

Economic Behavior of Coastal Communities and Strategy in Fulfilling the Needs of Fisherman's Household

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ABSTRACT

The decreasing quality of fishery resources results in resource scarcity, abrasion and flooding. Communities, especially those living near the coast, are often accused of being the cause of the damage and scarcity of these resources. Various government policies and programs are oriented towards efforts to preserve fisheries resources and improve the economy and standard of living of communities around the coast. Research objectives: 1) To describe the activities of fishermen households in earning a living, 2) To describe the economic behavior of fishermen households, namely the income structure and the structure of household expenditure, 3) To analyze the share of food consumption expenditure of fishermen households, 4) To analyze the influence of household income level factors, education of housewives, and number of household members on household food expenditure, 5) To identify social and economic strategies of fishermen households in meeting the economic needs of their households. This research was conducted in Ujung Tanah District, Makassar City, South Sulawesi Province, for eight months. Survey research method by conducting in-depth interviews with fisherman households. Data analysis used descriptive analysis, income and expenditure analysis, and multiple linear regression analysis. The results showed that fishing activities in the sea, fishermen consider the available resources (type of boat and equipment) with preparation before going to sea, such as the duration of time at sea, tamping capacity, distribution of results and the radius of the fishing location. The income structure of fisherman households in Cambayya Village, Ujung Tanah District, Makassar City is sourced from income as a fisherman of IDR 2,602,857 per month with a percentage of 75.38%, and the income earned from side jobs other than fishermen is IDR 850,000 per month with a percentage of 24.61%. The expenditure structure of fisherman households in Cambayya Village, Ujung Tanah District, Makassar City is allocated for food consumption spending on average IDR 974,257 with a percentage of 43.79% and non-food consumption expenditure of IDR 1,250,357 with a percentage of 56.21%. The share of food consumption expenditure for fisherman households in Cambayya Village, Ujung Tanah District, Makassar City is 43.79% and is included in the food secure category. 85.71% of the respondents carried out a social strategy to meet their household needs when not going to sea is to find a side job. On the other side, the economic strategy carried out by fishermen is to involve the family (wife, children, and other family members) in earning a living.

Keywords: economic behavior, expenditure, food consumption, income.

I. INTRODUCTION

The Marine and Fisheries Development Strategic Plan for the 2021–2024 period of the Ministry of Maritime Affairs and Fisheries, is directed at achieving the following goals and objectives: 1) Increasing capture fisheries resources to increase people's welfare; 2) Development of aquaculture to increase exports and development of aquaculture villages based on local wisdom; 3) Reviving the marine and fishery industry through meeting the needs of industrial raw materials, improving product quality and added value to increase investment and export of marine and fishery products; 4) Management of sea space, coastal areas and small islands, strengthening supervision of the management

of marine and fishery resources, and fish quarantine through coordination with related agencies; and 5) Strengthening human resources and marine and fisheries policies [1].

The development of the fisheries sub-sector is one part of the development of the agricultural sector, which aims to increase the income and welfare of farmers and fishermen, improve the quality of life of coastal communities, meet food and nutritional needs, provide industrial raw materials, increase exports, and expand employment opportunities. Small-scale fisheries business has enormous potential through marine product processing industry activities. According to [2], around 87% of fishery business is dominated by small-scale community fisheries. Most of these small-scale fishermen have limited capital and low technological capabilities.

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TABLE I: PRODUCTION OF MARINE FISHERIES SUBSECTOR IN SEVERAL REGENCIES IN SOUTH SULAWESI IN 2016–2020

Districts	Production (Ton)				
	2016	2017	2018	2019	2020
Bulukumba	18.994	18.421	12.833	20.566	23.883
Takalar	31.617	32.045	31.620	25.374	39.543
Barru	15.402	14.669	16.336	16.368	16.599
Bone	25.635	32.650	42.879	63.425	67.707
Makassar	13.335	13.548	13.779	13.732	17.957
Sul-Sel	278.389	309.889	306.115	337.471	354.434

Source: South Sulawesi Fishery Service, 2021 [3].

Table I shows that marine fisheries production in several districts in South Sulawesi generally increases from time to time. The above conditions are supported by the availability of resources that allow the archipelago area to have the potential to be developed. The development of the fisheries sub-sector aims, among other things, to increase the income of fishermen and fish farmers, increase business production and productivity as well as provide employment opportunities which in the end are expected to have a positive impact on increasing the welfare improvement and standard of living of fishermen and fish farmers. Development activities must be able to bring traditional businesses into something that truly develops the economy.

Coastal communities dominated by fishermen are the poorest community groups in Indonesia. Poverty is caused more because 78% of them are hodge. This condition causes the production obtained to be relatively low, which in the end they are unable to meet the needs of their households. Furthermore, the cause of poverty for coastal communities and small islands is due to the absence of concepts and programs for developing coastal communities as the subject and at the same time as object of development, especially the development of coastal communities and small islands. This is caused by a lack of partnerships both in terms of skills development and funding from investors for local communities, and often results in the displacement or eviction of local communities from strategic locations. Activities like this can lead to an increase in poverty for coastal communities, because they have to move to places that are increasingly difficult to use [4]. The impact of poverty which continues to entangle some coastal communities causes various damage to the coastal and marine environment not only due to industrialization, but also often caused by poor people who are forced (in the absence of alternative livelihoods) to exploit marine resources that are ecologically vulnerable (such as coral reefs, breeding areas and fish spawning areas) or by means that are not environmentally friendly such as the use of explosives and poisons to catch fish.

The decreasing quality of fishery resources results in resource scarcity, abrasion and flooding. Communities, especially those living around the coast, are often accused of being the cause of the damage and scarcity of these resources. This is understandable because this community group is the most intense in utilizing fishery resources, both as a source of economic life and as a vehicle for carrying out other activities. Various government policies and programs are oriented towards efforts to preserve fisheries resources and improve the economy and standard of living of communities around the coast.

Economically, increasing people's income through various government policy programs also has an impact on increasing public awareness in conserving natural resources [4]. However, this only takes place consistently if people's incomes have increased above the poverty line. However, if the community's economic balance is still below the poverty line, then the community will try to find other sources of livelihood even with lower wages or with high risks, including exploiting resources [5].

Based on the description on the background and the formulation of the problem, the objectives to be achieved in this study are to:

- 1) Describe the activities of fishermen households in earning a living in Cambayya Village, Ujung Tanah District, Makassar City.
- 2) Analyze the pattern of economic behavior of fisherman households, namely the pattern and structure of fisherman household income, and the structure of household expenditure.
- 3) Analyze the share of food consumption expenditure for fisherman households in Cambayya Village, Ujung Tanah District, Makassar City.
- 4) Analyze the influence of household income level factors, education of housewives, and number of household members on household food expenditure.
- 5) Describe the social and economic strategies of fishing households in meeting the economic needs of their households in Ujung Tanah District, Makassar City.

II. RESEARCH METHODS

This research was conducted in Ujung Tanah District, Makassar City. The location of this research was chosen with the consideration that the area is a location on the outskirts of Makassar city (northern coastal area of Makassar), where the majority of the people work as fishermen.

The data analysis method used are:

- 1) Quantitative Descriptive Analysis, used to describe fishing household activities in earning a living. This study describes, reveals and illustrates the condition of fishermen's household activities in earning a living [6].
- 2) Household's Economic Behavior, analyzing the structure of household income and household expenditure structure.
- 3) Analysis of fisherman household income is the total income of fisherman households originated from all family members who work in the fisherman/fisheries sub-sector and other non-fishery/fishery sub-sectors, which can be calculated using the following formula:

$$TI = \sum_{i=1}^n (IP)_i + \sum_{j=1}^m (IP)_j \quad (1)$$

where:

TI – total fisherman household income (Rp/month),

IP – household income from fishing activities (Rp/month) ,

INP – household income from non-fishing activities (Rp/month),

i – 1. n – activities of several fisheries sub-sectors,

j – 1. m – activities of several sub-sectors.

- 4) Analysis of Food Expenditure Share is the percentage of food expenditure to the total expenditure of fishermen households. This tool is used to test the share of food expenditure. However, before carrying out an analysis of the share of food expenditure, fisherman household expenditure is calculated first, which consists of food expenditure and non-food expenditure. This can be calculated using the following formula [7]:

$$TP = \sum_{i=1}^n (PP)_i + \sum_{j=1}^m (PNP)_j \quad (2)$$

where:

TP – total of household's expenditure (IDR/month),
PP – consumption expenditure for food (IDR/month),
PNP – consumption expenditure for non-food (IDR/month),
i – 1. n – expenditure for several types of food,
j – 1. m – expenditure for several non-food items.

To analyze the share of food expenditure or the percentage of food expenditure to total household expenditure in the study area, it is calculated using the following formula:

$$PPP = \frac{PP}{TP} \times 100\% \quad (3)$$

where:

PPP – Share of Food Expenditures (%),
PP – Consumption Expenditures for Food (IDR/month),
TP – Total Household Expenditures (IDR/month).

The food security category uses the share of food expenditure with the following criteria:

- 1) Share of food expenditure < 60%: Food Secure
- 2) Share of food expenditure ≥ 60%: Food Insecure

III. RESULTS AND DISCUSSION

A. Characteristics of Respondents

Fishermen in carrying out fishing activities are influenced by various factors. Characteristics of socio-economic factors of a person influence the decision-making process. Some of the characteristics of the respondents are age, education level, farming experience, and ownership of land. In general, the age level of the respondents is in the productive age, with an average of 47 years. Formal education is still low, which is at the junior high school level. Knowledge obtained through formal education provides a good basis for business activities. The average number of family members is 4 people. The number of family members affects the standard of living of a family. The greater the number of dependents in his family, the greater the household expenses.

B. Fishermen Household Activities

The source of income for fisherman households is very dependent on the catch of fish, where the activities of fishermen in the sea are also very dependent on the climate. To meet their household needs, fishermen look for other sources of income by looking for side jobs. Therefore, the activities of fishermen households in making a living in Cambayya Village, Ujung Tanah District, Makassar City are divided into 2 (two) activities, namely activities as fishermen and activities other than fishermen.

1) Activities as fishermen

The daily activities of fishermen in earning a living as fishermen in Cambayya Village, Ujung Tanah District, Makassar City are carried out in groups, consisting of a chairman (called *punggawa*) and group members (called *sawi*). The grouping is usually based on family relationships or kinship. To obtain the maximum response results, fishermen need to pay attention to several things as follows:

- 1) Preparation for going to sea (ship fuel, fishing gear, fish storage boxes, ice blocks).
- 2) The fishing process is carried out in various ways depending on the type of vessel and fishing gear used.
- 3) Time to go to sea (determination of time for going to sea is known by two terms, namely "Kallangang" and "Singara" Bulang". "Kallangang" is a term for the ideal time for fishermen to carry out fishing activities in the sea. At this time the fishing process is easier, the fish are easily herded approaching the fishing nets. Meanwhile, "Singara" "Bulang" is a term when the moonlight begins to appear until the full moon. At that time, fishermen do not go to sea, because the light that comes from moonlight affects the attractiveness of fish coming to the nets, so that the fishing process got tough.
- 4) Ship capacity and duration of time at sea. Fishermen in Cambayya Sub-District, Ujung Tanah District, Makassar City generally catch fish two times a month, where the duration of fishing depends on the type of vessel used. Fishing activities at sea are carried out in groups, where the number of group members is in accordance with the capacity of the vessels used. There are three types of fishing vessels with different fishing durations as follows. The types of ships "Papatte" and "Papekang" have a smaller passenger capacity and catch capacity compared to the type of ship "Pagae." The difference in the type and capacity of the vessels also results in different types of fish caught.
- 5) The catch shared based on mutual agreement involved in the fishing process, namely the owner of the ship, the retainer and the "sawi." The catch divided is the catch after deducting the ship's operational costs during the fishing process at sea. Then the owner of the ship, the retainer and the "sawi" each get 1/3 of the share. However, for "sawi", 1/3 of the share is then distributed again to how many "sawi" go to sea from the same boat. Operational capital while at sea is usually obtained from ship owners, but there are also those who borrow operational costs from capital owners but do not own ships. Ship owners or capital owners are referred to as "Punggawa."

2) Activities other than fishermen

When fishermen are not at sea (during moonlight) or are not doing fishing activities, most of them do side job such as being laborers (motorcycle taxi drivers, masseurs, parking attendants, barbers) and entrepreneurship. However, there are also fishermen who do not have a side job and spend their time resting and preparing equipment for the next fishing activity.

The number of fishermen who have a side job when they are not at sea is 24 people (68.57%). The number of fishermen who do not have a side job is 11 fishermen (31.43%).

C. Structure of Fisherman's Household Income

Fishermen household income consists of two types of income sources, namely income from activities as fishermen and income from activities other than fishing. Income from activities as a fisherman is obtained with a frequency of going to sea two times a month, while fishermen's income from side jobs is obtained by carrying out various work activities when they are not at sea [8]–[11].

1) Fishermen's income from fishing activities

Fishermen's income from fishing activities is obtained from catches during fishing which are carried out in groups, so that the income earned is based on a profit-sharing system. The net income obtained by the fishermen respondents in the Cambayya Village, Ujung Tanah District, Makassar City from their activities as fishermen is IDR 2,602,857, included as low income. This value is below the Makassar City Minimum Wage in 2022, which is IDR 3,294,982.

2) Fishermen's income from activities other than Fishermen

Respondents' income from activities outside the fisheries sector are obtained when fishermen fill their free time when they are not at sea. The type of work the respondents do is by doing sideline work activities (activities other than fishing) such as being a laborer (motorcycle taxi driver, masseuse, parking attendant, barber) and entrepreneurship. However, there are also fishermen who do not have a side job and spend their time resting and preparing equipment for the next fishing activity. The average income from side jobs other than fishing is Rp. 850,000 per month.

The structure of fishermen's household income comes from 2 (two) sources, namely from the fishing business (fishermen) and from side jobs (other than fishermen).

TABLE II: RESPONDENTS' HOUSEHOLD INCOME STRUCTURE IN CAMBAYYA VILLAGE, UJUNG TANAH DISTRICT, MAKASSAR CITY, 2022

No.	Type of Work	Average income (IDR/month)	Percentage (%)
1	Fisherman	2,602,857	75.38
2.	Other	850,000	24.65
Total		3,452,857	100.00

Source: Primary Data 2022.

Table II shows that the income earned from fishermen is on average of IDR 2,602,857 with the percentage of the respondents is 75.38%, while the average income earned from side jobs other than fishermen is IDR 850,000 with a percentage of 24.61%. The income of fisherman households from their main activities as fishermen is the main source of income and provides the largest contribution to fisherman households.

Based on data from [12], that in 2022 the Makassar City Minimum Wage is IDR 3,294,982, while the average income of fisherman households originating from activities as fishermen and non-fishing activities is IDR 3,452,857 per month. Based on this income value, the income of fisherman households is greater than the UMK in Makassar City, so it can be concluded that fisherman household incomes are in the high category.

These results show that the fishing activities as a fisherman is still very low so that it has not been able to meet the needs of fishermen's households, so an alternative action that can be taken is to look for a side job to take advantage of free time when not at sea.

D. Structure of Fisherman's Household Expenditures

Fisherman household expenditure is a routine activity carried out by fisherman households to fulfill their daily needs. Household expenditure is grouped into 2 (two) types of expenditure, namely food consumption expenditure and non-food consumption expenditure [13]–[15].

1) Structure of food consumption expenditures

Food expenditure for fishermen households is a major need in meeting their needs and all members of their families. Food consumption needs consist of spending on main food consumption, such as rice, purchase of side dishes, vegetables, fruits, milk, and others. The average food consumption expenditure for fisherman households in Cambayya Village, Ujung Tanah District, Makassar City is IDR 974,257/month. The highest expenditure is on cigarette with an average of IDR 332,857 or 34.17%, then followed by the expenditure for rice of IDR 253,143 or 25.98%.

2) Non-food consumption expenditures

Non-food consumption expenditure is consumption expenditure to support all life activities or fisherman household activities every day. The total non-food consumption expenditure of fishermen households is IDR 1,250,357. Expenditures for children education IDR 472,857 with a percentage of 37.82% is the largest non-food consumption expenditure in fishermen households. The next Fig. 1 is spending on health with IDR 229,286 or 18.34%.

The structure of fisherman household expenditure in Cambayya Village, Ujung Tanah District, Makassar City, which consists of food consumption expenditure and non-food consumption expenditure is as follows:

TABLE III: STRUCTURE OF FISHERMAN HOUSEHOLD CONSUMPTION EXPENDITURES IN CAMBAYYA VILLAGE, UJUNG TANAH DISTRICT, MAKASSAR CITY

No.	Expenditure Type	Total (IDR/month)	Average (IDR/month)	Percentage (%)
1	Food consumption	34,099,000	974,257	43.79
2.	Nonfood consumption	43,762,500	1,250,357	56.21
Total		77,861,500	2,224,614	100

Source: Primary Data 2022.

Table III shows that the total consumption expenditure of fishing households is IDR 77,861,500, with an average fishing household expenditure of IDR 2,224,614 per month. The average income of fisherman households is IDR 3,452,857 per month, so fisherman households still have an average saving of IDR 1,228,243 per month.

3) Share of food expenditure

The share of food expenditure is the proportion of food consumption expenditure and total household expenditure per month. The share of food expenditure can be used as an indicator to measure the level of food security of fishing households. The following Table IV shows the share of fisherman household food consumption expenditure.

TABLE IV: ANALYSIS OF FOOD EXPENDITURES SHARE (PPP) OF FISHERMAN HOUSEHOLDS IN CAMBAYYA VILLAGE, UJUNG TANAH DISTRICT, MAKASSAR CITY

No.	Analysis	Total (IDR/month)	Average (IDR/month)	Description
1	Food Consumption Expenditure (PP)	34,099,000	974,257	-
2	Non-Food Consumption Expenditures (PNP)	43,762,500	1,250,357	-
3	Total Household Expenditures (TP)	77,861,500	2,224,614	-
4	Share of Food Expenditure (PPP)	-	-	43.79
5	Category	-	-	Food secure

Source: Primary Data 2022.

Table IV shows that the share of fisherman household's food expenditure in Cambayya Village, Ujung Tanah District, Makassar City is 43.79%. Food security category based on the share of food expenditure with criteria by [16], where if the share of food expenditure < 60% belongs to the category of "Food Secure" and if the share of food expenditure $\geq 60\%$ belongs to the category of Food Insecure. Hence it can be concluded that the share of fishermen households' food expenditure in Cambayya Village, Ujung Tanah District, Makassar City is included in the food secure category (<60%).

E. Fishermen's Household Social and Economic Strategy

Behavior and social strategies of the respondents are not much different from fishing communities in other areas. Social strategies carried out by fishermen to meet the needs of their families are:

- 1) Ask neighbors/family/relatives for help.
- 2) Establish a relationship with the capital owner.
- 3) Looking for a side job.
- 4) Pawn valuable things (gold, electronics, etc.).

The following presents several social strategies carried out by fishermen to meet the economic needs of their households.

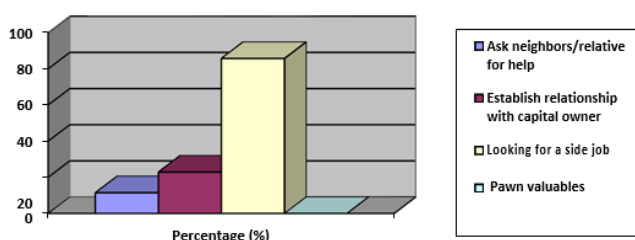


Fig. 1. Social Strategy of Fishermen Households.

Fig. 1 shows that the social strategy carried out by 85.71% of the fishermen to meet their household needs when they do not go to sea is to find a side job. Then followed the second strategy, which is establishing friendly relations with capital owners/ ship owners, as many as 22.86%. Then 11.43% of the respondents ask for help from neighbors or family or relatives. Lastly, no fisherman takes the action of pawning valuable things, such as gold, electronic goods, vehicles and so on.

The economic strategies carried out by fishermen to meet the needs of their families are [17]–[19]:

- 1) Increase the number of catches.
- 2) Save expenses (operational costs of household

consumption).

- 3) Borrow money from a cooperative/ capital owner.
- 4) Involve the family in earning a living.

The following Fig. 2 portray several economic strategies taken by fishermen to meet their household economic needs.

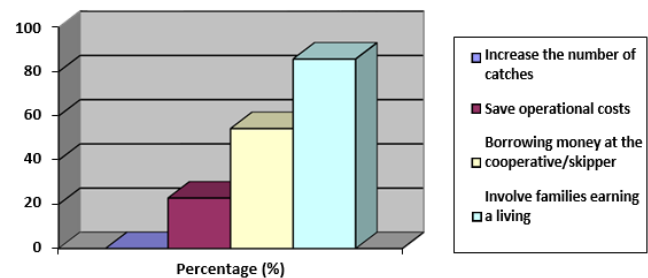


Fig. 2. Economic Strategy of Fishermen Households.

Fig. 2 shows that the dominant economic strategy carried out by fishermen to meet their household needs when they do not go to sea is to involve their families (wife, children and other family members) in earning a living (with 85.71% of the respondents). Then followed by the second strategy, namely borrowing money from cooperatives or capital owners as many as 19 fishermen or 54.26%. Then fishermen save on operational costs for going to sea, saving household consumption expenditures as many as 8 fishermen or 22.86%. And there are no fishermen taking action to increase the number of catches, because fishermen do not go to sea due to climatic conditions.

IV. CONCLUSION AND RECOMMENDATIONS

A. Conclusion

From the results of research on fisherman households in Cambayya Village, Ujung Tanah District, Makassar City, the conclusions are as follows:

- 1) There are 2 (two) types of activities for fishing households in Cambayya Village, Ujung Tanah District, Makassar City, namely activities as fishermen and non-fishermen. In carrying out fishing activities at sea, fishermen consider the available resources (type of boat and equipment) with preparation before going to sea, namely the duration of time at sea, tamping capacity, distribution of results and the radius of the fishing location. While non-fishing activities carried out by the majority of fisherman households are entrepreneurship (trade) and work in the service sector (tailor, barber, motorcycle taxi driver, masseuse, parking attendant).
- 2) The structure of fishermen's household income comes from income as a fisherman of IDR 2,602,857/month with a percentage of 75.38%, and income from a side job of IDR 850,000/month with a percentage of 24.61%. The income of fisherman households from their main activities as fishermen is the main source of income and provides the largest contribution to fisherman households. The total household income of fishermen is IDR 3,452,857/month.
- 3) The structure of fisherman household expenditure is allocated for food consumption on average of IDR

974,257 with a percentage of 43.79% and non-food consumption expenditure of IDR 1,250,357/month with a percentage of 56.21%.

- 4) The share of food consumption expenditure for fisherman households in Cambayya Village, Ujung Tanah District, Makassar City is 43.79% and is included in the food secure category.
- 5) The dominant social strategy carried out by fishermen to meet their household needs when they do not go to sea is to look for side jobs. The second strategy is establishing better relations with capital owners/boat owners.
- 6) The economic strategy carried out mostly (85.71%) by fishermen to meet their household needs when not going to sea is involving their family members to make money. The other strategy is lending money from cooperatives or skippers who owned capital, with as many as 19 fishermen or 54.26%.

B. Recommendations

To improve the welfare level of the ginger-based beverage processing home industry, it is suggested that:

- 1) Community empowerment, especially for housewives regarding the processing of fishery products, so that it is possible to open new jobs and increase the income of fisherman households in Cambayya Village, Ujung Tanah District, Makassar City.
- 2) Providing assistance by the government should be increased and distributed fairly to fishing households in need so that social inequality can be minimized.
- 3) To anticipate food consumption shortages when fishermen are not at sea, socialization should be given about the benefits of saving.

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CONFLICT OF INTEREST

The authors declare there is no conflict of interest related to the publication of this article.

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