

Analysis of the Income Efficiency of Fishermen Catching Fish on the Coast of Tubeleh Hamlet, Kalangkangan Village

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Abstract

This research aims to determine the efficiency analysis of fishermen's income from fishing on the coast of Tubeleh Hamlet, Kalangkangan Village. This research uses a descriptive analysis method with a qualitative approach. The data analysis technique used is the calculation of gross income, total costs and net income of fishermen, as well as calculating the efficiency of fishermen's income. Data sources come from data in the form of primary data and secondary data. Primary data was obtained from the results of respondents' responses through interviews. Secondary data in this research is data on the number of fishermen in Dasa Kalangkangan. Based on the results of the research and discussion, it can be concluded that the income of a fisherman catching fish on the coast of Tubeleh Hamlet, Kalangkangan Village is quite good in meeting the daily living needs of his family, because the average net income earned by fishermen is IDR 6,956,833. And based on efficiency calculations, it shows that the income of fishermen catching fish on the coast of Tubeleh Hamlet, Kalangkangan Village is in an efficient or profitable condition with an R/C Ratio >1, namely 4.52.

Keywords: *efficiency, income*

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INTRODUCTION

Indonesia is an archipelago country in Southeast Asia that crosses the equator and is located between the mainland of Asia and Oceania so it is known as a continental country, as well as the Pacific Ocean and the Indian Ocean. Based on data from the Geospatial Information Agency, Indonesia has a land area of 1,905 million km² and a water area of 3,257 million km², so that Indonesia's total area is around 5,180 million km². Indonesia consists of islands, both large and small, which number around 17,504 islands (in the journal Fajri Tsaniat Hasanah 2020). Three-quarters of Indonesia's territory is a sea area of 5.9 million km² with a coastline length of 95,161 km, which is the second most prominent coastline in the world after Canada. Having a large enough area of waters makes the potential of Indonesia's fisheries sector the largest in the world, both capture fisheries and aquaculture with a production potential of around 67 million tons/year. The number of Indonesians living in the peisir reaches 161 million people or about 60% of the 250 million population. Coastal and ocean areas that are rich in natural resource potential have long been used by the community.

Tolitoli Regency is one of the areas in the Central Sulawesi region that has considerable fisheries and marine potential. Fisheries investment potential in this region includes capture fisheries, aquaculture fisheries, and fisheries management and marketing of catches (KKP 2018). Tolitoli Regency has great potential, this can be seen from the abundant catch of fishermen. The potential of Tolitoli regency's fishing resources has a variety of abundant marine potential, according to the deputy chairman of the Tolitoli DPRD Jemmy Yusuf saying that Tolitoli Regency's marine potential reaches 60,000 tons per year (Quoted from the 2023 Tolitoli RRI.co.id page). Basically, income can support the success, prosperity, and economic progress of a community in a region (Bustari and Yanto 2025; Nur et al. 2024; Yanto 2024; Yanto et al. 2023, 2025; Yanto and Aqfir 2020; Yanto, Bustam, and Aqfir 2021; Yanto and Fatima, Siti; Aqfir 2023; Yanto and Maskur 2025), especially people on the coast who work as fishermen. The income of the fishing community directly or indirectly will greatly affect their quality of life, because income from sailing is the main or even the only source of income for the fishermen. So that the small amount of income will have a great influence on the lives of fishermen.

The living conditions of the fishing community on the coast of Tubeleh Hamlet, Kalangkangan Village, in maintaining their welfare cannot be separated from the pattern of life in the marine and fisheries sectors. People in coastal areas have many jobs as fishermen to meet the needs of their families. Fishing communities have special characteristics that distinguish them from other communities, namely characteristics formed from harsh and risky marine life, especially risks derived from natural factors. Fishermen's income greatly affects their quality of life because income from fishing is the main source for fishermen in meeting their living needs. The phenomenon that occurs to fishermen on the coast of Tubeleh Hamlet, Kalangkangan Village is that the economic life conditions of the community are always uncertain, sometimes they can meet their living needs and sometimes they cannot, because the income they receive is not balanced with their daily needs, because of the erratic income when they go fishing for fish that is uncertain per day and even sometimes fishermen do not get their daily catch.

Kalangkangan Village is a village located in Galang sub-district, Tolitoli regency, formed in 1967 with the boundaries of the area north of Ginunggal village, to the right of Sandana village to the west of Lantapan village and to the west bordering the sea. It currently has a population of 3,783 people with 1,936 males and 1,847 prempuan (Kalangkangan Village Profile Data, Galang District, 2023). The purpose of this study is to find out how much efficiency of fishermen's income on the coast of Tubeleh Hamlet, Kalkangngan Village.

METHODOLOGY

Sampling Methods

In this study, sampling was carried out using *Purposive Sampling technique*. Where according to Sugiyono (2020:94) *purposive sampling* is a data collection technique with certain considerations. The researcher can determine the research informant himself based on certain considerations. This consideration is in the form of selecting people who are considered to know the most about what to expect in this study. The sample used as respondents in the study was 30 fishermen on the coast of Tubeleh Hamlet, Kallangangan Village.

Cost Analysis

Cost is the cost invested during the course of a business or cost calculated between the sum of the total fixed cost (TFC) and the total variable cost (TVC) (Soekartiwa, 1995). To find out the total amount of the total cost used by fishermen to catch fish in their business, the formula is used:

$$TC = TFC + TVC$$

Where:

TC	Total Biaya (<i>Total Cost</i>)
TFC	Total Biaya Tetap (<i>Total Fixed Cost</i>)
TVC	Total Biaya Variabel (<i>Total Variabel cost</i>)

Admission Analysis

According to Soekartawi (1995), revenue is the result of the multiplication between the amount of production and the selling price of the product. To find out the acceptance of fishermen to catch fish is used:

$$TR = Q \times P$$

Where:

TR	Total Penerimaan (<i>Total Revenue</i>)
Q	Jumlah Hasil (<i>Quantitas</i>)
P	Harga (<i>Price</i>)

Profit Analysis

According to Soekarwati (1995), the value of a business is obtained from the calculation of the result of the reduction between the total revenue and the total cost that has been used. With the following formula:

$$\Pi = TR - TC$$

Where:

Π	Keuntungan (<i>profit</i>)
TR	Total Penerimaan (<i>total revenue</i>)
TC	Biaya Tetap (<i>Total cost</i>)

Efficiency Analysis

In simple terms, efficiency can be interpreted as the absence of waste, according to Arif Suandi (2001), efficiency is the comparison between output and goals, the relationship between output and goals to be achieved, and the ability to do it correctly. According to Soekartawai (2006:97) to determine the level of efficiency of fishermen's income, the following formula is used as a measuring tool:

$$E = \frac{TR}{TC}$$

Where:

E = Efficiency

TR = Total Revenue

TC = Total Cost

Description:

R/C ratio >1, efficient

R/C ratio <1, inefficient

R/C ratio = 1, no profit and no loss

RESULTS AND DISCUSSION

From the results of direct interviews with respondents, it was found that respondents have certain characteristics. These characteristics were obtained from the answers of the respondents. The respondents who were the subjects of this study were fishermen in Tubeleh Hamlet, Kalangkangan Village, which amounted to 30 people. The characteristics of the respondents consisted of the age group of the fishermen, the length of the fisherman's experience at sea, the number of fishermen's catches per day, and the profit sharing carried out by the fishermen. Following are the characteristics of the respondents based on the results of the interview:

By Age Group

Table 1. Interview Data by Age Grouping

Age Group	Frequency	Percentage %
20 - 29 Years	4	13%
30 - 39 Years	8	27%
40 - 49 Years	11	37%
> 50 Years	7	23%
TOTAL	30	100 %

Based on table 4.2 above, it can be known about the age of fishermen respondents in Tubeleh Hamlet, Kalangkangan Village who were taken as respondents. Ages 20 - 29 years old amounted to 4 oang or 13%, age 30 - 39 years old amounted to 8 people or 27%, age 40 - 49 years old amounted to 11 people or 37%, and age > 50 years old amounted to 7 people or 23%. From the information above, it can be seen that most of the respondents are 40-49 years old. From the information above, it can be seen that the age of 40 - 49 years is the productive age.

2. Based on the old group of seafaring experience.

Table 2. Interview Data Based on Long Grouping of Marine Experience

A Long Time of Marine Experience	Frequency	Percentage %
1 - 10 Year	14	47 %
11 - 20 Year	10	33%
> 20 Year	6	20%
TOTAL	30	100%

Based on table 4.3 above, it is known about the number of years of fishing experience of fishermen in Tubeleh Hamlet, Kalangkangan Village who were taken as respondents, the length of sea experience as fishermen of 1 - 10 years as many as 14 people or 47 years, the length of sea experience as fishermen of 6 - 10 years as many as 10 people or 33% and the length of sea experience as fishermen > 20 years as many as 6 people or 20%.

3. Based on the number of fishermen caught per day

Table 3. Interview Data Based on the Grouping of the Number of Fishermen's Catches Per Day

Total Catch per day (Ikat)	Frequency	percentage %
1 - 10	11	37%
11 - 20	13	43 %
21 - 30	4	13 %
> 31	2	7%
TOTAL	30	100%

Based on table 4.3 above, it can be known about the number of fishermen caught in Tubeleh Hamlet, Kalangkangan Village who were taken as respondents, namely, fishermen who obtained a daily catch of 1 - 10 ties as many as 11 people or 37%, fishermen who obtained a daily catch of 11 - 20 ties as many as 13 people or 43%, fishermen who obtained a daily catch of 21 - 30 ties as many as 4 people or 23%, and fishermen who increase the number of catches >31 by 2 people or 7%.

4. Based on Profit Sharing Group

Table 4. Interview Data Based on Profit Sharing Grouping

Revenue Share	Frequency	Percentage (%)
There is profit sharing	17	57%
No profit sharing	13	43%
TOTAL	30	100%

Based on table 4.4 above, it can be known about the profit sharing of fishermen in Tubeleh Hamlet, Kalangkangan Village who were taken as respondents, it is known that 17 people or 57% have a revenue share and it is known that 13 people or 43% have no revenue sharing.

Fishermen's Income Analysis

To calculate the level of gross income and net income received by fishermen in Tubeleh Hamlet, Kalangkangan Village, a method is needed to calculate fishermen's income, the methodology is divided into three, namely gross income, total costs and net income.

a. Fishermen's Gross Income

Gross income is the total amount of income received from the sale of fish caught by fishermen that has not been deducted by any cost. To find out the gross income of fishermen fishing on the coast of Tubeleh Hamlet, Kalangkangan Village, you can see the following table:

Table 5. Fishermen's Total Revenue in a Month

No	Average Catch of Fishermen in a Day at Sea (Stickers in a Day)	Average Catch of Fishermen per month at sea (stickers in a month)	Pricing Sell (Rp/ikat)	Total Revenue (Rp)
1	10	300	15.000	4.500.000
2	15	450	10.000	4.500.000
3	20	600	20.000	12.000.000
4	20	600	15.000	9.000.000
5	9	270	15.000	4.050.000
6	27	810	20.000	16.200.000
7	24	720	25.000	18.000.000
8	20	600	20.000	12.000.000
9	14	420	20.000	8.400.000
10	10	300	15.000	4.500.000
11	9	270	10.000	2.700.000
12	5	150	15.000	2.250.000
13	17	510	15.000	7.650.000
14	11	330	20.000	6.600.000
15	10	300	20.000	6.000.000
16	10	300	10.000	3.000.000
17	12	360	20.000	7.200.000
18	5	150	20.000	3.000.000
19	31	930	20.000	18.600.000
20	6	180	10.000	1.800.000
21	14	420	20.000	8.400.000
22	30	900	25.000	22.500.000
23	20	600	20.000	12.000.000
24	17	510	15.000	7.650.000
25	10	300	15.000	4.500.000
26	11	330	15.000	4.950.000
27	21	630	15.000	9.450.000
28	20	600	20.000	12.000.000
29	34	1020	30.000	30.600.000
30	9	270	15.000	4.050.000
Total	471	14130	525.000	268.050.000
Average	16	471	17.500	8.935.000

Based on table 4.5 above, it can be known that the total gross income of fishermen in a month is Rp.268,050,000 and the average gross income per month that can be obtained by fishermen is Rp.8,935,000. Where the largest total revenue in a month is that fishermen can get a gross income of Rp.30,600,000 while the smallest total income obtained by fishermen in a month is Rp.1,800,000.

b. Total Fisherman Cost

Total *Cost* is the total amount of fixed *costs* and variable *costs* incurred by fishermen. The total cost of fishermen fishing on the coast of Tubeleh Hamlet, Kalangkangan Village can be seen in the following table:

Table 6. Total Cost of Fishermen in a Month

No	Fixed Fee (Rp) in a Month	Fixed Fee (Rp) in a Month	Total Cost (Rp) in a Month
1	750.000	1.500.000	2.250.000
2	660.000	1.500.000	2.100.000
3	850.000	2.500.000	3.350.000
4	500.000	900.000	1.400.000
5	350.000	745.000	1.095.000
6	800.000	1.600.000	2.400.000
7	1.000.000	2.300.000	3.300.000
8	500.000	1.200.000	1.700.000
9	250.000	1.050.000	1.300.000
10	1.500.000	2.000.000	3.000.000
11	350.000	600.000	950.000
12	300.000	450.000	750.000
13	500.000	1.500.000	2.000.000
14	700.000	850.000	1.550.000
15	750.000	700.000	1.450.000
16	450.000	450.000	900.000
17	550.000	900.000	1.450.000
18	400.000	1.050.000	1.450.000
19	700.000	1.800.000	2.500.000
20	250.000	450.000	700.000
21	650.000	1.200.000	1.850.000
22	1.500.000	2.400.000	3.900.000
23	1.100.000	1.300.000	2.400.000
24	900.000	800.000	1.700.000
25	450.000	1.000.000	1.450.000
26	450.000	650.000	1.100.000
27	600.000	1.450.000	2.050.000
28	750.000	1.600.000	2.350.000
29	2.000.000	3.550.000	5.550.000
30	500.000	900.000	1.400.000
Total	21.950.000	37.395.000	59.345.000
Average	732.000	1.236.500	1.978.166

Based on table 4.6 above, it can be known that the total cost incurred by fishermen in a month is Rp.59,345,000 and the average total cost incurred by fishermen in a month is Rp.1,978,166.

Where the largest total cost incurred by fishermen in a month is Rp.5,550,000 while the smallest total cost incurred by fishermen in a month is Rp.700,000.

c. Fishermen's Net Income

The net income of fishermen is the result of the gross income received by the fishermen with the total costs incurred by fishermen during the sea. then the net income of fishermen catching fish on the coast of Tubeleh Hamlet, Kalangkangan Village can be seen in the following table:

Table 7. Fishermen's Net Income

No	Gross Income (Rp) in a Month	Total Cost (Rp) in a Month	Net Income (Rp) in a Month
1	4.500.000	2.250.000	2.250.000
2	4.500.000	2.100.000	2.400.000
3	12.000.000	3.350.000	8.650.000
4	9.000.000	1.400.000	7.600.000
5	4.050.000	1.095.000	2.955.000
6	16.200.000	2.400.000	13.800.000
7	18.000.000	3.300.000	14.700.000
8	12.000.000	1.700.000	10.300.000
9	8.400.000	1.300.000	7.100.000
10	4.500.000	3.000.000	1.500.000
11	2.700.000	950.000	1.750.000
12	2.250.000	750.000	1.500.000
13	7.650.000	2.000.000	5.650.000
14	6.600.000	1.550.000	5.050.000
15	6.000.000	1.450.000	4.550.000
16	3.000.000	900.000	2.100.000
17	7.200.000	1.450.000	5.750.000
18	3.000.000	1.450.000	1.550.000
19	18.600.000	2.500.000	16.100.000
20	1.800.000	700.000	1.100.000
21	8.400.000	1.850.000	6.550.000
22	22.500.000	3.900.000	18.600.000
23	12.000.000	2.400.000	9.600.000
24	7.650.000	1.700.000	5.950.000
25	4.500.000	1.450.000	3.050.000
26	4.950.000	1.100.000	3.850.000
27	9.450.000	2.050.000	7.400.000
28	12.000.000	2.350.000	9.650.000
29	30.600.000	5.550.000	25.050.000
30	4.050.000	1.400.000	2.650.000
Total	268.050.000	59.345.000	208.705.000
Average	8.935.000	1.978.000	6.956.833

Based on table 4.7 above, it can be seen that the total net income received by fishermen in a month at sea is Rp.198,705,000 with the average net income received by fishermen in a month which is Rp.6,623,500. Where the largest net income obtained by fishermen in a month is Rp.25,050.00 while the smallest opinion obtained by fishermen in a month is Rp.300,000. Net

income is the result of income gross (*total revenue*) which is funded by the total cost that fishermen spend in a certain time. From the description above, it can be concluded that the livelihood as a fisherman is quite good for the people on the coast of Tubeleh Hamlet, Kalangkangan Village, who work as fishermen and can meet the daily needs of their families.

d. Fishermen's Income Efficiency

The efficiency of fishermen's income is to maximize the income from going to sea with little cost, time and energy spent by fishermen to catch fish on the coast of Tubeleh Hamlet, Kalkangnan Village. To find fishing efficiency, it can be done by dividing gross income by the total costs incurred by fishermen. , then the income efficiency of fishermen fishing on the coast of Tubeleh Hamlet, Kalangkangan Village can be seen in the following table:

Table 8. Fishermen's Income Efficiency

No	Gross Income (Rp) in a Month	Gross Income (Rp) in a Month	Efficiency
1	4.500.000	2.250.000	2
2	4.500.000	2.100.000	2,14
3	12.000.000	3.350.000	3,58
4	9.000.000	1.400.000	6,43
5	4.050.000	1.095.000	3,70
6	16.200.000	2.400.000	6,75
7	18.000.000	3.300.000	5,45
8	12.000.000	1.700.000	7,06
9	8.400.000	1.300.000	6,46
10	4.500.000	3.000.000	1,50
11	2.700.000	950.000	2,84
12	2.250.000	750.000	3
13	7.650.000	2.000.000	3,83
14	6.600.000	1.550.000	4,26
15	6.000.000	1.450.000	4,14
16	3.000.000	900.000	3,33
17	7.200.000	1.450.000	4,97
18	3.000.000	1.450.000	2,07
19	18.600.000	2.500.000	7,44
20	1.800.000	700.000	2,57
21	8.400.000	1.850.000	4,54
22	22.500.000	3.900.000	5,77
23	12.000.000	2.400.000	5
24	7.650.000	1.700.000	4,50
25	4.500.000	1.450.000	3,10
26	4.950.000	1.100.000	4,50
27	9.450.000	2.050.000	4,61
28	12.000.000	2.350.000	5,11
29	30.600.000	5.550.000	5,51
30	4.050.000	1.400.000	2,89
Total	268.050.000	59.945.000	129.06
Average	8.935.000	1.998.166	4,3

Based on table 4.8 above, it can be known that the average gross income obtained by fishermen in a month is Rp.8,935,000, the average total cost incurred by fishermen in a month is Rp.1,998,166 and the average efficiency of fishermen's income is 4.3. Where the largest income efficiency of fishermen catching fish on the coast of Tubeleh Hamlet, Kalangkangan Village, is 7.06 while the smallest income efficiency of fishermen is 1.18. Efficiency is the result of gross revenue divided by the average *total cost* of going to sea for a month. Fishermen who were 30 respondents on the coast of Tubeleh Hamlet, Kalangkangan Village, can be determined by the average income efficiency using the following R/C Ratio formula:

$$\begin{aligned} R/C &= \frac{TR}{TC} \\ &= \frac{8.935.000}{1.978.167} \\ &= 4,52 \end{aligned}$$

It is known from table 4.8 and the calculation of efficiency above that the income of fishermen fishing on the coast of Tubeleh Hamlet, Kalangkangan Village is profitable or in efficient conditions, where the R/C Ratio >1 is 4.52 profitable and efficient to meet the daily needs of fishermen.

CONCLUSION

Based on income analysis, the total gross revenue of fishermen in a month was Rp.268,050,000, with the average gross income received by fishermen in a month of Rp.8,935,000. The total fixed costs incurred by fishermen in a month were obtained which was Rp.59,345,000 with the average fixed costs incurred by fishermen in a month which was Rp.1,978,000. received by fishermen in a month amounting to Rp.208,705,000 with an average net income that can be received by fishermen in a month of Rp.6,956,000. Thus, it can be concluded that fishermen are a profitable livelihood, especially for fishermen fishing on the coast of Tubeleh Hamlet, Kalangkangan Village. Based on the calculation of fishermen's income efficiency, the average of fishermen's gross income in a month at sea is Rp.8,935,000, the average of the total cost incurred by fishermen in a month at sea is Rp.1,998,000 and the average efficiency of fishermen's income is obtained which is 4.52. This proves that the income of fishermen fishing on the coast of Tubeleh Hamlet, Klangkangan Village is in an efficient or profitable condition, this is due to an R/C Ratio of >1 which is 4.52 which proves that the income of fishermen is efficient in meeting the daily needs of the fishermen's families. With a note that can be said to be efficient if fishermen go to sea for a full month to catch fish, nelyan does not have many dependents that fishermen pay.

For the Government that is involved, it is possible to directly help fishermen by providing physical assistance in the form of anchors, mesih or new trawlers to fishermen. Then for the Kalangkangan Village apparatus, if they can provide training for fishermen's wives for the continued management of fishermen's catches which can increase income and can also open job opportunities for the prempuans. For the community or fishermen to not only hope for income from seafood, but also to always

maintain the preservation of the aquatic environment. To the next researcher to continue to expand the scope of his research and his insights in order to be able to complete the parts that are lacking in this research. For the reader, so that they do not see the references that support this writing until it can be resolved so that there will be no misunderstandings in the future.

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