

Diversification in Seaweed Processing Cooperative Businesses: A Study of Products and Services Varieties

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Abstract. This study aims to investigate the business diversification undertaken by seaweed processing cooperatives and analyze the variety of products and services offered. This study used a qualitative approach with in-depth interviews and participatory observation to collect data from seaweed processing cooperatives, namely the Utari Seaweed Cooperative (KRLU), which operates in various coastal areas of Bulukumba Regency. The results showed that seaweed processing cooperatives have successfully diversified their businesses to optimize the potential of their seaweed resources. This business diversification includes processing seaweed into various products such as processed foods. The cooperative also offers services such as educational tours, where people can learn about seaweed cultivation and processing. This diversification of businesses and services has provided economic and social benefits to the cooperative and local communities. The study concludes that the business diversification of the KRLU cooperative is an effective strategy for increasing the added value of its products and improving the cooperative's income. Recommendations from this study are to continue to encourage innovation in seaweed processing, increase the capacity of cooperative members through training and mentoring, and expand marketing networks to improve market access.

1 Introduction

Seaweed, one of the most valuable marine resources, has been the focus of global attention

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in recent decades [1]. Rich in nutrients and having the potential for various products, seaweed has become an important raw material in the food, pharmaceutical, cosmetic, and other industries [2]. In several countries, seaweed processing has become a booming industry. However, the positive impact of seaweed processing is not only limited to the economic sector but also impacts local communities in coastal areas [3].

Seaweed processing cooperatives are emerging as economic entities that plare importantn sustainably managing this resource. Cooperatives allow local communities to band together, process and market, their seaweed products [4]. Seaweed processing cooperatives also have the potential to support local econ regional development and reduce poverty levels in coastal areas [5].

A cooperative is a business organization owned and operated by individuals for the common good. Cooperatives are economic activities based on the principle of kinship. In Indonesia, cooperatives are one of the pillars of the economy besides the government and private sectors [6]. Cooperatives, as an association for mutual welfare, conduct business and activities to meet the everyday needs of their members [7,8]. Cooperatives are one source of *strength for* seaweed businesses to produce good quality seaweed in Takalar [9].

The Ujung Tarang Bahari Seaweed Cooperative (UTARI Cooperative) in Bontobahari sub-district, a cooperative whose business is based on the local commodity/resource of seaweed, was established in 2022. However, its members had already started to carry out activities together in the previous year. Its activity area covers four coastal sub-districts that are the leading producers of seaweed, namely Kecamatan Gantarang, Kecamatan Ujungbulu, Kecamatan Ujungloe, and Kecamatan Bontobahari. UTARI Cooperative is a primary cooperative that focuses its business on the production, processing, and trading of seaweed and its supports [10].

Cooperative development is one of the programs implemented by the Government and the community to improve the economy and welfare of the community, including coastal communities. Cooperatives must be able to provide a balanced position, role, and contribution to the national economic order so that the ideals of the Indonesian nation can be achieved as stated in the Law, namely realizing a just and prosperous society. as an economic institution based on community values, cooperatives are still very much needed to improve people's welfare [11].

Business diversification within seaweed processing cooperatives is an attractive strategy to improve economic sustainability and diversify income sources. This diversification involves expanding the products and services offered by cooperatives to include a range of seaweed products and processing services for third parties [12]. Therefore, assessing the range of products and services provided by seaweed processing cooperatives is essential to understand their contribution to local economic sustainability.

Previous studies have examined the critical role of cooperatives in the economic development of coastal areas [4], the potential use of seaweed in the food and pharmaceutical industries [6], and the impact of cooperative business diversification on local economic sustainability [12]. However, research focusing on the business diversification of seaweed processing cooperatives and studies the variety of products and services is still limited. Therefore, this study will continue the line of previous research with the aim of providing deeper insights into the benefits of seaweed processing cooperative business diversification for coastal communities and economic sustainability in Bulukumba Regency.

2 Research method

The method used in this research is mixed methods, which is a research approach that combines or associates qualitative and quantitative forms. However, previously, qualitative and quantitative analysis was carried out. Qualitative descriptive analysis is an analysis that explains a phenomenon or reality that exists by describing several variables related to the problem and unit under study. Descriptive qualitative using the help of questionnaire instruments. This qualitative descriptive analysis will describe the profile of respondent farmer characteristics and cooperative business diversification, resulting from the tabulation of questionnaire answers.

3 Results and discussion

3.1 Respondent identity

Human resources are minimally seen from three aspects age, education, and experience. Seaweed farming in Bulukumba Regency is the main livelihood of the local coastal community. Most of the community changed their profession from capture fisheries to seaweed cultivation to meet the increasing needs of life. The driving force for farmers from seaweed farming in Bulukumba District is to support basic daily needs to other needs such as education. This is because seaweed farming is quite easy to do and the cultivation cycle is short so farmers feel that seaweed farming is more profitable. In general, the social and economic characteristics of seaweed farming respondents in Bulukumba Regency were assessed in terms of age, farming experience, education, land size, participation in training and motivation in farming.

Table 1. Characteristics of seaweed farmers in Bulukumba Regency.

No.	Respondent Characteristics	Number (people)	Percentage (%)
1.	Age		
	0 - 14 years	0	0
	15 - 56 years	23	76.7
	>56	7	23.3
	TOTAL	30	100
2	Farming Experience		
	≤ 10	5	16.7
	11 - 20	24	80.0
	21 - 30	1	3.3
	≥ 31	0	0
	TOTAL	30	100
3	Last Education		
	SD	12	40.0
	SMP	6	20.0
	HIGH SCHOOL	9	30.0
	S1	2	6.7
	S2	1	3.3
	TOTAL	30	100
4	Actively Participating in Training		
	Never	1	3.3

	Ever (1-5)	24	80.0
	Frequent (>5)	5	16.7
	TOTAL	30	100
5	Seaweed farming objectives		
	Profitable Business	28	93.3
	Have no other choice	2	6.7
	TOTAL	30	100

3.1.1 Age

Age determines a person's achievement or performance, in this case, seaweed farmers. The older the age of the workforce, the physically heavier the work will feel so their performance will decrease as well, but in terms of responsibility, the older the age of the workforce, it will not affect because there is more experience. The distribution of respondents based on certain age groups is one way to determine the number of farmers who are at a productive or unproductive age. Table 1 shows that respondent seaweed farmers in Bulukumba Regency are farmers who are at a productive age, reaching 76.7% or almost the entire number of respondents. The high percentage in this age range is due to the many demands to fulfill the basic living needs of farmers.

The high age that is classified as productive indicates that seaweed farmers can explore their farms with new things that will increase their profits. In line with [5], farmers' age is related to the ability to apply new farming techniques.

3.1.2 Experience

Experience can determine the development of skills, abilities and farm success through how much information is received. The experience of farmers in the study area is quite diverse. Most seaweed farmers have been farming for 11-20 years, with 24 farmers (Table 1). This indicates that the farmers are relatively experienced in running seaweed farms, both in the cultivation process and marketing aspects, so the opportunity for farm success can continue to be achieved. The farming experience influences farmers' skills and abilities in dealing with problems in their farms. Farmers with more extended experience will be more responsive to problems related to their farms and more able to take risks from every decision. Theoretically, the results of this study are in accordance with the opinion of [10] which explains that farming experience is one of the factors that can be categorized as supporting the success of a farm. With farming experience owned by farmers, it is expected that farmers are able to overcome the problems they face in farming.

3.1.3 Education

The level of education is generally categorized as one of the assessments of the quality of life in a particular area. Some areas with a high level of education indicate that the average person living there has a better quality of life. The level of education determines the community's mindset, thus influencing the various norms that arise in the community. The higher the level of education (middle and above), the mindset of the community will be much different from the level of education at the middle and lower levels. Some community groups/higher education institutions tend to perform better.

Based on Table 8, the education level of most respondent farmers is elementary school education, amounting to 40 percent. This indicates that the education level of seaweed respondent farmers is still relatively low, so farm management needs to be encouraged with

informal education such as training and counseling related to onfarm and off-farm seaweed farming. So that it will help respondent farmers improve the quality of life through changes in mindset towards modernity. Given that the higher the level of education in an area can influence the level of beliefs, habits, and behavior.

3.1.4 Actively participating in training

Seaweed farming in Bulukumba Regency has always received attention and assistance from the central government, local government, institutions/cooperatives, and outside organizations in terms of seaweed commodity development. In addition to providing production facilities, the Bulukumba Regency Marine and Fisheries Service also provides training to seaweed farmers as a human resource development program for farmers, both training on technical cultivation and seaweed processing. Respondent farmers in the research location were generally active (80.0%) in training activities organized by the local government or economic institutions such as the Utari Seaweed Cooperative (KRLU). These development and training activities are considered necessary by farmers because the benefits are quite helpful for farmers in absorbing information or knowing the latest technology that can be adapted, as well as the marketing process of the products processed by farmers.

Activities that are intensely participated in by farmers include meetings and group discussions. Another activity involving farmers massively is a program from UNIDO and KKP, namely *Sustainable Market Access through Responsible Trading of Fish* (SMART-Fish), which aims to increase the productivity of seaweed farming. In addition, there is training on the establishment of seaweed nurseries and training on processing seaweed into snacks and other types of cakes.

3.1.5 Motivation for farming

Motivation for farming is the underlying reason or desire of farmers to achieve success in seaweed farming. Most respondent farmers in the research location started their farm because they considered seaweed farming profitable or 93.3% of the local community believed that depending on the farming profession could fulfill their needs. The remaining 6.7% were farmers who started their businesses because they had no other choice as a livelihood for coastal communities. However, seaweed farming is a business that has great prospects, considering that domestic demand and export demand for seaweed products continue to increase.

The existence of motivation can direct behavior towards specific goals. According to [12] achievement motivation can be reflected in individual behavior that leads to *standards of excellence* so that individuals will like challenging, responsible, and open tasks or things to improve their innovative-creative achievements. Motivation arising from this tendency increases independence and develops creativity.

3.2 UTARI cooperative business diversification

Cooperative business diversification is an essential strategy that involves expanding into different types of economic activities or market sectors, to reduce risk and improve financial stability. In the context of cooperatives, diversification can include developing new products or services, expanding into different markets, or even diversifying within different value chains. By adopting diversification, a cooperative can reduce its dependence on one source of income or one particular market segment. This can help the cooperative weather market

fluctuations or changes in economic conditions without experiencing too much impact. In addition, diversification can also provide opportunities to increase revenue, capture new market shares, and expand the reach of the cooperative's business, which in turn can improve the welfare of its members.

This study was conducted to investigate the business diversification undertaken by the UTARI seaweed processing cooperative and analyze the variety of products and services offered by the cooperative. The results showed that the UTARI cooperative has diversified its business effectively. It has developed a range of products and services based on the potential of its seaweed resources.

1. Product Variety from Business Diversification:

- a) Processed Foods: UTARI Cooperative has processed seaweed into processed foods such as seaweed crackers, seaweed noodles, seaweed meatballs, seaweed *dodol*, seaweed candy, and seaweed-based dry snacks.
- b) Cosmetic Ingredients: UTARI Cooperative also creates seaweed-based cosmetic ingredients, such as soaps and face masks.
- c) Industrial Materials: One form of business diversification is to produce industrial materials such as organic fertilizer from seaweed.

2. Variety of Services from Business Diversification:

- a) Educational Tours: Some cooperatives provide educational tours where people can learn about seaweed cultivation and processing first-hand.
- b) Seaweed Cultivation Training: The cooperative also provides training on sustainable seaweed farming techniques to local communities to increase member participation and knowledge.
- c) Seaweed Business Management: This service assists communities in managing their seaweed businesses efficiently and sustainably.

Diversifying the business of the UTARI seaweed processing cooperative into a variety of products and services has several important implications, the first of which is increasing the income and sustainability of the cooperative. Business diversification allows the cooperative to reduce dependence on a single product or service type. This increases the payment of the UTARI cooperative and provides financial stability in the long term, especially the business income of its members or seaweed farmers who are members of the UTARI cooperative. Following research [10] that the average income of farmers reached Rp. 57,971,540 / farmer/cycle with a business feasibility analysis $RC / Ratio > 1$ means that the businesses run by farmers or members of the UTARI cooperative are feasible to develop because they are economically profitable.

Furthermore, by providing various products and services, the cooperative can add value to seaweed and increase competitiveness in local and international markets. The business diversification of the UTARI cooperative also has a positive impact on the local community. The provision of training and mentoring in seaweed cultivation has increased community involvement in the business and empowered the economy of local coastal communities. While UTARI cooperative's business diversification offers significant benefits, the cooperative also faces challenges in its implementation. Some of these include the need for technological innovation, capitalization, and wider market access.

Given the challenges faced, UTARI Cooperative must continue to develop technological innovations in seaweed processing to improve efficiency and product quality. In addition, the results of this study also recommend continuous training and mentoring for cooperative members to improve their seaweed cultivation and processing skills. By implementing these recommendations, the business diversification of seaweed processing cooperatives is expected to be more successful and provide more significant benefits to cooperatives and coastal communities.

3.3 Benefits of cooperative business diversification

Seaweed is an abundant marine resource along the world's coasts, and many coastal communities depend on seaweed processing activities as a primary livelihood. Seaweed processing cooperatives are one organization that provides tangible benefits to coastal communities and economic sustainability.

1. Benefits of Economic Stability

Seaweed processing cooperatives enable coastal communities to create a stable source of income. With business diversification, cooperatives can produce various seaweed products such as food, cosmetics, and fertilizer. This reduces dependence on one type of product and increases the economic resilience of coastal communities to fluctuations in global market prices and demand. Studies by [14] show that business diversification can increase income and reduce poverty levels in coastal communities.

2. Environmental Sustainability

The diversification of seaweed processing cooperatives also positively impacts environmental sustainability. By combining different types of seaweed processing, cooperatives can minimize exploitative pressures on marine ecosystems. Research by [15] shows that diversifying seaweed production can reduce the risk of overharvesting and damage to marine habitats caused by monoculture practices. This contributes to maintaining healthy marine ecosystems, which in turn supports the survival of marine species and the livelihoods of coastal communities.

3. Social Role and Community Development

Seaweed processing cooperatives also play an essential role in the social development of coastal communities. They provide local employment opportunities, improve access to education and health, and promote women's active involvement in economic activities. Research by [16] shows that cooperatives often provide training and mentoring to their members, thereby increasing the capacity and skills of coastal communities.

4. Quality of Life Improvement

The diversification of seaweed processing cooperative businesses can also improve the quality of life of coastal communities. Apart from the economic aspect, cooperatives often provide local employment opportunities, access to education and healthcare, and promote women's active participation in economic activities. This helps build more substantial and more socially sustainable communities.

5. Local Economic Sovereignty

With business diversification, seaweed processing cooperatives can help improve local economic sovereignty. This means that coastal communities can be more independent in managing and utilizing their marine resources, ultimately supporting economic sustainability in the region.

4 Conclusion and recommendation

Business diversification in seaweed processing cooperatives brings excellent benefits to coastal communities and supports their economic sustainability. It not only creates financial stability and reduces environmental risks, but also improves quality of life and local economic sovereignty. By understanding and applying the principles of diversification, coastal communities can utilize the potential of their marine resources sustainably and profitably. Recommendations from this study are to continue to encourage innovation in seaweed processing, increase the capacity of cooperative members through training and mentoring, and expand marketing networks to improve market access. In the long term, business diversification is expected to contribute positively to the welfare of cooperative members and coastal communities.

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