Analysis of Income and Marketing of Seaweed in Coastal Communities in Bulukumba District

Nurbaya Busthanul[1(✉)] [ID], Pipi Diansari[1] [ID], Eymal B. Demmallino[1] [ID],
Masyhur Syafiuddin[2], S. Ni Made Viantika[1] [ID], Ayu Marshya[1], A. Rusita[1],
Nabilah Rahmawati[1], and Siti Hardiyanti Syam[1]

[1] Department Socio Economic of Agriculture, Faculty of Agriculture, Hasanuddin University, Makassar, South Sulawesi, Indonesia
n.busthanul0963@gmail.com

[2] Department Soil Science, Faculty of Agriculture, Hasanuddin University, Makassar, South Sulawesi, Indonesia

Abstract. Seaweed is one of the country's foreign exchange sources and a source of income for coastal communities. Besides being able to be used as an ingredient food, drink and medicine. This study aims to analyze the income and feasibility of seaweed farming in coastal communities in Bulukumba Regency. The research was conducted from May to July 2022 in Bulukumba Regency. The basic method in this research is descriptive analytical with the implementation using survey techniques. Determination of the sample used by using a total sampling of 80 respondents spread over four sub-districts. The data used are primary data and secondary data. Analysis of the data used is the income analysis and R/C ratio. The results of the income analysis show that the average farm income is Rp. 57.971.540/farmer/cycle. The results of the feasibility analysis of seaweed farming in Bulukumba Regency can be said to be feasible because the R/C ratio is more than one (RC > 1), which means that seaweed farming activities are feasible to be developed because they are economically profitable. Marketing chain of seaweed in Bulukumba District consisted of two chains, namely: Seaweed Farmer-Trader-Merchant-KIMA Makassar and Seaweed Farmer-Trader-KIMA Makassar.

Keywords: Bulukumba Regency · Income · R/C ratio · Seaweed

1 Introduction

Indonesia as an archipelagic country which is one unit and must be protected and used for the prosperity of Indonesia. The territory of the State of Indonesia which consists of a sea area under its sovereignty covering an area of 3.1 million Km^2, a sea area where the state has sovereign rights covering an area of 2.7 million Km^2, a land area of 1.9 million Km^2. Around 17,508 large and small islands are inhabited and uninhabited and some islands do not have a name with a coastline length of 81,900 km [1].

Seaweed is very useful as a food ingredient or raw material for various products. With abundant raw materials and increasing land use for seaweed cultivation, seaweed

is a leading commodity. At this time seaweed has been used as a raw material for industrial gelatin, carrageenan, alginate, and furselaran [2]. Products extracted from seaweed are widely used as food ingredients, additives, or mixed ingredients in the food, pharmaceutical, cosmetic, textile, paper, paint, and other industries. In addition, seaweed is also used as fertilizer and a component of animal or fish feed. This seaweed farming is very appropriate to be developed as an effort to provide employment and expand opportunities to try to increase the family income of seaweed farmers [3].

Widespread use of seaweed provide great opportunities for development the cultivation business includes fishermen who there is also a tendency to cultivate seaweed, because seaweed cultivation has advantages compared to commodities other aquaculture [4]. So far, farmers have been doing seaweed farming without doing farming calculations financially, they are solely trying to do production and marketing. Financial analysis is important to do to find out the amount of income, costs incurred and find out whether the farming carried out is in a feasible and profitable condition. [5] put forward financial analysis as an analysis that compares costs and benefits, to determine whether an activity is profitable.

South Sulawesi is one of the centers of seaweed development in Indonesia, against the background of the condition of its geographical area which is a coastal area along the district in South Sulawesi [6]. Bulukumba is one of the areas in South Sulawesi where the population works as fishermen and conducts seaweed farming activities [7]. Gantarang, Ujung Bulu, Ujung Loe and Bonto Bahari sub-districts are some of the sub-districts in Bulukumba which are coastal areas that generally cultivate Euchema cottini seaweed.

One of the pillars of income for coastal communities in Indonesia is the cultivation of seaweed, there are various reasons why seaweed can be the foundation of hope for coastal communities today and in the future: First, various types of seaweed can potentially be cultivated and are relatively easy to cultivate because of their simple technology. And does not require feed in its cultivation but sufficient with water fertility. Second, the opportunity for several types of seaweed to be used as food and as industrial material so that it has a very strategic potential to become a value-added commodity. Seaweed cultivation is a source of income and at the same time a business opportunity and job opportunity for coastal communities and especially small-scale cultivators. In addition, seaweed cultivation can improve the ecological balance of the waters [8].

This encourages efforts to conduct research on financial analysis of seaweed that can provide an overview of whether seaweed farming is financially feasible. Based on this description, this study aims to determine the financial aspects of farmers in seaweed farming in four sub-districts in Bulukumba. The criteria used in the income analysis for seaweed are income and R/C Ratio.

2   Research Method

Determination of the location of the study was done intentionally by determining the area as a center for seaweed production in Bulukumba Regency. The research was conducted in four districts in Bulukumba, namely Gantarang District, Ujung Bulu District, Ujung Loe District and Bonto Bahari District. This research was conducted in May-July 2022. Primary data were obtained from observations, interviews, questionnaires, and

documentation conducted in the field. While secondary data obtained from journals on the internet. The number of respondents was determined using purposive sampling with a total of 80 respondents spread over the four sub-districts. The methods of analysis carried out is:

2.1   Income Analysis

Is the analysis carried out to obtain seaweed cultivation business with the formula proposed by Soekartawi (2002) in [9] as follows:

$$Pd = TR - TC$$

Desc:
Pd = income.
TR = total revenue.
TC = total cost.

2.2   Analisis R/C Rasio

[10] put forward the formula for the r/c ratio is

$$\frac{R}{C}\text{Ratio} = \frac{TR}{TC}$$

Under the condition:

R/C Ratio > 1 then the business makes a profit
R/C Ratio = 1 then the business is at break even
R/C Ratio < 1 then the business suffers a loss

If the calculation result of the R/C ratio is greater than one, then the seaweed cultivation business of E. cottonii is feasible, if the calculation result of the R/C is smaller than one, then the seaweed cultivation business of Euchema spinosum is not feasible: If the results of the calculation of R/C are the ratio is equal to one, so the E. cottonii seaweed cultivation breaks even.

3   Results

Farming income analysis is a way of analyzing the calculation of farm income. The analysis used in this research is Net Farm Income (NFI). This analysis aims to find out how much the farmers' net income is worth developing or experiencing losses. Farming income requires 2 basic information, namely the state of receipt and the state of expenditure within a certain period of time. Net Farm Income is the total net income received by farmers. The average Net Farm Income of all respondents can be seen in Table 1. This table shows the average income level of farmers per cycle and per year (3 cycles per year) in each sub-district of production centers.

Table 1. Average income of E. cottonii seaweed in four sub-districts in Bulukumba

No.	Districts	Cost (IDR/cycle)	Production (kg/cycle)	Revenue (IDR/ha)	Income (IDR/cap/cycle)	Incomem (IDR/cap/year)
1	Gantarang	23.714.906	1.374	27.480.000	3.765.094	11.295.282
2	Ujung	30.171.352	3.108	62.160.000	31.988.648	95.965.944
3	Bulu	20.193.203	2.423	48.460.000	28.266.797	84.800.391
4	Ujung Loe Bonto Bahari	32.925.153	2.310	46.200.000	13.274.847	39.824.541
	Average	26.751.154	2.304	46.075.000	19.323.847	57.971.540

Table 2. R/C E. Cottonii seaweed farming in Bulukumba Districts

No.	Sales price scenario (IDR/kg)	R/C	Profit (IDR/cap/cycle)	Profit (IDR/ha/year)
1	19.000	1.64	17.020.097	216.128.210
2	21.500	1.85	22.779.472	289.263.130
3	23.000	1.98	26.237.097	333.144.083

The income from the production of seaweed cultivation in Bulukumba Regency in one cultivation cycle is an average of 2,304 kg. For one cycle of cultivation, an average income of Rp. 19,323,847,-. In a year the income of seaweed farmers is Rp. 57.971.540,-. E. cottonii seaweed farming income is obtained from the difference between total revenue and total production costs incurred in farming activities in one growing season. In general, costs are the sacrifices made by farmers in processing their farms to get maximum results. The existence of fixed and variable production elements in the short term results in the emergence of two categories of costs, namely fixed costs and variable costs. Seaweed production is strongly influenced by the daily growth rate and is protected from disease [11].

The most powerful indicator and often used to express the feasibility of a business is the value of the RC-ratio, namely the ratio between the amount of revenue (R) to the total cost (C). If the R/C ratio > 1.0 means that the business (farming) has a profit or margin so that it can be sustainable. And, if the RCR < 1.0 then the business is at a loss; while if RCR = 1.0 it means neither profit nor loss. The cumulative average of RCR and the level of net income with three price scenarios are presented in the Table. In Table 2, three price scenarios are tested from the lowest, the average (mudus) to the highest based on the relatively stable price developments in the last three years in Bulukumba. The average area of land (arable) per farmer in Bulukumba Regency is 788 m².

From the table, clear information is obtained and confirms that even though sales are made at the lowest price level, the E. cetionii seaweed cultivation business in Bulukumba Regency is still profitable. This means that the effort can be recommended to continue. Not only this, but also shows a relatively high net income of farmers, which is Rp 17,020,097.00 per cycle or equivalent to Rp 51,000,000 per farmer per year.

It can be seen in the table above that there is a difference in the purchase price of seaweed dry at the consumer level. The existence of this difference, where in the marketing channel I is lower than the price received by collectors, because it is caused by grass the sea under the collector to the consumer (KIMA) in channel II does not undergo a sorting process so that the seaweed that is sold is given a price low by consumers in the Makassar Industrial Estate (KIMA). Whereas In marketing channel II, the price is greater for wholesalers, because At this merchant level, seaweed undergoes a sorting process first before being sent to the consumer (KIMA) for sale. Therefore, merchant large bidders offer higher prices for dried seaweed to the parties consumers (KIMA) as a result of the sorting activities carried out. From activities the sorting makes there is a difference in the quality of the seaweed between the received by consumers on channels I and II, so that the seaweed under wholesalers are given high prices by consumers in Industrial Estates Makassar (KIMA).

4 Conclusions

The results of the study can be concluded that the average income of seaweed farming in Bulukumba Regency is Rp. 57.971.540,-. This farming is said to be feasible because even with the lowest selling value it still produces an R/C above 1.

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