MARKETING EFFICIENCY OF SEAWEED IN SABU RAIJUA REGENCY (CASE STUDY RAIJUA DISTRICT)

Micha Snoverson Ratu Rihi[1*] , Viona Febrina Natalia Nainggolan, Siviardus Marjaya, Haryati M.Sangadji, Manaor Bismar Nababan[2]

[1]State Agriculture Polytechnic of Kupang, Jl. Prof. Dr. Herman Johanes, Lasiana, Kec Kelapa Lima, 85011, Kupang, Indonesia
[2]Indonesian Methodist University, Jl Hang Tuah No 8, Madras Hulu, Medan Polonia District, 20151, Medan, Indonesia

Corresponding author. Email: raturihimicha@gmail.com

ABSTRACT

One of the agricultural products of Sabu Raijua Regency ships to the outside of the island is seaweed, but because middlemen set the selling price, it is never fixed at the farm level. This study aimed to determine the following: 1) the channels through which seaweed is marketed; 2) the marketing functions that farmers and marketing institutions play in the industry; 3) the marketing margin on each seaweed marketing institution; and 4) the efficiency of the seaweed marketing system in Sabu Raijua Regency. Data collection was carried out through a survey method. The method for determining respondents was carried out in a stratified random sampling. Data analysis methods were carried out

qualitatively and quantitatively. The results of the research showed 1) the seaweed marketing channel was Farmers → Middlemen → Inter-Island Traders → Wholesaler in Macassar → Industrial Consumer; 2) The function of seaweed marketing at the Farmer level was exchange function (sale), at the Middleman level, exchange functions (purchase, sale), physical functions ((weighing, packaging, transportation); facility function (risk bearing), at the Inter-Island Trader level, exchange functions (purchase and sale), physical functions (weighing, packaging, transportation, storage, sorting), and facility functions (risk bearing and retribution), at the Wholesaler level, exchange functions (purchase and sale), physical functions (weighing, transportation, packaging, sorting), and facility functions (risk bearing and retribution); at the Consumer level, there was only the exchange function (purchase); Seaweed marketing margin was IDR 4,500 kg^{-1}; 4) Sabu Raijua Regency's seaweed marketing was not yet efficient.

Keywords: marketing; efficiency; seaweed

1. Introduction

Seaweed farming is one of the economic activities being pushed by the government as part of the development of coastal areas. It is anticipated that this program will boost regional economic growth since it will raise local residents' incomes (Agustang et al., 2021). In addition to being a superior aquaculture commodity (Agustang et al., 2021), seaweed is a fishery commodity with numerous uses as a medicine and raw material in the pharmaceutical, cosmetic, and beauty, food, fertilizer,

animal feed, and textile industries. It also helps boost fisheries production and generates foreign exchange for the state (Aslan, 1998).

Seaweed's polysaccharide content has been shown to have medicinal benefits, including lowering blood cholesterol and lipid levels, enhancing the digestive system, regulating diabetes, antithrombotic, anticoagulant, anticancer, antiproliferative (anti-cell division uncontrollably), antiviral, and anti-inflammatory (anti-inflammation) properties (Burtin, 2003 and Shiratori et al, 2005 in Agustang et al., 2021); treating goiter; treating calcium deficiency in pregnant women, teenagers, and elderly individuals who may be at risk of calcium deficiency (Fitton, 2005 in Agustang et al., 2021); contains omega 3 and 6 fatty acids to prevent various diseases including narrowing of blood vessels and bone disease (Almatsier, 2005 in Agustang et al., 2021); includes lipids with antioxidant activity and synergistic effects on tocopherol (an antioxidant compound that has been widely used) (Anggadiredja et al., 1997 and Shanab, 2007 in Agustang et al., 2021); contains vitamin B, specifically vitamin B12, which is specifically useful for the treatment or delay of the effects of aging (antiaging), chronic fatique syndrome (CFS), and anemia (Almatsier, 2005 in Agustang et al., 2021); contains vitamin C, which is beneficial for boosting the immune system, increasing

the activity of intestinal iron absorption, controlling the formation of bone tissue and matrix, and regenerating vitamin E (Soo-Jin Heo et al., 2005 in Agustang et al., 2021); and contains polyphenols with antibacterial activity, making them useful as alternative (John and Ashok, 1986 and Fitton, 2005 in Agustang et al., 2021).

Because seaweed has carrageenan, it can be used in the pharmaceutical business as a laxative, bacterial culture, suspense maker, liver oil emulsifier (Agustang et al., 2021), stabilizer, tablet medicine, syrup, ointment, capsule, plaster, and filter (Aslan, 1998). As a result of this, the most crucial raw materials for the synthesis of carrageenan are carrageenate and its derivatives, which include *Chondrus crispus*, several *Gigartina* species, particularly *Gigartina stellata*, *Eucheuma*, and *Hypnea* species (Agustang et al., 2021). Moreover, algin is a sort of substance found in *Phaephyceae* that is used in the cosmetic sector to manufacture ointments, soap stabilizers, creams, sun protection oils, shampoos, hair colors, toothpastes, dental printing materials, and powders (Aslan, 1998).

Algin found in seaweed is widely used in the food industry or as food ingredients: it can be found in vegetables, sauces, butter, thickeners, stabilizers, and sausage made with seaweed polysaccharides (Nugroho and Kusnedar, 2021 in Agustang et al., 2021), cheese, ice

cream, candy, jelly, milk chocolate, ice cream, yogurt, wafer cream, instant pudding, bread, candy, soft drinks, fruit juice, beer, milk, salad dressing, soy sauce, diet food (jelly, jam, syrup, pudding), baby food, fish and meat canning, and natural food coloring (Aslan, 1998). In the realm of biotechnology, seaweed is also frequently employed as a growth medium for microbes, fungi, yeast, microalgae, and DNA recombination and electrophoresis. Seaweed's picocolloids are also used to stabilize milkshakes and stop ice crystals from forming in ice cream (Burns, 1974 in Agustang et al., 2021).

Given that seaweed, particularly that which belongs to the *Rhodophyceae* and *Phaeophyceae* classes, is high in potassium, it is utilized as an organic fertilizer in the fertilizer industry. Seaweed fertilizer has been employed by Japan, China, England, France, and Canada to increase crop yields, particularly when it comes to cassava, sweet potatoes, and potatoes. If seaweed is combined with manure prior to usage, it will break down faster and release nitrogen and phosphorus into the soil faster. This will speed up the process of using seaweed as fertilizer. Using seaweed as a fertilizer can help break up silt or clay, bind sand, and loosen the soil (Aslan, 1998).

Seaweed is fed to slaughterhouse animals in the animal feed business in order to produce meat that is expected to be excellent (Abdullah, 2021). Certain

varieties of seaweed, such as *Rhodymenia* and *Allaria* (Aslan, 1998), are utilized as fish feed and as feed for sheep, goats, and cattle in a number of nations, including Scotland and Ireland (Agustang et al., 2021).

In the textile industry, seaweed finds application as an additive in a variety of products such as paint, ceramics, textiles, paper, photography, shoe polish, toothpaste, insecticides, pesticides (Abdullah, 2011), wood protection, fire prevention, microtomy interests, museums, criminology (Aslan, 1998), and glass, among other products (Agustang et al., 2021).

Seaweed, a fishery commodity that is exported, is a significant contributor to the foreign exchange earnings of the nation. With a value of US$ 397.16 million, Indonesia exported 231,829.70 tons of seaweed and other algae in 2022. Compared to the previous year, when there were 206,185.10 tons and a value of US$ 222.61 million, this amount climbed by 12.44% (BPS RI, 2023). Indonesian seaweed exports to more than ten nations in 2022 were distributed based on the countries of destination. With total exports of 195,115.4; 7,818.1; 6,138.2; and 5,820.2 tons with export values of US$ 335,827,900; 15,823,200; 4,776,000; and 13,997,000, respectively, China, South Korea, Vietnam, and France are the top four destination countries for Indonesian seaweed exports in 2022 (BPS RI, 2023).

As a superior commodity for aquaculture (Agustang et al., 2021), seaweed is a fishery commodity that plays a significant role in augmenting fisheries production (Aslan, 1998). One of seaweed cultivation's benefits, according to Asaad et al., (2008) in Agustang et al., (2021), is that it requires a lot of labor. Age and gender disparities are not taken into account in the labor absorption of seaweed farming. Men and women share about 75–80% of the order and task related to seaweed farming. The availability of sufficient labor, the ease with which work can be completed by anybody, the relatively high value of the rupiah earned, and the lack of a perspective that separates the roles of men and women are the factors that contribute to the equitable distribution of work. The Raijua District has 2,158 households, of which 1,781 (82.53%) were engaged in seaweed farming, according to study by Ratu Rihi et al., (2008). This indicates that the majority of the district's residents were employed in seaweed farming.

One of the coastal regions in East Nusa Tenggara Province where seaweed agriculture is taking place is Sabu Raijua Regency. With a total production of 60,941 tons and a value of IDR 179,380,582,000, seaweed production in this district ranks third as the largest grass-producing district in 2022 after Kupang District and East Flores District (BPS Provinsi NTT, 2023). Despite being

one of the districts in Nusa Tenggara Timur Province designated as seaweed production centers, Sabu Raijua Regency is located relatively far from consumers, particularly those in the seaweed industry. This poses a challenge to the marketing of seaweed, as even consumers in the seaweed industry who are able to consume relatively large amounts of seaweed are located outside the province.

Similar to seaweed, every agricultural commodity has a particular marketing route in every region (Sudiyono, 2004). Due of the relatively great distance between producers and consumers, there are a number of marketing institutions involved in seaweed marketing that serve as intermediary institutions. Institutions engaged in seaweed marketing function as go-betweens for producers and consumers. Nasrudin and Musyadar (2018) state that the distance between producers and consumers is one of the factors that determines how far agricultural products move in the marketing channel. The lengthier (shorter) the product's channel of transit, the greater (closer) the gap between producers and consumers. Because of that, research has been done to determine the seaweed marketing channels of Sabu Raijua Regency.

Each marketing institution involved in the distribution of seaweed from producers to consumers is

expected to carry out the marketing functions associated with the seaweed it purchases and sells in order to expedite the transfer of ownership from one intermediary institution to another and expedite the time it takes for consumers to obtain the commodity. Therefore, research has been done to determine the seaweed marketing functions conducted by marketing institutions involved.

Intermediary institutions are anticipated to pay a range of costs in carrying out marketing functions aimed at facilitating the selling of seaweed commodities during the flow from producers to consumers. Furthermore, intermediary institutions are eligible to obtain marketing profits, which are incentives from marketing functions. It is believed that seaweed varies in price at the store level throughout time. The length and duration of the marketing channel, the quantity of expenses, and the marketing earnings at each commodities intermediary institution are other factors that impact the selling price of seaweed. The price of seaweed in different marketing institutions or intermediary institutions will depend on the variety of marketing functions offered, the amount of marketing expenses incurred, and the marketing earnings in each marketing institution. The selling price of seaweed to customers will rise even more due to increased and more substantial marketing expenses at

the intermediary level. The marketing margin is the difference between the price that producers receive (the selling price of a commodity at the producer level) and the price that consumers pay (the selling price at the retailer level). Research has been done to calculate the marketing margin of seaweed of Sabu Raijua Regency, since it needs to be known.

Finding the profit margin ratio—the ratio of marketing profits to marketing costs—in each marketing institution is one way to assess a commodity's marketing efficiency. In order to determine the marketing efficiency, research has been done on each marketing institution involved marketing of seaweed of Sabu Raijua Regency to calculate the profits and marketing costs ratio.

2. Research Methodology

2.1   Place and Time of Research

The Sabu Raijua Regency's Raijua District is the site of this study. The period of time used to collect the data was September 1–30, 2008. Despite this research conducted in 2008, most of the data are still relevant to nowdays conditions for several reasons: Firstly, the price of seewed at the level of producers is same with the price in September 2008, that is IDR 18,000 kg^{-1} per September

2023. Secondly, the number of middlemen just increase 1 person form the number of those in 2008 that was 20. Even, the middlemen are the same people with those in 2008. Thirdly, the number and the people of those who are inter-island traders, wholesalers and industrial consumer are alike with those in 2008. Lastly, the costs of marketing carried out by middlemen in the island not much changed.

2.2   Site Selection Method

The choice of site was purposive. Raijua District was selected because, according to BPS Kabupaten Kupang (2008), it was the region with the largest seaweed production in the region in 2008 (23.25% prior to the division into Sabu Raijua Regency) or 33.37% following the divide into Sabu Raijua Regency

2.3   Data Retrieval Method

Survey methodology was used to acquire data. Both primary and secondary data were gathered. Direct interviews with respondents who were directed by a set of questions (questionnaire) were used to collect primary data. BPS Provinsi Nusa Tenggara Timur, BPS Kabupaten Kupang, and BPS Republik Indonesia were the sources of secondary data that were gathered concurrently for this study.

2.4   Respondent Determination Method

Every household in the Sabu Raijua District that cultivates seaweed was the study's population. 570 seaweed farmer households had a business scale of less than 50 ropes, 850 had a business scale of 51-100 ropes, and 370 had a business scale greater than 100 ropes. There were 1,781 households in all. Based on the business scale (number of ropes being cultivated with seaweed), the sample selection process was stratified. Ten percent of the samples came from each stratum, for a total of 178 seaweed growers' samples. In the meantime, intermediary traders and so on up to consumers were obtained through tracing information from seaweed producers. The study's consumer constraint pertains to industrial customers who convert raw seaweed into semi-finished forms.

Table 1. Number of Households and Households of Seaweed Farmers in Raijua District

Village	Number of Households	Number of Households Cultivating Seaweed	Percentage of Household Cultivating Seaweed (%)
Kolorae	410	287	70
Bolua	436	400	92
Ledeke	245	237	97
Ledeunu	657	597	91
Ballu	410	260	63
Total	2,158	1,781	

Table 1 reveals that 82.53% of the households in the Raijua District are engaged in seaweed farming. These houses are distributed across five villages, with Ledeke Village having the highest number of seaweed households and Ballu Village having the lowest.

According to Table 2, the majority of respondents (47.75%) belonged to the 51-100 rope seaweed business scale, while the least number (20.79%) was in the >100 rope business scale.

2.5. Data Analysis Model

The gathered information was tallied and examined in light of the study's goals. Descriptive analysis was done to ascertain the quantity and kinds of marketing channels as well as the marketing functions carried out by intermediary institutions. Meanwhile, the following formula is used to determine the amount of marketing margin:

$$M = \sum_{i=1}^{m} \Sigma_{j=1}^{n} cij + \Sigma \pi j$$

Description: M = Marketing Margin; Cij = marketing costs to carry out the i-th marketing function by the j-th marketing institution; πj = profit obtained by the j-th marketing institution, m = the sum of the types of marketing costs; n = number of marketing institutions (Sudiyono, 2004).

Table 2. Number of Seaweed Farmer Household Respondents by Business Scale in Raijua

Village	Number of Respondents	Seaweed Business Scale (Rope)		
		≤ 50	51-100	>100
Kolorae	29	9	12	8
Bolua	40	15	20	5
Ledeke	23	3	9	12
Ledeunu	60	15	35	10
Ballu	26	15	9	2
Total	178	57	85	37

The profit margin ratio (PMR) approach is used to calculate marketing efficiency at the intermediary trader level or in each marketing channel.

$$PMR = \frac{\pi i}{c}$$

Description: PMR = profit margin ratio; c = marketing cost of the i-th level institution; πi = marketing profit of the i-th level marketing institution (Azzaino, 1993)

A marketing system that operates efficiently is reflected in PMR values that are comparatively evenly distributed among various marketing intermediary levels. Efficiency criterion: A marketing system is deemed efficient if the difference in PMR across intermediary institutions is zero; conversely, if the difference in PMR between intermediary institutions is not zero (Azzaino, 1993). Stated differently, the efficiency of seaweed marketing in Sabu Raijua Regency is determined by the equal profit margin ratio (PMR) across the marketing institutions.

3. Result

In Sabu Raijua Regency, Raijua district is an island that is isolated from Sabu Island. Raijua District seaweed production is still done the old-fashioned, uncomplicated method with little outside technological input. Using a rope that is stretched 7.6–8.0 m in length, arranged in

the shape of a free lane, seaweed can be grown in the water column (eupotic) close to the water's surface using the long line method. Thirty seaweed seedlings weighing 50 grams each were strung along the rope at 40-centimeter intervals. The main ropes are nylon ropes are stretched out on two ends of stakes or anchors. Seaweed clumps are attached to the main ropes at a distance of 50 cm from one another. Red and green algae were the types of seaweed that were farmed. With an average productivity of 0.6 kg m^{-1} and an average rope length of 7.8 m, the average scale of effort was 85 ropes. The seaweed was collected 45 days after it was planted.

3.1.   Seaweed Marketing Channel

Seaweed producers in Raijua District sell their produce to middlemen for an average of IDR 18,000 kg^{-1}. The inter-island seaweed traders who travel by motor boat from South Sulawesi Province purchase it from middlemen. The seaweed is motorboated to the harbor at Sinjai Regency, South Sulawesi Province, by inter-island traders. The inter-island traders unload the seaweed at the Sinjai harbor and subsequently sell it to wholesaler in Macassar City. Subsequently, wholesaler in Macassar City offer their products to industrial consumer (factory that turns seaweed into seaweed flour).

Raijua District was the exclusive source of

seaweed marketing channels. Farmers → Middlemen → Inter-Island Traders → Wholesaler in Macassar → Industrial Consumer was the marketing channel.

Table 3. Seaweed Rope Ownership by Business Scale

Details	Seaweed Business Scale (Rope)		
	≤ 50	51-100	>100
Number of respondents	57	85	37
Number of ropes	2.508	6.630	5.735
Average number of ropes per respondent	44	78	155
Total rope length (m)	20.064	52.377	43.586
Average rope length (m)	8,0	7,9	7,6

3.2 *Seaweed Marketing Function*

Table 4 summarizes the marketing functions carried out by seaweed marketing institutions in the Raijua District.

Table 4. Seaweed Marketing Functions in Raijua District

Marketing Institutions	Exchange			Physical				Facility	
	Sale	Purchase	Weighing	Packaging	Transportation	Storage	Sorting	Risk Bearing	Retribution
Farmers	√	×	×	×	×	×	×	×	×
Middlemen	√	√	√	√	√	×	×	√	×
Inter-Island Traders	√	√	√	√	√	√	√	√	√
Wholesaler	√	√	√	√	√	×	√	√	√
Consumer	×	√	×	×	×	×	×	×	×

Source: Ratu Rihi, et al (2008). Description: √: carried out marketing function; x did not carry out marketing function

Marketing margin is the difference between the price paid by consumers and the price received by producers. In Raijua District, the seaweed marketing margin is IDR 4,500 kg^{-1}. Table 5 provides specifics on purchase prices, costs, profits, and marketing margins.

Table 5. Margin, Margin Distribution, and Share of Seaweed Marketing in Raijua District

Marketing Institutions and Margin Components	(IDR kg^{-1})	Margin Distribution (%)	Share (%)
Seaweed Farmers			
Selling Price	18,000	-	80
Middlemen			
Buying Price	18,000	-	80
Weighing Cost	50	1.11	0.22
Packaging Cost	50	1.11	0.22
Freight Cost	150	3.33	0.67
Weight loss cost	90	2.00	0.40
Profit	160	3.56	0.71
Selling Price	18,500	-	82.22
Inter-Island Traders			
Buying Price	18,500	-	82.22
Weighing Cost	50	1.11	0.22
Labor Cost to Boat	50	1.11	0.22
Retribution Fee	100	2.22	0.44
Freight by Boat	400	8.89	1.78
Labor Cost from Boat to Truck	100	2.22	0.44
Freight Cost to Warehouse	50	1.11	0.22

Marketing Institutions and Margin Components	(IDR kg^{-1})	Margin Distribution (%)	Share (%)
Sorting Cost	100	2.22	0.44
Packaging Cost	50	1.11	0.22
Weight Loss Cost	185	4.11	0.82
Storage Cost	150	3.33	0.67
Profit	1,265	28.11	5.62
Selling Price	21,000	-	93.33
Wholesaler in Macassar			
Buying Price	21,000	-	93.33
Weighing Cost	50	1.11	0.22
Freight Cost	450	10.00	2.00
Retribution Fee	10	0.22	0.04
Labor Costs	50	1.11	0.22
Sorting and Packaging Costs	100	2.22	0.44
Weight Loss Cost	210	4.67	0.93
Profit	630	14.00	2.80
Selling Price	22,500	-	100.00
Consumer (Factory)			
Buying Price	22,500	-	100.00
Marketing Margin	4,500		

Marketing efficiency is one aspect of marketing in an effort to improve the movement of goods from producers to consumers (Downey and Erickson, 1992**).**

Table 6. Profit Margin Ratio of Seaweed Marketing in Sabu Raijua Regency

Marketing Institutions	Total Marketing Cost (IDR kg⁻¹)	Marketing Profit (π) (IDR kg⁻¹)	Profit Margin Ratio (PMR)
Middlemen	340	160	0,47
Inter-Island Traders	1.235	1265	1,02
Wholesaler	870	630	0,72

4. Discussion

The Raijua District was the exclusive marketing outlet for seaweed. This is due to Raijua District somewhat remote position (1,004.7 km) as a seaweed grower with industrial consumer in Macassar City. There was only one consumer of seaweed from Kecamatan Raijua, and that was industrial consumer (seaweed processing factory), despite the fact that there were twenty intermediaries, four inter-island traders, and one wholesaler acting as intermediary institutions between producers and consumers. There is a strong suspicion that industrial consumer has set the price of seaweed that they bought from wholesaler, creating a liberal monopoly in the market structure between wholesaler and industrial consumer. A liberal monopoly market, according to Sudiyono (2004), is one in which there is only one buyer and one seller. Furthermore, agricultural goods are frequently produced in isolated and distant locations where there is typically only one buyer for every numerous sellers (a phenomenon known as monopsony). Moreover, the price of seaweed bought from wholesaler had a monopsony market structure, while the price of seaweed bought from middlemen had an oligopsony market structure. Lastly, middlemen decided the price of seaweed bought from producers who had an oligopsony market structure (a small number

of buyers and a large number of sellers, according to Abidin et al., 2021).

Exchange, physical, and facility functions were the marketing functions carried out by marketing institutions.

4.1 *Marketing Functions at the Middleman Level*

Table 4 demonstrates that the purchase and sale functions are the exchange functions that were performed. Almost the entire island's seaweed was purchased from farmers' locations along the coast in order to fulfill the purchase function. While the sales function was carried out by selling seaweed to inter-island traders waiting at the Raijua sea port dock. The functions that were physically performed include packing, transportation, and weighing functions. To guarantee the quantity of seaweed bought from farmers, the weighing function was used throughout the buying process. The scales were hanging scales, however two persons must hold the scales while they were being weighed.

Weighed seaweed was subsequently packed into 70 kg capacity bags that middlemen have prepared for the packing operation. The transportation role involves employing human labor to move freight from the seaweed farmer's hut to the truck that was ready for use,

and then the truck's contents were delivered straight to the sea port in Raijua. The facility function of risk coverage of loss resulting from decreased seaweed weight loss was carried out by middlemen. Even though the seaweed was delivered from the seaweed farmer's location to the inter-island trader's location in a reasonably short amount of time (a few hours), there was still a chance that the middleman will lose the weight of the seaweed they purchased. This occurs because inter-island traders occasionally believe that seaweed they bought from middlemen hasn't dried to the appropriate degree. If this occurs, inter-island traders will unilaterally lower the seaweed's weight based on their experience with calculations. The sort of scales used by intermediaries to weigh seaweed at seaweed farmers' locations differs from those held by inter-island traders, and this distinction was also significant when it comes to the risk of weight loss. Inter-island traders utilized seated scales; middlemen use hanging scales, which were typically held by two persons. Even though the intermediary claims that the weight is accurate, it frequently happens that the seaweed will weigh less when it was weighed again at the inter-island trader's location.

4.2   Marketing Functions at the Inter-Island Trader Level

Exchange, physical, and facility functions include the marketing functions carried out by inter-island traders. The purchase and sales functions were the exchange functions that were executed. Inter-island traders purchased seaweed from intermediaries for their purchasing function, and they sold seaweed to wholesaler in Macassar City, South Sulawesi Province, for their sales role. The physical functions that were completed include packing, storing, sorting, weighing, and transportation. The seaport at Raijua is where the weighing function was performed. Before the seaweed was loaded aboard the motorboat, inter-island traders performed this function. Using port labor, the transportation function involved moving seaweed from the Raijua Island seaport pier to the motorboat. Next is the motorboat transportation service between the seaports in Raijua and Sinjai Regency, South Sulawesi Province. Upon reaching Sinjai seaport, there was a transport function that uses port workers to move the motorboat to the vehicle (truck) at the Sinjai dock and then from the dock to the warehouse. The purpose of the sorting process was to remove any remaining contaminants from the seaweed. New sacks were used

in place of the packing bags to complete the packaging functions.

The storage function is carried out by storing seaweed for a while before it was sold to wholesaler in Macassar City. The risk-bearing and retribution functions were the facility functions carried out by inter-island traders. Seaweed losses as a result of weight loss happened as the motorboat was being transported from Raijua seaport to Sinjai seaport. It is believed that the decreased moisture content of the seaweed and the contaminants that were separated after the seaweed was sorted are the causes of this weight loss. At the level of inter-island traders, the average weight loss was 10 kg ton^{-1}. The payment of retribution to the government of Sabu Raijua Regency, the region that produces seaweed, prior to the seaweed's departure from the Raijua sea port, was known as the retribution function. The existence of sea port facilities used to load seaweed onto motorboats anchored at the Raijua sea port is the reason for the retribution.

4.3   Marketing Functions at the Wholesaler

The marketing functions performed by wholesaler were exchange functions, physical functions, and facility functions. The exchange functions carried out were the purchase and the sales function. In the

purchase function, wholesaler in Macassar bought seaweed from inter- island traders in Sinjai Regency while in the sales function, wholesaler sold seaweed to industrial consumer (factory processing seaweed into seaweed flour). The physical functions carried out consist of weighing, transportation, sorting and packaging. The weighing function was carried out to ensure the weight of seaweed purchased from inter-island traders. The transportation function was carried out by transporting seaweed from the warehouse in Sinjai Regency to Macassar City (where industrial consumer is located) and transporting by workers from the vehicle to the factory's warehouse. Sorting and packaging functions were carried out to re-sort seaweed purchased from inter-island traders according to the sorting results demanded by industrial consumer and packed it into new packaging or sacks. The facility functions performed by wholesaler were risk-bearing and retribution. The weight loss was estimated at 10 kg ton^{-1}.

Table 5 shows that the difference between the price paid by consumer and the price received by producers or the seaweed marketing margin in Raijua District is IDR 4,500 kg^{-1}. The components that made up the marketing margin were marketing costs and marketing profits. In terms of contribution to the

marketing margin, marketing costs had a greater contribution of 54.33% (IDR 2,455 kg^{-1}) than marketing profits which contribute 45.67% (IDR 2,055 kg^{-1}). The greater the marketing costs the greater the marketing margin, and vice versa. The same is true for marketing profits. Marketing costs vary for each commodity including agricultural products. According to Crawford (1997) in Abidin et al., (2021) due to several factors, including: the more waste the greater the proportion of consumer's expenditure which goes on marketing cost, the more perishable the product the greater the marketing cost, the more processing of the commodity the greater the marketing cost, and the greater the amount of product handling and transportation the greater the marketing cost. In addition, the greater the marketing profits received by marketing institutions, the greater the marketing margin, and vice versa. Marketing institutions will always increase marketing profits if there is an increase in marketing costs, and vice versa.

Table 6 shows that the largest PMR value is found at the inter-island trader level, while the lowest PMR value is found at the middleman level. The PMR value at the inter-island trader level was the highest because of the relatively large profits obtained from seaweed marketing. Inter-island traders took large profits that

even exceed the marketing costs incurred because they incur relatively large costs. Relatively large costs occurred because they had the most cost components incurred compared to the amount and cost of the cost components of large traders and middlemen. The relatively longer possession of goods and the risks during transportation between sea ports that are relatively long and far away place inter-island traders to incur large costs so that it is only natural to take the most profit among existing marketing institutions. Based   on the unequal PMR values between marketing institutions, the efficiency of seaweed marketing in Sabu Raijua Regency was not yet efficient.

5. Conclusion

Based on the results and discussions above, it can be conclude that:

1). Seaweed marketing channels in Sabu Raijua Regency was Farmers → Middlemen → Inter-Island Traders → Wholesaler in Macassar → Industrial Consumer.

2). The function of seaweed marketing at the Farmer level was exchange function (sale); atthe Middleman level were exchange functions (purchase, sale), physical functions (weighing, packaging, transportation), facility function (risk bearing); atthe Inter-Island Trader level were exchange functions (purchase and sale), and physical function (weighing,

packaging, transportation, storage, sorting), facility functions (risk bearing and retribution), at the Wholesaler level were the exchange function (purchase and sale), physical functions (weighing, transportation, packaging, sorting), facility function (risk coverage and retribution); at the Consumer level was the exchange function (purchase).

3). Seaweed trading margin was IDR 4500 kg^{-1}

4). Calculated using the profit margin ratio method, seaweed marketing in Sabu Raijua Regency was not yet efficient.

Acknowledgements

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