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Research Article

Analysis of Income and Expenditure Based on Fishermen's Households The Level of Food Security in the Term District of Bireun Regency

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ABSTRACT

This study aims to analyze household income and expenditure and the level of food security of fishermen's households in Term District, Bireuen Regency. This research was conducted in the District of Term, Bireuen Regency. Determination of the research location is done purposively. The population in this study were all fishermen in the District of Jangka. The sampling method uses the Accidental Sampling technique, which is the technique of making a sample by chance. The analysis carried out is to analyze the income and expenditure of fishermen's households and analyze the level of resilience. Based on the results of the study, it was found that the average income of fishermen's households originating from fishing business activities was Rp. 4,406,329/month, from a side business of Rp. 1,578,145, and sourced from family opinion 3,106,076. Meanwhile, household expenditure is IDR 2,633,139/month. The share of fisherman household expenditure is 53.7% and is in the food security category.

Keywords: *Income; Expenditure; Food Security; Households; Fishermen*

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1. Introduction

A fishing/coastal village is a social, economic, ecological, and cultural institution that straddles the land-sea boundary and consists of a group of people with a distinct lifestyle and set of features. Fishermen are a coastal group whose primary source of income is the exploitation of the sea's natural resources, including fish, shrimp, seaweed, shellfish, coral reefs, and other marine richness (Rosni, 2017). Fishing communities have unique characteristics that distinguish them from other communities, and fishermen are synonymous with poverty, large family sizes, and low educational attainment. Fishermen play a crucial role in the advancement of human life. Its nature is more open than the communities that inhabit the interior. Fishermen have unique characteristics that set them apart from other communities, namely characteristics shaped by marine life that is extremely harsh and fraught with dangers, especially due to natural factors.

Due to competition with large vessels and a decline in the quality of fish catches, small fishermen are only able to exploit resources in coastal regions where catches tend to continue to decline. The catch is readily damaged, which weakens their stance in sales negotiations (Widodo, 2011). In addition, the pattern of exploitation relations between capital owners and laborers and fishermen, as well as the seasonal and erratic nature of the fishing industry, makes it difficult for poor communities in coastal areas to escape poverty and debt servitude to merchants or ship owners.

The employment of a fisherman at sea is risky and greatly influenced by natural forces, so that the revenue obtained from fishing fluctuates throughout the year depending on the season and fish prices. During the harvest season, the income earned by fishermen is sufficient to meet their daily needs; however, during the famine or rainy season with intense storms, their income level is low, and sometimes they do not even receive the same income.

This circumstance affects the food security of fishing households without a doubt (Rachman, 2016).

Most fishing communities depend for their lives on the utilization of marine and coastal resources which require large and seasonal investments. They work as small fishermen, fisherman workers, small scale fish entrepreneurs and small traders because they have limited investment capacity. In Bireuen Regency there are 6771 people who work as fishermen. Of these, there are 4767 people whose permanent jobs are fishermen, 901 people are only part-time workers and 1103 are owner fishermen (BPS, 2020).

Jangka Subdistrict is one of the subdistricts in Bireuen district which has the third highest number of fishermen out of 10 subdistricts which have a large number of people who work as fishermen. It can be seen that in the Jangka Subdistrict, there are 699 fishermen, 567 of whom actually work permanently as fishermen, 59 people only do the fishing profession as a side job and only 73 fishermen have their own boats and fishing equipment (BPS, 2020). It can be seen that in the Jangka sub-district there are still many fishermen who carry out fishing activities at sea using boats and other people's fishing gear, which means that in the Term sub-district there are still many sharecropper fishermen or labor fishermen rather than owner fishermen.

2. Method

This research was conducted in the District of Jangka, Bireuen Regency. The determination of the research location was carried out purposively or intentionally with the consideration that the sub-district is one of the areas with a large number of fishing households in Bireuen Regency, namely 659 households. The population in this study were all fishermen in the Kecamatan Jangka. The sample in this study was taken as many as 79 respondents. The sample size of 79 respondents has fulfilled the statistical test requirements used (Wirartha, 2006). The sampling method uses the Accidental Sampling technique, which is a coincidence sampling technique. This means that anyone who meets the researcher by chance or incidentally can be used as a sample as long as the person meets the sample criteria (Sugiyono, 2016). This study uses primary data obtained directly through interviews and questionnaires from fishermen. Secondary data was obtained from the Marine Service, the Central Bureau of Statistics, the Agricultural Extension Center and other related agencies.

The analysis carried out is analyzing income, which is the overall family income received by members of the fishing household either from the head of the family or from members of the fishing family. The amount of household income will be known from the amount of the fisherman's own income and the amount of income from other family members. In this study, to calculate the income of fishermen's households in the Term District of Bireuen Regency, it is necessary to know the average net income of fishermen in one month, the amount of fishermen's side income, and the additional income of fishermen's family members in one month, whether from the wife's income or child. Next analyze the level of food security. The level of food security is analyzed using the household expenditure share approach, namely the following equation Arifin, et al (2011):

$$PPP = \frac{household\ production}{total\ expenditure}\ x\ 100\ \%$$

Information:

- The share of food expenditure (PPP) < 60% of total expenditure is a household that is food secure

- The share of food expenditure > 60% of total expenditure is food insecure households

3. Result

The geographical location of the Kecamatan Jangka is directly adjacent to the Malacca Strait. Jangka District is one of the sub-districts in Bireuen Regency, Aceh Province. The area of Kecamatan Jangka, Bireuen Regency is 8.118 Ha, consisting of 46 villages and 5 settlements. The distance from the District of Jangka to the center of Bireuen City is 22.3 km. Topography of Jangka District Bireuen Regency is directly adjacent to the following areas:

- To the north is directly adjacent to the Malacca Strait
- To the south it is bordered by Peusangan District
- To the west it is bordered by Kuala District
- In the east it is bordered by Kuta Blang District and Subdistrict

  Gandapura (Central Bureau of Statistics for Bireuen Regency, 2021).

The number of residents in Jangka Subdistrict, Bireuen Regency in 2021 is 28,687 people, with a population density of 763 people/km2 and the number of households is 6975. The number of residents who are male is 14618 people and women is 15652 people (Central Bureau of Statistics for Bireuen Regency, 2021). Most of the population in the District of Jangka has a livelihood as a fisherman. Workers as fishermen are the third largest source of income in the Term District of Bireuen Regency. This can be seen in Table 1 below.

Table 1. Number of Households Based on Main Livelihoods in 2019 Term Districts

No	Livelihood	Amount	Percentage (%)
1.	Rice farming	3083	46
2.	Fisherman	746	11
3.	Other agriculture	782	12
4.	Trader	551	8
5.	Domestic industry	593	9
6.	Government employees	440	7
7.	Private worker/employee	435	7
	Amount	6975	100

Source: BPS Kecamatan Term 2021

The sample used in this study was 100 labor fishermen households in the Jangka District of Bireuen Regency. This section will discuss the characteristics of respondents based on age, level of education, experience, and number of family dependents.

3.1 Age

The age of fishermen is one of the factors that greatly influences the high and low income of fishermen. Age is also a determining factor in increasing productivity. (According to BPS, 2021), the age of the population is grouped into 3 namely, (a) Age 0-14 years is called young age or not yet productive age, (b) Age 15-64 years is called mature age or

working age or productive age, and (c) Age 65 and over is called old age or non-productive age.

Fishermen who are in the productive age range certainly have optimal physical conditions in carrying out fishing activities. This means that fishermen at productive age have better and stronger physical stamina and strength than fishermen who are old or unproductive. This will certainly affect fishing activities and the number of catches that will be obtained so that it will indirectly affect the increase in income received. The characteristics of the fishermen's age level can be seen in Table 2 below.

Table 2. Distribution of Respondents by Age Level in Kecamatan Jangka Bireuen Regency

Age Level (Years)	Number of Fishermen (Person)	Percentage (%)
21 – 35	6	8
36 – 45	3	4
46 – 55	16	20
56 - 64	40	50
≥ 65	14	18
Total	79	100

Based on Table 2. it can be seen that the age level of fishermen starts at the age of 21 years. The distribution of the age levels of fishermen in the Term District of Bireuen Regency which are categorized as old age or unproductive age groups, namely those aged over 65 years, is 18 percent, while those in the productive age group are those aged 21-64 years with the number of fishermen as much as 82 percent. . This study explains that fishermen in Jangka Subdistrict, Bireuen Regency still have good physical strength so that they are able to facilitate fishing activities and efforts in the ocean. This age factor certainly has important implications for the progress of the capture fisheries sector, given that older groups find it difficult to accept changes and prefer to carry out traditional activities (Adhiana et al. 2009).

3.2 Education

In general, this education will affect the way and mindset of fishermen, because education is a process in developing the knowledge, skills or attitudes of fishermen that can lead to changes in improving the quality of life. The higher the education of a fisherman, the higher the knowledge and skills so that later it will also affect the management of capture fisheries business carried out by fishermen, especially in implementing innovations or new technologies.

The level of education is an indicator of the socio-economic status of the community. This education will also be able to show the knowledge possessed by the respondents. The education referred to in this study is the length of formal education obtained by the respondents. From the results of research conducted in the Term District of Bireuen Regency, there have not been many innovations and new technologies applied by fishermen. Fishing activities by fishermen are still traditional, no new innovations or technologies have been implemented, and the fishing gear used is still traditional. The educational level of fishermen can be seen in Table 3 below.

Table 3. Distribution of Respondents by Education Level in Kecamatan Jangka Bireuen Regency

Education	Number of Fishermen (Person)	Percentage (%)
Primary School	11	14
Junior High School	28	35
Senior High School	34	43
College	6	8
Total	40	100

Based on Table 3 it can be seen that the frequency distribution of respondents according to the highest level of education is at the high school level with 34 fishermen or 43 percent. While the lowest distribution of education is at the tertiary level, namely the number of fishermen is 6 people or 8 percent. The educational level of fishermen in the Term District of Bireuen Regency, which is classified as high school, is 28 people and 35 percent. In the research area, only 11 fishermen or 14 percent have basic education. This situation indicates that fishermen in the study area may be dominated by fishermen with upper middle education. The results of this study are no different from several previous studies (Roslina, 2011).

The high level of education will affect the mindset of fishermen to use various new innovations so that it can affect the increase in fish catches in the sea. Conversely, the low level of formal education also affects the ability of fishermen to increase various efforts to improve fishing methods so that it can become one of the causes of obstacles to increasing fish catches. This research is in line with research (Adhiana, et.al 2021). The higher the formal education attained, the more it can affect the way fishermen think and the easier it is to apply innovation or new technology, so that later it will affect the level of income that fishermen will receive. Education can also influence farmers through the absorption of various information and innovations that are useful for increasing production. sembung (Thamrin et al., 2012).

3.3 Experience

The experience of fishermen is an important factor in carrying out fishing activities at sea. The more experience a fisherman has, the more learning that can be used by fishermen in managing to increase fishing effort. The fishermen's experience in this study can be seen in Table 4. Experience in fishing activities owned by fishermen in research locations generally has been going on for a long time. From Table 4 below, it explains that fishermen who have experience of less than 5 years are as many as 10 fishermen or 13%, while those with experience of 6 to 10 years are 23 fishermen or 29%, who have experience between 11 to 15 years, namely 16 fishermen or 20 percent, while the rest have experience of more than 15 years, namely 30 people or 38 percent.

Tabel 4. Distribution of Respondents by Education Level in Kecamatan Jangka Bireuen Regency

Experience (Year)	Number of Fishermen (Person)	Percentage (%)
1–5	10	13
6 – 10	23	29
11– 15	16	20
>15	30	38
Total	79	100

The experience of fishermen in catching fish determines the management of the business they run, so that the more experienced a fisherman is, the better their management will be in running a fishing business at sea. According to Manulang (1987) that someone who is experienced will always be smarter than people who are not supported by experience. Generally these fishermen gain experience from their parents from generation to generation.

3.4 Dependent Family Members

The number of dependents is the number of family members who until the time the research was conducted were still the responsibility of the respondent fishermen in making ends meet. Family dependants are the number of people who are supported based on needs or financed in the family. The number of dependents will affect the level of need for fishermen respondents. The more the number of dependents, the greater the necessities of life that must be met. So this encourages fishermen to be more active in working to meet the needs of their families. In addition, the large number of dependents owned by fishermen can also assist in the supply of labor to carry out fishing activities at sea. The number of fishermen's dependents in this study can be seen in Table 5.

Table 5. Distribution of Respondents According to the Number of Dependents in the Term District of Bireuen Regency

The quantity of dependants	The Number of Farmers (Person)	Percentage (%)
1-3	57	72
4-5	18	23
>5	4	5
Total	79	100

Based on Table 5, it can be seen that the largest number of fishermen's dependents is between 1-3 people, namely 57 fishermen or 72 percent of the total number of fishermen respondents. The number of family dependents will greatly affect the amount of consumption. This is because more and more family members are covered, it will encourage a fisherman to be more active in earning a living both in fishing in the sea or other side jobs due to the large burden being borne and the increasing household needs.

Based on BPS (2020) classifies the number of family dependents into three groups, namely small family dependents of 1-3 people, medium family dependents of 4-5 people and large family dependents of more than 6 people. The negative impact of a large number of dependents is the greater the costs that must be incurred by the family to make ends meet.

4. Discussion

4.1 Analysis of Fisherman's Household Income

Fisherman household income is income received by fisherman households, both from the head of the family and the income of fisherman family members. The income of fishing households in Jnagka District, aside from coming from fishing activities, also comes from other activities, namely civil servants, non-fisherman farming, traders, teachers, brick craftsmen, laborers and others. The amount of income received by fishermen in the Term District of Bireuen Regency can be seen in Table 6 below.

Table 6. Distribution of Average Income of Fishermen's Households in the Term District of Bireuen Regency

Type of Source of Income	Average Income/month (Rp)
Fisherman Business	4.406.329,00
Side Business	1.578.145,00
Family member contributions	3.106.076,00
Total	9.090.551,00

The average net income of fishermen originating from fishing activities in the Jangka District of Bireuen Regency is Rp. 4,406,329.00. This income is the main income of fishermen as the head of the family to meet the consumption needs of fishermen's households. In addition to the income that comes from fishing activities, most fishermen in the Term District also have side jobs and obtain additional income from other family members to supplement their income in one month. The average income of fishermen from side jobs in the Term District of Bireuen Regency is Rp. 1,578,145.00. This side income is obtained by fishermen outside of fishing activities to help meet family needs.

Generally fishermen work as construction laborers, and a small number work in the agricultural sector as garden farmers, especially oil palm plantations. These fishermen also get income from other family members to meet their needs. Most fishermen get additional income from their children in the form of remittances from their children who work in Malaysia and from their wife's income. Almost all of the money sent by their children from Malaysia is saved by them, and is not used for their daily needs. The average additional income earned by fisherman family members per month in the Kecamatan Bireuen Regency is Rp. 3.208.608,00. Most of the total income is saved, mainly sourced from income sent by their children who work abroad. The average interval distribution of fisherman household income is in Table 7 as follows.

Table 7. Distribution of Average Household Income Intervals of Fishermen in the Term District of Bireuen Regency

Average Income Interval/mounth	Number of Fishermen (Person)	Percentage (%)
>1.000.000 – 3.000.000	2	3
>3.000.000 – 5.000.000	9	11
>5.000.000 – 7.000.000	3	4
>7.000.000	65	82
Amount	79	100

Table 7 shows the average distribution of fisherman household income in one month. The highest percentage is at an income level greater than Rp. 7,000,000 with a total of 65 fishermen or 82 percent. While the lowest percentage is at the level of income between Rp. 1,000,000 – 3,000,000 with 2 fishermen or 3 percent. The average total monthly income of fisherman households in the Term District of Bireuen Regency is Rp. 9,090,551 per month. Most of the total income is saved because most of the income comes from sending their children who work outside the area, especially from Malaysia. This income is obtained from the amount of fishermen's income, fishermen's side income and income from fishermen's family members in one month in the Term District of Bireuen Regency. Such as research (Widodo, 2011), where most of the access to income obtained by fishermen is fully spent to meet the various needs of their household life.

4.2 Fishermen Household Expenditure

A very important benchmark for viewing the welfare of fishermen is household income, because several aspects of welfare depend on the income level of fishermen. The amount

of fishermen's income will affect the amount of basic needs that must be met, namely, food, clothing, shelter, health and employment or usually these expenses can be grouped into food and non-food consumption expenditures. Household consumption is expenditure for the purchase of final goods and services to obtain satisfaction and meet household needs. In general, households with high income will use it for higher consumption, while households with relatively low income will use it for low consumption as well.

The expenditure of fishing households in the Term District of Bireuen Regency is food and non-food expenditure. Food expenditure includes spending to meet food needs in the form of rice, eggs, fish, tofu, tempeh, vegetables, beverages and others. While non-food needs are used to pay for clothing, education, health, transportation, toiletries, washing clothes, electricity costs and so on.

Consumption patterns are defined as the proportion of household expenditure allocated for various food and non-food needs. Consumption patterns are the percentage of fisherman household expenditure for food consumption higher than 60% or lower food consumption ≤ 60% of total consumption. The proportion of household expenditure for a certain period of time will be fulfilled from the total household income itself. In managing the proportion of household expenditure, fishermen generally prioritize basic needs or food. In other words, the fulfillment of less urgent needs will be postponed before the basic needs are met.

The proportion of food and non-food consumption expenditure is the percentage of food and non-food consumption expenditure to the total consumption of fisherman households in the Term District of Bireuen Regency. The following Table 8 details the proportion of consumption spending.

Table 8. The Proportion of Food and Non-Food Consumption Expenditure to the Total Expenditure of Fisherman's Households in the Term District of Bireuen Regency

No	Expenditure Type	Total Expenditure/mounth	Percentage (%)
1	Food Production	1.509.494	57,3
2	Non-Food Expenditure	1.123.646	42,7
	Total	2.633.139	100

Table 8 shows that in Jangka Subdistrict, Bireuen Regency, the proportion of expenditure for food consumption is 57.3 percent of the total average consumption expenditure of fishing households, higher than expenditure on non-food consumption, which is 42.7 percent. The proportion of expenditure for food consumption is higher than the proportion for non-food consumption indicating that the average fishing household is still not prosperous, because most of their income is still used to meet their food needs. Population welfare greatly influences household economic access to food so that it also affects the quantity and quality of food consumed (Yudaningrum, 2011). So that the problem of poverty in coastal communities is basically caused by non-fulfillment of basic needs. The need for clothing, boards, food, health and educational facilities, religion. In addition, the lack of access to information in an effort to innovate and empower fish catches, as well as low technology and weak capital have weakened the bargaining power of the poor (Iryana, 2019).

In general, the consumption patterns of fishermen in the Jangka Subdistrict, Bireuen Regency can be grouped into two types of consumption, namely food and non-food. Thus, at a certain level of income, fishing households will allocate their income to meet their needs. Fishermen's consumption patterns can be seen in Table 9 below.

Table 9. Distribution of Fisherman Household Consumption Patterns in the Term District Bireuen Regency

N0	Expenditure Type	Number of Fishermen (person) NelayanPengeluaran/bulan	Percentage (%)
1	Higher Food Consumption	45	57,3
2	Lower Food Consumption	34	42,7
	Total	79	100

Table 9 shows that out of the 79 fisherman households studied, in the Jangka District of Bireuen Regency, 57 households or 57.3 percent had a higher food consumption pattern. Meanwhile, 34 households or 42.7 percent had lower food consumption patterns. This indicates that the percentage of fisherman household consumption in the Term District of Bireuen Regency is more on fulfilling food first than the total consumption. Judging from these conditions, it shows that the fishermen's household economy has a low level of welfare. Spending on food consumption is higher than spending on non-food consumption indicating that household income is still low.

4.3 Food Security Level

The level of food security can be seen from the share of food expenditure which is calculated from the ratio of the total expenditure on food to the total expenditure of fishing households per month. The following is the result of calculating the share of fisherman's household food expenditure in the Jangka District of Bireuen Regency.

The level of fisherman food security can be analyzed using the household expenditure share approach, namely with the following equation, Arifin, et al (2011):

$$PPP = \frac{household\ production}{total\ expenditure}\ x\ 100\ \%$$

or $\mathrm{PPP} = \frac{119250000}{208018000}\ x100\%$

PPP = 57,32%

If the Share of Food Expenditures (PPP) < 60% of total expenditure are households that are food secure, and if the share of food expenditure > 60% of the total expenditure, it is a food insecure household. This value explains that fisherman households in the Term District of Bireuen Regency are in the food security category, namely (57,32% < 60%).

Table 10. The Average Share of Fisherman Household Expenditure in the Term District of Bireuen Regency

No.	Expenditure Type	Total Expenditure/mounth	Percentage (%)
1.	Food Production	1.509.494	57,3
2.	Non-Food Expenditure	1.123.646	42,7
	Total	2.633.139	100

Based on Table 10 it is known that the average total expenditure of fishing households is IDR 2,633,139/month. This expenditure was dominated by food expenditure of IDR 1,509,494, while non-food expenditure was IDR 1,123,139, similar to research conducted by Martina et al (2019) and Adhiana, et.al (2021), that household food consumption red chili farmers and soybean farmers are larger when compared to non-food consumption. According to Ernest Engel in BPS (2014), that the percentage of spending on food will decrease as income increases. Therefore, the composition of household expenditure can be

used as an indicator for the welfare of the population. The lower the percentage of spending on food to total expenditure, the better the economic level of the population and vice versa.

The level of food security can be seen from the share of fisher household food expenditure which is 57.3% which is greater than the share of non-food expenditure (42.7%). This value explains that fishing households are in the food security category (57.3% <60%). Based on research conducted by Fatimah and Syamsiyah, (2018), the proportion of food and non-food expenditure in Pusakanagara District, Subang Regency, namely household expenditure for food is 60% and non-food expenditure is 40%.

5. Conclusion

Based on the results of the research that has been described, it can be concluded that the average income of fisherman households in the Term District, which originates from fishing business activities, is Rp. 4,406,329/month, from a side business of Rp. 1,578,145, and those sourced from family income amounted to 3,106,076. Meanwhile, household expenditure is IDR 2,633,139/month. The share of fisherman household food expenditure is 53.7% and is in the food security category.

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