lermatang Village and it shows that the product increases significantly from the previous cultivation pattern.

3.2. Roadmap

Below is the roadmap of the research which is described by determination of competitive partnership strategy model of seaweed cultivation. The roadmap started

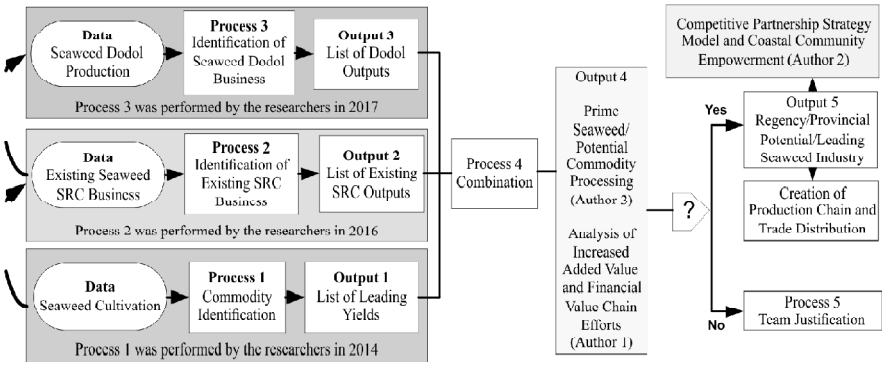

Figure 3.1: Flowchart of the Process of Determining Competitive Added Value Improvement Strategy Model

from seaweed cultivation, Semi Refined Carrageenan (SRC) processing, and then seaweed Dodol product.

3.3. Financial Analysis

Added value in finance means the result of a previous product has more profitable financial value. The researchers would like to analyze the added value of seaweed cultivation product or dried seaweed in the form of SRC and Dodol. The researcher used financial value chain to maximize the result of seaweed processing.

IV. RESULT AND DISCUSSION

The result discussed in this paper is only the economic analysis.

4.1. Value added Analysis of Seaweed Business

4.1.1. Analysis of Seaweed Cultivation Business

In the initial study in 2014, the researcher used the same method as in 2016 but with different score and there was a decrease of selling price. The method used for seaweed cultivation in West Maluku Tenggara Regency was Long Line method using 400 m of rope. The average area size for long line method was 30 x 400 m/ unit. Every unit had 4 400 m ropes and the distance between the ropes was 5 meters so that they weren't tangled when there was wave or current. The end of every unit was anchored to large stone and used water bottle buoy on top of the rope.

The seed required for every land/unit (30 x 400 m) was 640 kg for 6.400 cluster/point. Every rope had 800 clusters and there was 25 cm between clusters while every cluster had 100 gr of seed. Based on the survey, the average wet seaweed harvest of every cluster was 1.250 gr/cluster. So, total wet seaweed harvest was 8.000 kg. Based on the survey, for every 1 kg sundried seaweed, the dry product was 700 gr or 0,7 kg and the selling price of dried seaweed was Rp.12.000/ kg. (2016 survey. In 2014, the selling price was Rp.14.000/kg).

Based on the survey, seaweed cultivation business group received Rp.67.200.000,- for every harvest from 5.600 kg dried seaweed multiplied with Rp.12.000,- selling price of dried seaweed per kilogram. Based on the result, the first harvest had covered the investment and operational cost for one harvest in 45-50 days. If there were 7 harvests in a period (1 year), the cultivators would receive Rp.470.400.000,- from Rp.67.200.00,- multiplied with 7 kali harvest in a period (1 year).

4.1.2. Analysis of Semi Refined Carrageenan (SRC) Seaweed Processing

The 2017 research also focused on Semi Refined Carrageenan (SRC) Training to sell it because in the initial identification, there was demand for semi-finished material of seaweed processing product.

SRC is also known as Alkali Treated Cottonii (ATC). 1 Kg dried seaweed which is submerged and cleaned could produce ready to process 10 kg wet seaweed.

Analysis of SRC Business Income was also promising if cultivators were able to meet demands while maintaining quality. The selling price of 1 Kg SRC seaweed in the market was Rp.70.000,- Kg, so farmers received Rp.58.000,- added value per 1 Kg dried seaweed.

4.1.3. Analysis of Seaweed Dodol Processing

Dodol production training in the previous study (2016) was performed only as a sample for home consumption. In 2017, it was produced to be sold. The price increased from Rp.70.000,- / Kg in 2016 to Rp.85.000,- / Kg in 2017. 1 Kg dried seaweed which is submerged and cleaned could produce ready to process 10 kg wet seaweed. 10 kg ready to process wet seaweed produced 6 Kg *dodol* ready for consumption or sale, assuming that it contains supplementary materials.

Analysis of seaweed dodol Business Income was very promising. For example, in Lombok, most seaweed farmers both cultivate and process seaweed into *dodol* and seaweed dodol becomes famous unique Lombok souvenir. The researcher planned to adopt this concept for seaweed cultivators in Ambon and West Maluku Tenggara Regency to improve their welfare.

The selling price of 1 Kg seaweed *dodol* in the market was Rp.85.000,- Kg. Assuming 10 Kg of dried seaweed could be processed into 6 Kg of seaweed *dodol* without accumulating supplementary materials, the added value of seaweed *dodol* is very significant for seaweed farmers. 6 Kg of dodol could yield Rp.510.000,- reduced with the price of dried seaweed, so the farmers received Rp.73.000,- added value per 1 Kg dried seaweed.

TABLE 4.1: ANALYSIS OF SEAWEED BUSINESS FEASIBILITY

Ratio Analysis	*Cultivation*	*SRC*	*Dodol*
Revenue Cost Ratio	9,60	2,24	2,80
Break Event Point (Kg)	4.083,72	41,50	171,92
Return on Investment	8,60	1,24	1,80
Economic Rentability	9,46	19,71	20,39

Note : SRC and *dodol* calculation in accordance with the amount of dried seaweed harvest

Based on Revenue Cost Ratio (R/C) analysis, (R/C) values of dried seaweed sale was 9,60 SRC 2,24 and Dodol 2,80. Based on Revenue Cost Ratio (R/C) criteria, R/C > 1, so seaweed business to sell dried seaweed was profitable. Based *on Revenue Cost Ratio* (R/C) criteria, R/C > 1, so seaweed business to sell SRC and seaweed *dodol* was profitable.

The BEP (kg) above meant breakeven point would be reached when seaweed cultivation produced 4.083,72 Kg seaweed seed. Breakeven would be reached when seaweed cultivation produced 41,50 Kg SRC and 171,92 kg seaweed *dodol*.

Based on comparison of profit and production capital, ROI was 8,60%, meaning the profit compared with production cost was "good", so every Rp.100 of capital produced Rp.8,60 of profit. SRC and seaweed *dodol* business was also "good", meaning every Rp.100 of capital to process SRC produced Rp.1,24 of profit and seaweed dodol produced Rp.1,80 of profit.

The economic rentability values above were 9,46% better than the standard 9%, so they were feasible for business and the value of SRC production was 19,71% and seaweed *dodol* 20,39 %, also higher than 9%. Therefore dried seaweed processing into SRC and seaweed dodol were feasible businesses.

4.1.3. Value Chain Finance

The selling price of dried seaweed in the research period declined from Rp.14.000,- / Kg in 2016 to Rp.12.000,- / Kg in 2017, and there was increase of seaweed *dodol* price. The sale of seaweed cultivation in Figure 4.1 showed that dried seaweed should be priced similar to market price which was Rp.12.000,- per Kg but it had to go through small collector and large collector to reach production company, so farmers only sold it for Rp.6.000,- to Rp.9.000,- per Kg. This distribution chain showed that collectors received more profit from the sale of dried seaweed than cultivators.

The concept of value chain finance in seaweed processing in figure r 4.2 shows that seaweed farmers could cut value chain from four value chain actors before seaweed products could be consumed. Seaweed farmers could also become seaweed processors and product distributors. So, farmers received more benefits than in figure 4.1 in which there were three actors who benefited from value chain after seaweed farmers.

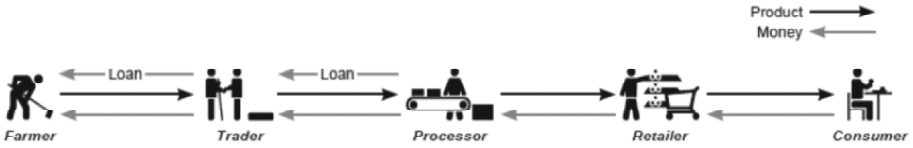

Figure 4.1: The Actor Value Chain of Cultivated Seaweed

Figure 4.2: Value Chain Finance of Seaweed Processing Result

V. CONCLUSION

Seaweed is a promising commodity which is found nearly all over Maluku islands. This study produced analysis of seaweed management in terms of fishery product processing technique, analysis of strategy management in terms of competitive partnership pattern and financial analysis of seaweed management. This article only discusses the financial analysis.

Seaweed processing product showed increased added value than only selling dried seaweed and if seaweed cultivators can stop the chain of distribution, they will receive more profit. Identification in the field found that cultivators had financial difficulties in marketing their products, whether dried seaweed or processing products, so they could only sell them at home. As a solution, they used funding from financial institutions to cut the chain of distribution.

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