

Economic Analysis of Fisher Households: Income, Expenditure and Economic Sustainability in the Coastal Area of Karanrang Island, Pangkajene and Kepulauan Regency

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Abstract. This study aims to analyze the economy of fisher households both from income, expenditure and economic sustainability in the coastal area of Karanrang Island, Pangkajene dan Kepulauan Regency. This research used a survey method with a quantitative descriptive approach to answer the first and second problem formulations, and a qualitative approach to answer the third problem formulation. This study took 28 samples of fishermen household actors in the Karanrang Island Coastal Area from 73 households in the population with an error rate of 10% using simple random sampling. The data collection techniques used were observation, interview and documentation. The results showed that the total income of fishermen households in the coastal area of Karanrang Island, Pangkajene dan Kepulauan Regency amounted to IDR 4,576,680 / month with the contribution of fishermen's income by 56% affecting income, for fishermen's household expenditure on average spent IDR 3,895,179 / month for food expenditure with a proportion of expenditure of 72% and the economic sustainability of fishermen households analyzed from the concept of blue economy can be said to continue in economic and social aspects but there needs to be special attention to ecological / environmental aspects. It is expected that the economic actors of fisher households can maximize their income either from the fisheries sector or from non-fishermen. It is expected that fishermen can manage and utilize fishery resources wisely and responsibly. It is expected for the government to pay more attention to the people in the Coastal Zone. Then, for researchers to be able to develop this research and be able to be continued by other researchers to conduct more in-depth research on income, expenses and economic sustainability in the Coastal Zone. This research supports and strengthens the findings of previous studies. The results provide an overview of the economic situation of household actors in terms of income, expenditure and economic sustainability in the region.

Keywords: Fishermen's Household Income, Fishermen's Household Expenditure, Fisher Household Economic Sustainability

1. Introduction

Household economics is one of the key aspects of economics that examines the behavior and economic attitudes of individuals, families, or households in managing limited resources to meet their needs and goals. The concept of household economics literally addresses individuals and families making decisions about consumption, savings, investment, and spending based on the limited resources available. In Indonesia, national economic performance is strongly influenced by economic activity carried out by households because the role of households in the Indonesian economy takes an important role in consumers of goods and services, producers, provision of labor or non-labor production factors and also as providers of funds in terms of financing national investment. The household sector is the largest group of consumers in the economy. GDP per capita growth has a positive impact on household income [1]. An economic actor is a person, entity or group that carries out economic activities, whether production, consumption, or distribution, of goods or services. In the Indonesian economy, there are several economic actors, one of which is the family household [2]. Indonesia is an archipelago consisting of 17,504 islands with a coastline length of approximately 81,000 km with a total population of 16.42 million Indonesians living in coastal areas. Meanwhile, there are 8,090 coastal villages in



Indonesia spread across various regions in Indonesia. The fisher household economy is an important part of the economic structure of coastal and marine areas. Fishers play a key role in meeting food needs, creating jobs, and maintaining environmental sustainability in aquatic ecosystems. Traditional and modern fishing activities undertaken by fishers affect the economic, social and environmental conditions in coastal communities [3].

Pangkajene dan Kepulauan Regency is an area where most of the area is water. the length of the coastline in Pangkajene dan kepulauan Regency is 250 Km, which stretches from west to east. Thus, some households of economic actors are located in coastal areas or islands. Karanrang Island is one of the coastal areas in the Liukang Tupabbiring Utara sub-district which is the object of this research. Pangkajene dan Kepulauan Regency is an area that has great potential for marine resources and fisheries. From the analysis of the area of this district where the sea area is larger, many households have income derived from the marine and fisheries sector [4].

However, fisher household economies also face a number of unique challenges. There are many factors that affect the economic stability of both the income and expenditure of fishing households and the sustainability of the fishing economy itself. Traditional fisheries play a fundamental role in the food security and household incomes of coastal fishing communities in Colombia and other parts of the world, coastal fishing households have 68.7% Unsatisfied Basic Needs (UBN) among the country's population [5]. Poverty, livelihood improvement and food security are important roles of the fisheries and aquaculture sector in developing countries. According to a report by WorldFish (2020), more than 90% of fishers and related workers in the fishing sector are employed in small-scale industries [6]. During the off-season, most small-scale fishers tend to wait and not engage in fishing activities at sea. Consequently, small-scale fishers experience socioeconomic problems in their households [7]. Therefore, an in-depth understanding of the economic dynamics of fisher households is important for adequate and sustainable policy development. The limited income earned by fishermen makes the economy of fishermen households insufficient for primary or secondary needs as well as needs for food or non-food. Similar to other needs, the food needs of each fisher household have different levels. When viewed from the social life of the fishermen, these differences can be reviewed [8]. The economic problems of fishing households are things that need attention in making policy decisions, there is no analysis of the income and expenses of fishing households so that there is no specific picture of what income is obtained from household activities and what are the expenses of these fishing households. Similarly, the analysis of the economic sustainability of fisher households is not widely known or explored. The economy of fishermen's households in the coastal area of Karanrang Island is a phenomenon of fishermen's economic problems that need attention, the economy in remote and coastal areas sometimes experiences uncertain economic stability where the income and expenses of the fishermen's household economy cannot be identified and how sustainable the economy is in the coastal area.

Based on the problems in the coastal area of Karanrang Island, Pangkejene dan Kepulauan Regency has uncertain sea conditions so that fishermen will not go down to the sea if sea conditions are very choppy and weather conditions are very extreme. As is known, the income from working as a fisherman often cannot meet the needs of fishermen's households. The condition of subsistence fishing activities for fishermen without saving is also a phenomenon that is also often experienced by households who work as fishermen, several activities that have a source of income not only as fishermen on Karanrang Island is a fact that there is a tendency that fishing activities are not sufficient to meet the basic needs of the community there, therefore the people of Karanrang Island have alternative jobs to meet family needs, such as entrepreneurship, trade and sea transportation service providers.

Poverty in Indonesia's small islands is a complex social and economic problem. There is a causal relationship between poverty and food insecurity. Where poverty is the cause of food insecurity and the phenomenon of food insecurity is the result of poverty. One indicator that can be used in coastal areas can be seen from erratic coastal weather conditions. This happened on Karanrang Island, Pangkajene dan Kepulauan Regency. The community there often does not carry out fishing activities during extreme weather. So, there is no source of income that comes from fishing and is required to have other alternative income. During the season of strong winds and waves, coastal communities who work as fishermen have the opportunity to experience poverty due to less production when conducting fishing operations so that the income earned is also small. When analyzed in terms of community expenditure on Karanrang Island, there are two types of expenditure, namely food and non-food expenditure. Households whose welfare level is less or categorized as poor can be seen from food expenditures that are greater than non-food expenditures in their daily lives so that it is also able to influence nutrition in determining the household's food security. The income of a household greatly affects the amount of expenditure in the household because income is also the most important factor in influencing household expenditure including family food consumption patterns [9].

Economic sustainability in coastal areas is often faced with a number of complex issues, given the high dependence on natural resources and the impact of environmental change. In the current situation, fishers are

particularly vulnerable to poverty. Most fishers are still tied to the fishing industry. Therefore, the government must formulate relevant incentive policies to improve and ensure the economic sustainability of fishers [10]. The problem of economic sustainability in the coastal area of Karanrang Island can be seen from the activities of community fishermen there, which increasingly have a decrease in fishing catches, not only that the fishermen are also getting farther and farther away from searching for marine resources. Economic sustainability in coastal areas needs to be analyzed so that it will provide an overview of decisions for government policy. In general, problems that are often faced in the context of economic sustainability of coastal areas are environmental degradation or overexploitation of fisheries resources, climate change, social and economic inequality and also lack of awareness and education in coastal areas.

From the research reviewed by Kamil (2020) obtained the results that the income of fishermen's families conducted in the Gu Timur village, Lakudo sub-district, Buton Tengah Regency can be concluded that the amount of net income obtained from the revenue and also the catches sold directly and as for the value of income obtained from the fishermen's households from the dried fish business which will then be reduced by the costs required to produce the highest net income at IDR 6,660,000,- while the lowest net income for household economic income and others in the area was IDR 1,920,000,- so that the conclusion of the overall income obtained from trawl fishermen in Gu Timur village can be categorized as an average income that is sufficient, from the results of the study it also provides suggestions that for fishermen in the village in Gu Timur in order to further maintain and improve their work methods and habits that are inherent in fishermen to be embedded in the lives of people faced in this modern era. Analysis of fishermen's household income was also put forward Latief (2021) which obtained the results that research on fishermen's household income in Bintalahe Village averaged IDR 46,700,478/ year Which can also be categorized that the income of fishermen's households in the area is sufficient with the contribution of household income sourced from capture fisheries by 85% and the remaining 15% from outside the agricultural sector [11][12].

Mahesa Panji (2018) also conducted research on the analysis of household expenditure factors which obtained research results showing that the average expenditure of fishermen's households in Bagan Deli village was IDR 2,016,167/month where the total expenditure was still small compared to the income in the fishermen's household [13]. Meanwhile, the expenditure of labor fishermen households in the Kampar coastal area of West Bangka Regency spends 83% of total household expenditure on food expenditure and the rest is used for non-food expenditure such as clothing, housing, education and health [14]. Analysis of fishermen's household expenditure is also put forward by researchers which shows that the expenditure of fishermen's households in Teluk Nibung Sub-district, Tanjung Balai City for food expenditure is higher than non-food expenditure [15].

The purpose of this research is to analyze the income and expenses of fishing households in the coastal area of Karanrang Island, Pangkajene dan Kepulauan Regency so that it will provide information about income and expenses in the activities of fishing households, so that the sources of income of fishing households in coastal areas and their expenses can be identified. Not only that, this research also analyzes simply how economic sustainability in the coastal area of Karanrang Island, Pangkajene dan Kepulauan Regency and islands by taking into account economic, social and ecological factors of marine and fisheries resources in the region. The household actors who are the subject of this study are the community of fishermen household actors who live in the coastal area of Karanrang Island, Pangkajene dan Kepulauan Regency. The selection of the study subjects, namely fisher household actors in the coastal area of Karanrang Island, is due to the criteria needed by researchers in assessing how the income and expenses of fisher households in the area and also analyzing their economic sustainability.

This research uses income theory, household expenditure theory and sustainability theory. Income is the total receipt of a person for his services in the production process. The remuneration in question may be in the form of rent, profit, wages, or interest depending on the factors of production involved in the process [16]. Household expenditure refers to the theory of consumption in the household economy. Keynes' consumption theory provides an explanation that there is a relationship between current disposable income and all consumption made at this time [17]. Sustainability theory is defined as being able to fulfill development at the present time but not at the expense of future rights. Sustainability itself has principles that are categorized into three including economic, social and environmental [18].

1.1 Fishermen's Household Income

Income theory is all revenue that comes from outside parties or industries that have a value for the basic amount of money from current assets in the form of money or goods. Income is all of a person's income with the aim of meeting their daily needs and most importantly to maintain the sustainability of life and livelihood of a person or individual who is either directly or indirectly. The types of income can be divided into two, including operational income and non-operational income. Revenue is usually used as a benchmark in making decisions

about the success of a business and also a factor that ensures whether a business can continue [19]. According to Jhingan (2003) in Baruwadi's journal, revenue is income that is valued in the form of money within a predetermined period. Income can also be interpreted as a receipt that can cause an increase in ability, whether it is for savings or used as daily consumption, the income received can also be used in achieving satisfaction and meeting life's needs [20]. According to Suratiyah (2015), income is the difference between all total revenue and total cost or cost in rupiah units. Income is the difference between revenue and all costs. Household income provides and also provides labor which will later be used in production purposes. Furthermore, households will receive income which is usually in the form of money or goods so that they can be directly consumed [21].

1.2 Fishermen's Household Expenditure

Consumption expenditure on households is the largest single material of all, but there is something that is able to determine the amount spent on households with the aim of buying goods or services as consumption in the household. A year that has a higher average income level is also a year that has an average consumption level [22]. Broadly speaking, household consumption can be divided into 2 groups including, main (basic) needs and supporting (inferior) needs. Components such as clothing, food and housing are groups that include basic or main needs. Similarly, inferior or supporting needs are included in the group of needs that usually do not have to be fulfilled or are just a desire. This is usually often done by households if the income received in the household is large enough to carry out more consumption activities when compared to households that have a smaller income [23].

Factors that play a role in determining family consumption patterns are usually education level, family income level, employment status, family head and family size. This is supported by the many studies that have been conducted to determine the relationship between income levels and food consumption patterns. When viewed from this classical theory, it can be said that families who have high welfare have a lower percentage of expenditure on food needs compared to a higher percentage of non-food expenditure which can be interpreted that the proportion of allocation for food expenditure will be smaller if a household has a larger income because the allocation to non-food needs is so large [24]. Household expenditure refers to the theory of consumption in the household economy. Keynes' consumption theory was expressed in 1936 in his book entitled *The General Theory of Employment, Interest and Money*. Keynes' consumption theory provides an explanation that there is a relationship between income earned at this time (disposable income) and all consumption made at this time. Which means that the income earned at a certain time will affect the consumption made by the household actors at that time. If the income earned increases, the consumption made by the household will also increase or if the income is lower, consumption will also decrease [17].

An actual definition that says that consumption is related to income and wealth and not only to income, shows empirical misalignment. The study also says that there is a correction between equilibrium consumption and changes in income and wealth, but it does not rule out the possibility that equilibrium income can also change the overall consumption pattern [25].

1.3 Fisher Household Economic Sustainability

The concept of sustainable development is essentially based on the concept of development (be it socio-economic development that has the same goal of ecological constraints), the concepts of needs (redistribution of resources in order to be able to guarantee the quality of life for all humans) and the concept of future generations (adopting policies in the use of resources over a long period of time in order to guarantee the quality of life needed for future generations). The concept of triple bottom lines is at the core of the concept of sustainable development, which means a balance between the three pillars of sustainability. Environmental sustainability which has a priority on maintaining a quality environment that will be used for economic activities and improving the quality of life of the community, there is sustainability in the social aspect in order to provide certainty for equality and human rights, preservation of cultural identity, respect for diverse cultural differences, race and religion, and economic sustainability which is needed in order to provide the resilience of natural resources, social and human conditions needed for living welfare standards and income [26].

The Sustainable Development Goals are based on three pillars: (1) the Economic pillar, with economic development; (2) the social pillar, with human development in the social sphere; (3) the Environmental pillar, which includes biodiversity. And all three pillars are supported by the institutional foundation of governance [27]. Elkington 1994 argues that the relationship between these pillars is set in a balanced framework or concept of sustainability called the Triple Bottom Line.

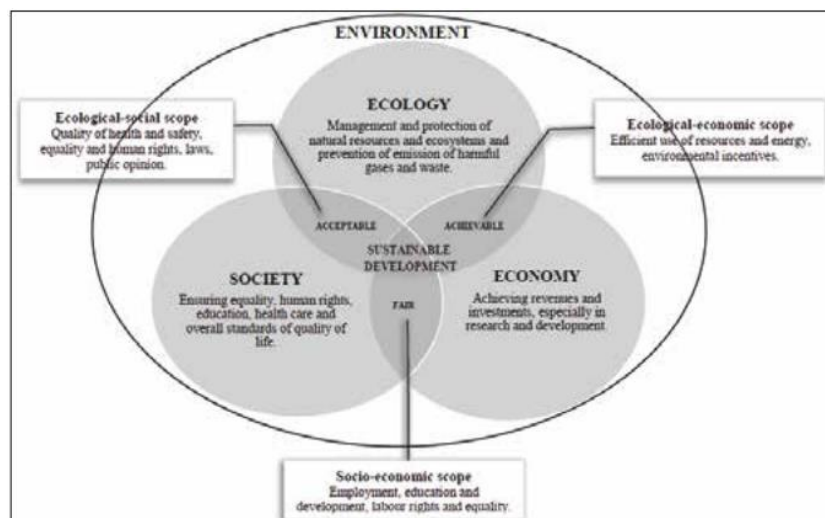


Figure 1. Triple Bottom Sustainable Environment

Explicitly, there are two points that can be of concern in the concept of sustainability, namely the main thing to note about the constraints of natural resources and the environment that have an impact on consumption and development, and the second point is the need for concern about welfare (well-being) for future generations [28].

Meanwhile, according to Otto Sumarwoto in Suardi, (2015) study there are three environmental factors needed to achieve sustainable development, including: First, the need for maintenance in essential ecological processes; second, sufficient availability of resources; and the third is the compatibility between the socio-cultural environment and the economy. These three factors have an impact on development but not only that, it is also an impact of development [29].

Sustainable development does not only focus on environmental issues. Sustainable development can be seen more broadly than these problems which include three policy scopes including economic development, social development, and environmental protection. These three dimensions are the driving pillars for sustainable development and are interrelated as in the 2005 world submit document in United Nasional (UN) documents [30]. In addition, it is also given direction so that sustainable development for all fields and improvements that are solely for economic growth are no longer the basis, but there needs to be support for social and environmental aspects in order to create sustainable development [31]. According to Fauzi (2004), there are at least three main reasons why economic development needs to be sustainable, namely regarding moral reasons, regarding ecological reasons, regarding economic reasons [32]. Sustainable economics is a development process in the economic sector that has the principle of meeting the needs of the present without overriding the fulfillment of needs for future generations, for example, businesses that are able to provide a direct increase in per capita income for a long time, reducing and also alleviating absolute poverty, and accelerating economic growth [33].

2. Method

This research uses a survey method with a quantitative descriptive approach to answer the first and second problem formulations, and a qualitative approach to answer the third problem formulation. The research method used in this research is descriptive with a qualitative and quantitative approach that focuses on solving and analyzing the problem under study by describing or describing the state of the subject or object based on facts that are seen and true. The data collection techniques used in this research are participatory observation data collection techniques, in-depth interviews, and documentation. In order for the information and sample results to be considered valid, data validity uses qualitative data processing analysis with triangulation techniques. Triangulation refers to the use of more than one particular approach when conducting research to obtain richer, more complete data and to help confirm research results [34].

In this research, the main respondents and informants are the fishermen household actors on Karanrang Island, Pangkajene dan Kepulauan Regency. This study took 28 samples of fishermen households in the Karanrang Island Coastal Area from 73 households in the population in the region with an error rate of 10%

using simple random sampling. The identity of the respondents who were used as informants on the research indicators of economic sustainability in fisher household economic actors on Karanrang Island are as follows:

Table 1. Informant Identity data

No.	Informant Name	Age	Gender	Last Education
1	H. Sau Dg Aha	68	Male	Elementary School
2	Majenuddin	42	Male	Elementary School
3	Sangkala	39	Male	Elementary School
4	M. Alwi	62	Male	Elementary School
5	Basir	41	Male	Elementary School
6	Narang	65	Male	Elementary School
7	Mustafa	48	Male	Senior High School

Source: Data Processing Results, 2024

For the analysis of Fishermen's Income, calculating the Total Revenue (TR) according to Wulandari (2018), the formula can be used:

$$TR = P \cdot Q$$

Explanation: TR = Total Revenue; P = Price; Q = Quantity

To calculate the total cost of fishermen (TCf), the formula can be used:

$$TCf = FC + VC$$

Explanation: TCf = Total Cost; FC = Fixed Cost; VC = Variabel Cost

To calculate total income of fishermen (TIf), the formula can be used:

$$TIf = TR - TCf$$

Explanation: TIf = Total Income; TR = Total Revenue; TCf = Total Cost

This analysis is used to calculate how much total income comes from fishermen's businesses from various sources in their household income. To calculate the income of fishermen households can be calculated using the formula:

$$Y = \sum_{i=0}^n (F) + \sum_{i=0}^n (NF)$$

Explanation: Y= Total Household Income; P = Fishing Business Income; NP = Non-Fishing Business Income.

To determine the contribution of fishermen to income that comes from outside the income of fishermen based on percentages, the following formula can be used:

$$A = \frac{F}{NF} \times 100\%$$

Explanation: A= Fishermen's Income Contribution; F= Fishing Business Income; NF= Non-Fishing Business Income.

To measure the contribution of fishermen to total household income, the following criteria can be used [35]:

- Categorized as very low if the contribution of fishermen is <25% of non-fishermen business household income.
- Categorized as low if the contribution of fishermen is 25-49% of non-fishermen's household income.
- Categorized as high if the contribution of fishermen is 50-75% of non-fishermen's household income.
- Categorized as very high if the contribution of fishermen is >75% of non-fishermen's household income.

To analyze the expenditure of fishermen household, stages and formulas are needed. According to Fatimah & Syamsiyah (2018), total household expenditure (TE_x) can be calculated using the formula [36]:

$$TE_x = FE + Nfe$$

Explanation: TE_x= Total Household Expenditure; FE= Food Expenditure; nFE= Non-Food Expenditure.

The proportion of household expenditure on food consumption can be using the formula:

$$PFE = \frac{FE}{nFE} \times 100\%$$

Expalnation: PFE = Proportion Food Expenditure (%); FE= Food Expenditure; nFE = Non-Food Expenditure.

Analyzing the Economic Sustainability of fishing households in this study uses a blue economy approach. Economic Sustainability of fishing households on Karanrang Island is measured using indicators of blue economy aspects by means of in-depth interviews with research informants. In this blue economy approach model, it is submitted that not solely in carrying out economic activities only rely on the basis of exploitation of marine resources or which can be interpreted as not merely dredging all natural resources and the environment, but paying attention to the sustainability of fishermen's economic activities [37].

In the blue economy concept, the Ministry of Maritime Affairs and Fisheries will focus on three factors, namely, ecology, social, and economy. The goal of the blue economy is how to use natural resources efficiently, no more waste, and provide income for the community and maintain the marine ecosystem [38] [39].

Table 2. Indicator of Blue Economy aspect statements

Indicator	Item/Statement
1. Economy (Profit)	<ul style="list-style-type: none"> - Marine catches that generate economic benefits for the wider community. - Knowledge of seafood Business networks to achieve defensible economic goals.
2. Social (People)	<ul style="list-style-type: none"> - Fishing activities that provide employment opportunities the surrounding community. - Cooperative relationships with market partners for fishermen's catches.
3. Ecology/Environment (Planet)	<ul style="list-style-type: none"> - Using environmentally friendly fishing gear. - Adopt responsible policies for the use of marine resources

Source: Data Processing Results, 2024

3. Result and Discussion

Overview Of the Research Location

Administratively, Pangkajene dan Kepulauan Regency has an area of 12,311.43 km² where the area is divided into a land area of 898.29 km² and an archipelago area of 11,464.44. When viewed from the area of this district, it has an island area that is wider than the mainland with a coastline length of 250 km stretching from west to east. One of the islands located in the Coastal Area of Pangkajene dan Kepulauan Regency is Karanrang Island. Karanrang Island is a small inhabited island located in the waters of the Makassar Strait and administratively, Karanrang Island is included in the Mattiro Bulu Village area, Liukang Tupabbiring Utara District, Pangkajene dan Kepulauan Regency, South Sulawesi Province, Indonesia. The island is part of the regional water conservation area of Pangkajene dan Kepulauan Regency with an area of 213,558.7 m² surrounded by the open sea. Karanrang Island has 3,494 inhabitants with a percentage of 50.3% male population of 1,759 and 49.7% female population of 1739. The average resident of Karanrang Island works as a fisherman.

Fishermen's Household Income

Income is obtained from the activities of community capture fishermen in the coastal area of Karanrang Island, Pangkajene dan Kepulauan Regency, the average sea capture income obtained for 12 months with an

effective period of doing fishing activities for only 9 months and the remaining 3 months are less effective due to extreme weather and uncertain sea conditions.

1. Revenue Catches Fishermen's Business

The amount of money received is the sale of sea catches obtained from the fishermen themselves, from the results of observations and interviews that have been conducted from household actors who work as fishermen have a focus on different catches and various types. The catches are then brought home by the fishermen to be sold, some fishermen sell their catches to consumers in the community and some sell their catches to collectors who are usually weighed and multiplied by the purchase price according to the type of fish or other catches. The catches of the fishermen can be seen in the following table:

Table 3. Catches of Fishermen's Business

No	Type of Seafood	Revenue	
		Daily (IDR)	Monthly (IDR)
1	Stone Fish	79.705	1.912.920
2	Tuna, sardines, mackerel, skipjack fish	133.904	3.213.706
3	Squid	60.576	1.453.819
4	Lobster	15.941	382.584
5	Cuttlefish	28.694	688.651
	Total	318.820	7.651.680

Source: Data Processing Results, 2024

Based on table 3, it can be concluded that the types of marine products obtained from the catch of community fishermen in the coastal area of Karanrang Island who work as capture fishermen have an average daily income of IDR 318,820 and IDR 7,651,680/month, including the catch of stone fish, fish (tuna, sardines, mackerel, skipjack), squid, lobster and cuttlefish. Where stone fish has an average income of IDR 1,912,920/month, fish (tuna, sardines, mackerel, skipjack) of IDR 3,213,706/month, squid of IDR 1,453,819/month, for lobster itself of IDR 382,584/month, and for cuttlefish of IDR 688,651/month. In contrast to the results of research conducted by Vibriyanti (2019) which obtained an income of IDR 3,094,803 in fishermen's households in one month, while in the research of M. Agam (2012) stated that the income of fishermen was only IDR 1,650,000/month but the fishermen there were only as hunters. Thus, it can be said that the income of fishing households on Karanrang Island is greater than in the previous research location [40][14].

2. Fishermen's Operating Costs

In conducting fishing activities, fishermen require capital and costs for these activities that need to be incurred from the receipt of the results of capture fishermen, some fixed costs and variable costs incurred by capture fishermen from the results of direct observations and interviews can be seen from the following table:

Table 4. Operational Costs of Fishermen's Business

No	Operational Costs	Value	
		Daily (IDR)	Monthly (IDR)
1	Fuel Oil	23.063	553.500
2	Supplies of Fishing gear	51.250	1.230.000
3	Ice Cubes	8.969	215.250
4	Cigarettes	14.094	338.250
5	Tools depreciation & Maintenance	30.750	738.000
	Total	128.125	3.075.000

Source: Data Processing Results, 2024

Based on Table 4, the average operational costs of fishermen, both fixed costs and variable costs for capture fishermen, are IDR 128,125/day and IDR 3,075,000 for the average operational expenditure of fishermen in a month. Among these costs are the cost of fuel oil of IDR 553,500/month, fishing gear of IDR 1,230,000/month, ice cubes of IDR 215,250/month, cigarettes of IDR 338,250/month and depreciation and maintenance of equipment of IDR 738,000/month.

3. Total Revenue Fishermen's Business Income

This revenue is the net revenue from all revenues from fishermen's activities which are then reduced by all costs incurred for these activities. Fishermen's income, which is the difference between all receipts from fishing and total costs, can be seen in the following table:

Table 5. Total Revenue Fishermen's Business

No	Total Revenue	Value	
		Daily (IDR)	Monthly (IDR)
1	Revenue Catches Fishermen's Business	318.820	7.651.680
2	Operational Costs Fishermen's Business	128.125	3.075.000
	Total	190.695	4.576.680

Source: Data Processing Results, 2024

Based on table 5, it can be seen that the total net income from the results of capture fishermen by the fishermen household actors in the coastal area of Karanrang Island, Pangkajene dan Kepulauan Regency where there is a total capture income as a capture fisherman in 1 month of IDR 7,651,680 while for the total operational costs used in 1 month of IDR 3,075,000 as operational expenses for fishing activities, the total net income of capture fishermen obtained is IDR 4,576,680 / month. In the research of Wahyuni (2020) which obtained research results with a total net income of fishermen of IDR 3,208,407 / month, so the total net income in this study is not much different from the difference in income [41].

4. Revenue Catches Non-Fishermen's Business

Receiving money outside of fishermen's income is an alternative for fishermen households to have a source of income that is not only from the fisheries sector, this is done by fishermen households to be more prosperous. Some of the non-fishermen's income alternatives are as follows:

Table 6. Revenue Catches Non-Fishermen's Business

No	Non-Fishermen's Business	Revenue	
		Daily (IDR)	Monthly (IDR)
1	Grocery store	27.926	670.218
2	Craftsman	13.963	335.109
3	Seafood Collectors	80.674	1.936.185
4	Sea transportation	32.580	781.921
	Total	155.143	3.723.432

Source: Data Processing Results, 2024

Based on Table 6 regarding income outside the fishermen's business, it can be seen that the average for the fishermen's business results from the fishermen's household actors in the coastal area of Karanrang Island is IDR 155,143 / day and IDR 3,723,432 / month. Businesses outside the fishermen's activities include working as grocery stalls, craftsmen, collectors, and sea transportation. This is different from the research of Latief (2021) which states that the contribution of income outside the fisheries sector is IDR 142,456. This figure is very far from the income outside the fishing business on Karanrang Island, so it can be said that the people of Karanrang Island not only have income in the fishing sector, but outside the fishing sector also have sufficient income and almost the same even though the income from the fishing sector is still more [12].

5. Contribution of Fishermen's Business Income

Contribution of income from fishermen's business income is the value of contributions sourced from income obtained only from the results of capture fishermen's activities which is the percentage of the difference between fishermen's income and from outside the fishermen's business on Karanrang Island, Pangkejene and Islands Regency from the results of the analysis of the contribution of fisheries sector income or fishermen's catch percentage and nominal can be seen from the following table:

Table 7. Contribution of Fishermen's Business Income

No	Source of Income	Revenue		Percentage
		Daily (IDR)	Monthly (IDR)	

1	Fishermen's Business	190.695	4.576.680	56%
2	Non-Fishermen's Business	155.143	3.723.432	44%
Total		345.838	8.300.112	100%

Source: Data Processing Results, 2024

Based on Table 7, it can be seen that the contribution of the capture fisheries business is 56% affecting the income of fishermen households in the coastal area of Karanrang Island, Pangkajene dan Kepulauan Regency, while the business outside fishing only affects 44% of the entire income of fishermen households on Karanrang Island. For both sources of income, the average net income received is IDR 345,838/day while the accumulation of both business income is IDR 8,300,112/month. This shows that income from the fisheries sector in Karanrang Island fishermen households is still greater than from outside the fisheries sector with a high category with a percentage of 56%. This finding is in line with Latief (2021) research which categorizes income from the fisheries sector as very high, reaching 85% [12]. Fishing activities as the main livelihood of fishermen contributed 49%, including the low category [14].

Fishermen's Household Expenditure

Fishermen's household expenditure in the coastal area of Karanrang Island has various types and nominal, these expenditures are generated from the economic activities of fishermen household actors to meet their daily needs.

1. Food and Non-Food Expenditures of Fishermen Household

Expenditures of fisher households in the coastal area of Karanrang Island, Pangkejene dan Kepulauan Regency are categorized into two main expenditures, namely expenditures for food consumption and non-food consumption. Consumption or food expenditures of fishermen households to support their daily needs can be grouped into expenditures on staples food, side dishes, beverage, spices, instant food & drinks, other consumption, and cigarettes. The average expenditure for consumption that has been grouped can be seen from the following table:

Table 8. Food Expenditures of Fishermen Household

No	Food Expenditure Type	Total Expenditure	
		Daily (IDR)	Monthly (IDR)
1	Staple Food	58.428	1.752.831
2	Side Dishes	27.266	817.988
3	Beverage	10.387	311.614
4	Spices	6.492	194.759
5	Instant Food & Drink	9.089	272.663
6	Other Consumption	10.387	311.614
7	Cigarettes	7.790	233.711
Total		129.839	3.895.179

Source: Data Processing Results, 2024

Meanwhile, non-food expenditures to support the survival of fishermen households in coastal areas can be grouped into housing and household facilities, clothing, educational needs, party and entertainment needs. The average non-food expenditure can be seen in the following table:

Table 9. Non-Food Expenditures of Fishermen Household

No	Non-Food Expenditure Type	Total Expenditure	
		Daily (IDR)	Monthly (IDR)
1	Housing & Household Facilities	16.400	492.000
2	Clothing	14.350	430.500
3	Education Needs	10.763	322.875
4	Party & Entertainment Needs	9.738	292.125
Total		51.250	1.537.500

Source: Data Processing Results, 2024

Based on the results obtained from the research, the expenditure of fishermen households is categorized into two main expenditures, food expenditure and non-food expenditure. Table 8 shows food expenditure for coastal

communities in Karanrang Island averaged IDR 129,839/day and IDR 3,895,179 average food expenditure by month. The food expenditure includes staples food, side dishes, beverages, spices, instant food & drink, other consumption and cigarettes. Meanwhile, Table 9 shows non-food expenditures in Karanrang Island fishermen households where the average expenditure is IDR 51,250/day and IDR 1,537,500/month for non-food expenditures. The types of non-food expenditure include housing and household facilities, clothing, educational needs, party and entertainment needs.

2. Proportion of Food Expenditure of Fishermen Households

The proportion of food expenditure in fishermen households is the percentage of expenditure for household consumption needs to the entire total amount of fishermen household expenditure, for the proportion of food expenditure can be seen in the following table:

Table 10. Proportion of Food Expenditure of Fishermen Households

No	Source of Expenditure	Total Expenditure		Percentage
		Daily (IDR)	Monthly (IDR)	
1	Food Expenditure	129.839	3.895.179	72%
2	Non-Food Expenditure	51.250	1.537.500	28%
	Total	181.089	5.432.679	100%

Source: Data Processing Results, 2024

Based on table 10, it can be seen how much the proportion of expenditure, both food and non-food, affects the household expenditure of Karanrang Island fishermen in Pangkajene dan Kepulauan Regency, there is 72% for food expenditure with an amount of IDR 3,895,179/month while for non-food expenditure 28% affects household expenditure which is worth IDR 1,537,500/month. The results of research submitted by Syariah & Asruddin (2020) which obtained a food expenditure value of IDR 1,196,875/month (61.63%) while the average non-food household expenditure was IDR 745,313/month (38, 37%) in Bone Bolango district [42]. Food expenditure is still higher than non-food expenditure in fishing household communities [14][43]. This proves that the people who inhabit coastal areas as economic actors of fishing households are still classified as poor, as stated by Wurangian (2015) that consumption for primary needs or basic needs such as food is usually higher for people who are not yet established [24]. This is in line with research that found the results that fishermen households are still classified as less prosperous [44][45].

Fisher Household Economic Sustainability

The economic sustainability of fishing households in the Karanrang Island Coastal Area of Pangkajene dan Kepulauan Regency is reviewed from 3 aspects, which are economic aspects, social aspects and ecological/environmental aspects. The results of in-depth interviews from fishermen household actors who became research informants obtained the following explanations:

1. Economic Aspect

The economic aspect is one of the important aspects in the economic sustainability of the Karanrang Island fishermen households of Pangkajene dan Kepulauan Regency, an indicator of the utilization of marine resources that has economic value for the perpetrators of coastal fishing households, from the results of in-depth interviews from informants, fishermen households get economic value when carrying out fishing activities, in this case capture fishermen, this is recognized by household actors who say:

"Yes, of course we get results from this fishing activity, almost every day because that is the livelihood of the people here as islanders, we come to sea then after that we sell the catch and get money, this income is used for daily needs. household day and Alhamdulillah, whether we get a lot or a little, we are grateful for the results and the family economy also continues because there is income from this activity" (Mr H. Sau Dg Aha/14-03-2024; 13:27).

From the results of interviews that have been conducted, the economic aspects for the sustainability of the household economy in the area are unconsciously said to continue because of the results of fishing and the business of household actors, which have economic value for the sustainability of their lives. There is an indicator of business network knowledge which is an economic aspect for the sustainability of the fishermen's household economy, the informant said that:

"Indirectly, I also learned business, because I am a collector of marine products from fishermen, I learned how to do business as an intermediary or second party between consumers and those who catch fish, of course I also learned how to do business. "From this activity, I earn income as a fish collector from fishermen" (Mr Majenuddin/14-03-2024;19:52).

From the results of in-depth interviews that have been conducted by fishermen household economic actors on Karanrang Island, Pangkajene dan Kepulauan Regency regarding the economic sustainability of fishermen households in the economic aspect is indirectly sustainable, this is evidenced by the activities of fishermen who produce economic value from fishing for their daily needs so that life there will continue. Not only that, from the results of the interview, it is also known that fishermen, whether they work as capture fishermen or not, learn how to do business within the scope of the coastal area so that it has economic value for the people there. The results of research submitted by Mukaromah & Rahmawati (2023) applying the concept of blue economy in their research which turned out to be able to provide an increase in the economic aspects of fishermen's households where the research has been carried out utilization of natural resources that are able to provide economic value for fishermen [46]. The application of this concept provides sustainability value in the economic aspect where its application is able to improve the economy and provide the value of business knowledge and the adoption of techniques for processing fisheries business [47]. However, the research of Tariq (2024) has not applied the concept of blue economy to the activities of fishing households where there are not many products or utilization of resources that have economic value [48].

2. Social Aspect

One of the important aspects in the economic sustainability of fishing households is the social aspect, in this study compiled labor and community indicators to identify social aspects for household economic sustainability. From the results of interviews with informants in this case the actors of fishing households said that:

"Yes, we definitely need partner to fish on the boat, as the local people here call it 'sawi'. As one of the fishermen who owns a boat, I call other people or my neighbors to join me in fishing and I will then give them wages either daily or weekly, so that we are neighbors and we get along with each other and understand the economic situation, at least he can get income from fishing together with me" (Mr Sangkala/16-03-2024; 09:17).

From the results of interviews that have been conducted by household economic actors on social aspects, it can be said that social aspects can be sustainable in the coastal area of Karanrang Island, Pangkajene dan Kepulauan Regency, this is supported by the recognition of fishermen household actors who say that in carrying out their activities as capture fishermen have employed the community in the area so that the social sense and harmony of households there is also getting closer. The social aspect on social values with the implementation of social care, namely the realization of a partnership program among the community [46].

3. Ecological / Environmental Aspects

In identifying the economic sustainability of fishing households, a paradigm of ecological or environmental aspects is needed. Ecological/environmental aspects are necessary to determine the extent to which the community in managing natural resources has an impact on the surrounding environment. The ecological aspects in this study use indicators of environmentally friendly and sustainable fishing gear and policies in the management of marine resources. From the results of interviews with community members of fishing households who work as capture fishermen said that:

"Because I am a fisherman who looks for squid, I use traditional fishing equipment specifically for squid fishing. In my opinion, the equipment is environmentally friendly and safe to use for squid fishing because it doesn't use dangerous materials and the way we fish the squid one by one so it doesn't become a problem for other marine animals" (Mr Alwi/16-03-2024; 16:20).

"I used an anesthetic to weaken and anesthetize the lobster, after that I caught it using 'sodo', because the shrimp we catch have to be alive when sold so we don't have any method that can be used other than anesthesia, even though it's not environmentally friendly" (Mr Basir/19-03-2024; 10:25).

"If I catch stone fish using a 'pappe' (a kind of bow tool for catching fish) it is considered safe to use when hunting fish because the fish must be aimed at and caught one by one, using this tool is also not dangerous for the surrounding sea. fish hunting place" (Mr Narang/19-03-2024; 19:30).

For the indicator of adopting responsible and sustainable policies, the results of in-depth interviews from informants said that:

"When I catch fish, I still don't pay attention to the conditions and policies that apply to catching marine products, we usually just catch what we have. We often catch fish that are still small or are still spawning because we don't know either" (Mr Mustafa/1-04-2024; 15:05).

Based on the results of in-depth interviews with informants, namely fishermen household economic actors seen from the ecological or environmental aspects of carrying out their household activities and also their fishing operations have not been said to be sustainable, this has resulted in the possibility of a damaged or unsustainable environment. This is evidenced by the fishermen there who still use various fishing gear to manage marine resources that still use chemicals and are not environmentally friendly, but some fishermen also have the awareness to use environmentally friendly tools. The fishing community also admits that they have not

adopted a responsible and sustainable policy in managing marine resources. This is evidenced by the recognition of fishermen who have not paid attention to the conditions in catching marine products which usually take maximum marine products without considering sustainability for the future. Research proposed by Adibrata (2022) which explains that the means in resource management are not environmentally friendly, it is in line with this research [49]. The application of ecological or environmental aspects has also not been implemented in the fishermen's household economy which is still minimal in terms of damage to marine ecosystems due to the use of natural resources [47][48]. Manage aquatic resources so that the level of economic welfare increases but there are challenges, such as overfishing which is one of the adoptions of policies that have not been responsible [50].

Economic sustainability in the Karanrang Island Coastal Area of Pangkajene dan Kepulauan Regency in applying aspects of the blue economy concept can be said to be able to continue in economic and social aspects but still needs special attention to ecological and environmental aspects. Economic and social aspects when viewed from several previous studies that implement the concept of blue economy in analyzing the economic sustainability of fisher household economic actors, can be said to have been implemented and able to continue but from the activities and activities of fishermen or non-fishermen are still a concern in ecological and environmental aspects because there is not enough awareness in this aspect. The role of the government in implementing the concept of blue economy is still needed to provide further understanding and education for communities in coastal areas, especially in the coastal area of Karanrang Island, Pangkajene dan Kepulauan Regency. The local government needs to pursue strategies in paying attention to these problems. However, the synergy between the community and the government needs to be pursued in order to create a better coastal area [46].

4. Conclusion

The income of fishermen's households in the Coastal Area of Karanrang Island, Pangkajene dan Kepulauan Regency with an average total net income from the results of capture fishermen by fishermen household actors amounted to IDR 4,576,680 / month while for income non-fishing business amounted to IDR 3,723,432 / month which included activities as grocery store, craftsmen, seafood collectors and sea transportation. The contribution of income from fishing results is 56% affecting income while for non-fishing business only affects 44% of the overall income of fishing households on Karanrang Island, Pangkajene dan Kepulauan Regency.

Expenditures of fishing households in the Karanrang Island Coastal Area of Pangkajene dan Kepulauan Regency are divided into two, which are food and non-food expenditures. Food expenditures for fishermen household economic on Karanrang Island averaged IDR 3,895,179/month which included expenditures on staple food, side dishes, beverage, spices, instant food & drinks, other consumption and cigarettes. Meanwhile, the average non-food expenditure amounted to Rp 1,537,500/month, which included expenditure on housing and household facilities, clothing, education needs and party & entertainment needs. So that the proportion of expenditure for food is 72% and for non-food is 28%.

The economic sustainability of fishing households in the Karanrang Island Coastal Area of Pangkajene dan Kepulauan Regency analyzed from the concept of blue economy including economic, social and ecological/environmental aspects can be said to be able to continue in economic and social aspects but there needs to be special attention to ecological and environmental aspects. In the economic aspect, household economic actors have indirectly generated economic value from the utilization of natural resources, namely by carrying out fishing activities so that their daily needs can be fulfilled and learning how to do business in the scope of the coastal area. In the social aspect, fishermen household economic actors have implemented in community life by employing people in coastal areas that create social value with the implementation of social care. In the ecological aspect of the environment, fisher household economic actors have not fully implemented the concept of economic sustainability, where fishermen still use fishing gear that contributes waste and is not environmentally friendly and has not adopted responsible policies.

As for suggestions for fisher household economic actors, in order to maximize income both from the fisheries sector and from non-fishermen, it is also expected to be able to manage household expenses so as to reduce non-essential expenses and be able to set aside savings for the future. For fishermen to be able to manage and utilize fisheries resources wisely and responsibly, so as to achieve economic and social welfare without overriding the environment and resource sustainability. For the government to pay more attention to communities in the Coastal Zone by providing innovations that can maximize the value of marine resources so as to obtain a more prosperous standard of living and provide education and direction that leads to economic sustainability. Then, for researchers to be able to develop this research and be able to be continued by other

researchers to conduct more in-depth research on income, expenses and economic sustainability in the Coastal Zone.

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