Value-chain distribution of seaweed production in Amal Coast, Tarakan Island

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Abstract. Seaweed has high economic potential which is can give a hope for coastal societies to improve their living standards. Since 2009, In Tarakan island, North Kalimantan especially In Amal’s Coast, the local communities started to developing seaweed cultivation and now seaweeds become one of Tarakan’s main commodity beside fish, shrimps and crabs. This study aims to analysis seaweed’s value chain distribution in Amal Coast, Tarakan. Data collection method is interview directly to farmers, collector traders and other marketing agents by using snowball sampling. The marketing Chains occurred trough 2 Value Chains Channel and the farmers get less profits than the factories or exporter. Therefore, it is indeed needs to improve the value chain distribution of seaweeds in Amal coast.

1. Introduction
Indonesia is a country that has larger ocean area than its land area. Indonesian territory consist 70% area of ocean with length of coastline is more than 81,000 km and consists of 13,677 islands [1]. The larger area of the ocean has an impact on the coastal resources which is make Indonesia has high potential of coastal resources. The efforts to manage the potential of Indonesia’s marine resources are done by many things, one of them is by cultivation. Seaweed cultivation is one of coastal resources that has a high potential in economic which is adequate to give a hope for coastal societies to improve their living standards.

Seaweeds is one of export commodities that has high potential to be developing. Indonesia is one of exporting countries in Asia. Seaweed is exported in form dried seaweed [2]. According to the [1] 70% of the production of seaweed are exported to Europe (EU), China and Philippines. 30% of seaweed production is circulated in domestic market. The type of seaweed that being cultivated by Indonesia people is Eucheuma cottonii. Species Eucheuma cottonii can be found in Amal Coast, Tarakan Island, North Kalimantan. Since 2009, In Tarakan Island, North Kalimantan especially In Amal’s Coast, the local communities started to developing seaweeds cultivation. At first, seaweed cultivation is only alternative income for local communities beside of being fisherman. But apparently, seaweed cultivation business is very promising and growing rapidly. Seaweed cultivation has a pretty good prospect, because it already has their own market and now it has become one of Tarakan’s main commodity beside fisheries, shrimps, and crabs.

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Figure 1. Distribution of Seaweed Cultivation In Amal Coast Tarakan

Seaweed cultivation has long been carried out by the community, but the marketing of seaweed products is still faced with various problems. The price of seaweed sometimes being determined by collector and wholesaler than farmers. This is the reason why farmer get less profit from seaweeds cultivation because the retailers and traders acted as price controller. For that reason, we need to see how the distribution chain of seaweed occurs and the value chain of seaweed in Amal Coast, Tarakan Island.

Value chain distribution is the various activities to bring products from the production involving the producer move along to marketing agents until deliver to customer [3]. Or how the products move along the with other actors engage in trading, assembling, processing and transporting. It examines all activities of production from the raw materials to customers. The distribution chains moving through the value chain which is include farmers, traders, whole shares, retailers until reach the customer [4]. The value chain perspective is important because the studies is focused on individual economic agents or particular cultivation policy or management frameworks [4].

Value chain approach is a way to look the interaction between different economic agents to deliver the products until reach the customer. so the mapping of actors and linkage between them (individuals, companies and governance) can be seen. The value chain can be used to see the social norms in cultivation area that can be used to see the potential economic development [5].

According to Kaplinsky and Morris [6] there is no right way to conduct a value chain analysis.
1. At the basic level, value chain analysis used to make a map how economic agents (individual, companies and governance) participate in the production, distribution until marketing and sales. The details can be found by combining survey and secondary data from governance.
2. Value chain Analysis can be used to identifying the distribution and benefits of economic agents in chains. [6].
3. The value chain analysis can examine the role of upgrading chains. The upgrading here can be referred with upgrading quality with design product that enable to enhanced value.
4. Value chain can highlight role of governance to see the relationship between the economic agents and governance in value-chain.

In this paper will examine how the value-chains in small-scale industry through study case from seaweed cultivation in Amal Coast, Tarakan Island. Through this research can be known whether there is a gap in an effort to increase the sale value of seaweeds commodities in each of value chain.
2. Methods

The study site has been selected in Amal Coast, Tarakan City in North Kalimantan which is determined purposively with the consideration that Amal Beach is the center of seaweed cultivation and production in Tarakan Island.

![Figure 2. Study Area in Tarakan Island, North Kalimantan](image)

The value chain analysis is based on primary and mostly from secondary data.

1. The primary data was collected through interview surveys with the farmers, economic agents or marketing institution in study area
2. The secondary data was collected by reports of government and seaweed marketing agencies and previous studies or literature that still associated with this study.

The population of this study consists of seaweed farmers and economic agents (traders, retailers, and other economic agents) that involved in seaweeds production and marketing. Snowball methods is being used in this study. In this case, the farmers can give an information to whom the seaweed they sell. Then the respondents are asked to identify another responder which is part of seaweed production and marketing. Data processing will include the description of seaweeds marketing agents, describe how the distribution occur, make the flow scheme from distribution chain, calculating the production, marketing cost and the income that will received by the farmers and economic agents. Income is calculated by the difference between the sales costs and marketing costs. The margins analysis is needed to determine the level efficiency of marketing in marketing chains and to see how much the profits will be obtained.

1. Calculation of total Marketing margins [7]

\[ M = Sp - PP \]  

where M, SP and PP is the Marketing Margins, Selling Price and Purchased Price (Rp), respectively.

2. Calculation of Percentage Marketing Margins

\[ \% M = \frac{M}{PE} \times 100\% \]  

where \% M, M and PE is the Percentage Margins (%), Marketing Margins and Price for End-Customer, respectively.

3. Calculation of Marketing Agents’s Profits

\[ \pi = M - Sp \]  

where \( \pi \), M and Sp is the Profits (Rp/Kg), Marketing Margins (Rp/Kg) and Selling Price (Rp/Kg), respectively.
3. Result

3.1. Value-Chain Distribution Channel

The value-chain analysis in Amal Coast showed that seaweed distribution chains involving several marketing agents on site or outside the cultivation area [8]. The marketing agents that involve in Seaweeds marketing in Amal Coast are:

1. **Farmers**
   Farmers are the man who cultivate seaweed around the coast. farmers cultivate seaweed by tied on seaweed to nets and then cultivated on sea. Farmers sell the seaweeds as dried seaweeds by drying it for 3-4 days. But not all seaweeds is being sell to traders, half of the seaweeds used as seeds back to be harvested.

2. **Local Collector Traders**
   The farmers collect all of seaweeds and sell it for sale to collector traders in seaweed cultivation area. The traders buy it as wet seaweeds or dried seaweeds. After collecting enough seaweeds, the collector sell it to other traders in different location.

3. **Wholesaler**
   The wholesaler received dried seaweeds from collector traders. The wholesaler can accommodate while seaweed to wait for a suitable price or higher price.

4. **Factory or Exporter**
   Most of factories are located in Makassar and Surabaya. Factories purchased it through the wholesaler depends on the distance on location. Seaweed production in Tarakan Beach mostly for export commodity to Hongkong and Taiwan.

Based on the researches, the distribution of value chains of seaweeds in Amal Coast Tarakan are going through 2 marketing channels.

1. The farmers send their seaweeds to collector and the collector send it to bigger market for sale.
   the local collector and wholesaler acted as price controller.

2. The farmers sell the seaweeds directly to the customer from factories. They came directly to the seaweed cultivation sites to bought the seaweeds.

![Figure 3. Marketing Channel Of Seaweeds in Amal Coast Tarakan](image)

The Analysis about marketing margins and farmer’s share is to determining the level efficiency of marketing in marketing chains [9]. The farmer’s share derived from marketing margins obtained by marketing agents based on measurement of selling price with purchase price and other costs. The bigger number of margin that received by marketing agents then the marketing of dried seaweed is more inefficient. It means that the bigger number between purchased price and selling price. the bigger income from farmer than overall income shows that the price in end-customer can give a more profit for seaweed farmers. Selling prices, purchased prices, margin and profit is showed in table 1.
Table 1. Margin Distribution, Profit and Farmer’s share of Seaweed in Amal Coast

| No | Marketing Agents        | Channel I      | Channel II     |
|----|-------------------------|----------------|----------------|
|    | Value (Rp/Kg) | Percentage (%) | Value (Rp/Kg) | Percentage (%) |
| 1  | **Farmers**             |                |                |
|    | **Selling Price**       | 9000           | 42.8%          | 9000           | 45.0%          |
|    | **Production Cost**     | 7000           | 33.3%          | 6500           | 32.5%          |
|    | **Marketing Cost**      | -              | -              | -              | -              |
|    | **Transportation Cost** | -              | -              | 150            | 0.8%           |
|    | **Profit**              | 2000           | 9.5%           | 2485           | 12.4%          |
|    | **Margin**              | 2000           | 9.5%           | 2335           | 11.7%          |
| 2  | **Local Collector**     |                |                |
|    | **Purchased Price**     | 9000           | 42.9%          | -              | -              |
|    | **Transportation Cost** | 200            | 1.0%           | -              | -              |
|    | **Packing Cost**        | 75             | 0.4%           | -              | -              |
|    | **Labor Cost**          | 500            | 2.4%           | -              | -              |
|    | **Marketing Cost**      | 650            | 3.1%           | -              | -              |
|    | **Selling Price**       | 12000          | 57.1%          | -              | -              |
|    | **Profit**              | 1575           | 7.5%           | -              | -              |
|    | **Margin**              | 3000           | 14.3%          | -              | -              |
| 3  | **Wholesaler**          |                |                |
|    | **Purchased Price**     | 12000          | 57.1%          | 9000           | 45.0%          |
|    | **Transportation Cost** | 150            | 0.7%           | 160            | 0.8%           |
|    | **Packing Cost**        | 100            | 0.5%           | 100            | 0.5%           |
|    | **Labor Cost**          | 250            | 1.2%           | 250            | 1.3%           |
|    | **Marketing Cost**      | 650            | 3.1%           | 700            | 3.5%           |
|    | **Selling Price**       | 17000          | 81.0%          | 15000          | 75.0%          |
|    | **Profit**              | 3850           | 18.3%          | 4790           | 24.0%          |
|    | **Margin**              | 6000           | 28.6%          | 6000           | 30.0%          |
| 4  | **Factories or Exportir** |            |                |
|    | **Purchased Price**     | 18000          | 85.7%          | 15000          | 75.0%          |
|    | **Tax**                 | 150            | 0.7%           | 150            | 0.8%           |
|    | **Marketing Price**     | 400            | 1.9%           | 400            | 2.0%           |
|    | **Selling Price**       | 21000          | 100.0%         | 20000          | 100.0%         |
|    | **Profit**              | 2450           | 11.7%          | 4450           | 22.3%          |
|    | **Margin**              | 3000           | 14.3%          | 5000           | 25.0%          |
|    | **Purchased Price** (End-Customer) | 21000 | 100.0% | 20000 | 100.0% |
|    | **Total Marketing Price** | 1700          | 8.1%           | 1100           | 5.5%           |
|    | **Total Profit**        | 9875           | 47.0%          | 11725          | 58.6%          |
|    | **Total Margin**        | 14000          | 66.7%          | 13335          | 66.7%          |
|    | **Farmer share**        |                |                |
|    |                        | 42.80%         | 45%            |                |                |
1. Channel I
The value-chain in Channel I (Table 1) showed that the share of prices received by farmer is 42.89%. The distribution of marketing margin from 14000 seen from ratio between cost and profit. It turns out that from Rp. 100 the cost by farmers will earn profit of Rp. 28. The collector traders earns Rp 14 from every cost, Wholesalers earns Rp 33 and factories earns Rp 44. Factories profits are bigger because the marketing costs are smaller.

2. Channel 2
In channel 2 the distribution directly to wholesaler and the wholesaler will sell it to factories or exportir. The farmers get the share of prices 45%. The distribution of marketing margins from 1335 showed that from Rp s100 cost will earns profit for Farmers by Rp 37. For wholesaler it will get Rp. 39 and Factories will get Rp. 80.

4. Conclusion
The Value-Chain Distribution for Seaweeds in Amal Beach, Tarakan North Kalimantan occurred trough 2 Channels.
1. Channel I : Farmers - Collector Traders – Wholesaler – Factories or Exporter
2. Channel II : Farmers – Wholesaler – Factories or Exporter
   Margin Analysis showed that the factories earn more profit than farmers because they have less effort for marketing. This can be happened too because the marketing costs and selling price of each packaging agency on each marketing channel are different and labor cost haven’t included yet.

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