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Analysis of Financial Feasibility of Anchovy Business (*Stolephorus* sp) Using Fishing Gear Bagan Tancap in Muara Nibung Village, Pandan District, Tapanuli Tengah Regency, North Sumatra Province

Analisis Kelayakan Finansial Usaha Ikan Teri (Stolephorus sp) Menggunakan Alat Tangkap Bagan Tancap di Kelurahan Muara Nibung Kecamatan Pandan Kabupaten Tapanuli Tengah Provinsi Sumatera Utara

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Abstract

This research was conducted in Muara Nibung Village, Pandan District, Tapanuli Tengah Regency, North Sumatra Province with the aim of knowing the amount of investment, profits and the level of feasibility of fishing for a Bagan Tancap fisherman based on financial aspects of using investment analysis, income, profit, revenue cost (R/C), financial rate of return (FRR), and payback period of capital (PPC). The method used in this study is a survey method while the determination of respondents is carried out by a census. The data collection was carried out by observations, interviews and documentation directly with 37 people of Bagan Tancap fishermen. The results of the study show that the Bagan tancap in Muara Nibung has two categories of operating distance from the coast, including the Bagan dekat ±1 km and the Bagan jauh ±3 km, of course different investments, profit and business feasibility. For Bagan dekat ±1 km the total investment is (IDR 124,616,000.00), the profit received is (IDR 121,240,800.00/year), R/C (2.59), FRR (97.29), PPC (1.03). Whereas Bagan jauh ±3 km the total investment is (IDR 139,416,000.00), the profit received is (IDR 179,140,800.00/year), R/C (2.85), FRR (128.49), PPC (0.78). Based on the results of the calculation that the R/C is more than 1, the FRR is greater than the bank interest rate of 11%, and the PPC is getting smaller, meaning that the fishing business is profitable and feasible to continue.

Keywords: Financial Feasibility, Anchovies, Bagan Tancap, Investment.

Abstrak

Penelitian ini dilaksanakan di Kelurahan Muara Nibung Kecamatan Pandan Kabupaten Tapanuli Tengah Provinsi Sumatera Utara. Penelitian ini bertujuan untuk mengetahui besar investasi, keuntungan dan tingkat kelayakan usaha nelayan Bagan Tancap berdasarkan aspek finansial (keuangan) menggunakan analisis investasi, pendapatan, keuntungan, *revenue cost* (R/C), *financial rate of return* (FRR), dan *payback period of capital* (PPC). Metode yang digunakan dalam penelitian ini adalah metode survei sedangkan penentuan responden dilakukan secara sensus. Pengumpulan data dilakukan secara observasi, wawancara dan dokumentasi secara langsung dengan nelayan Bagan Tancap'berjumlah 37 orang. Hasil penelitian menunjukkan bahwa Bagan Tancap di Muara Nibung ada dua kategori jarak pengoperasiannya dari pantai diantaranya

bagan dekat ±1 km dan bagan jauh ±3 km tentunya berbeda investasi, keuntungan serta kelayakan usaha. Untuk bagan dekat ±1 km total investasinya sebesar (Rp 124.616.000,00), keuntungan yang diterima sebesar (Rp121.240.800,00/tahun), R/C (2,59), FRR (97,29), PPC (1,03). Sedangkan untuk bagan jauh ±3 km total investasinya sebesar (Rp 139.416.000,00), keuntungan yang diterima sebesar (Rp179.140.800,00/tahun), R/C (2,85), FRR (128,49), PPC (0,78). Berdasarkan hasil perhitungan R/C lebih dari 1, FRR lebih besar dari suku bunga bank 11%, dan PPC semakin kecil artinya usaha nelayan "Bagan Tancap" menguntungkan dan layak untuk dilanjutkan.

Kata Kunci: Kelayakan Finansial, Ikan Teri, Bagan Tancap, Investasi

1. Introduction

Anchovy (*Stolephorus* sp) is a type of consumption fish whose price is affordable among the public and this can be used as a very good business area in everyday life, for that processing needs to be done. According to Zaelanie (2004), processing is a form of diversification of fishery products. Diversification of fishery products is aimed at increasing the economic value of fishery products, improving the taste of fishery products, maintaining quality, increasing product shelf life, and expanding product distribution and marketing. This activity is mostly carried out by coastal fishermen such as coastal fishermen in Tapanuli Tengah Regency.

Tapanuli Tengah Regency is one of the districts of the North Sumatra Province which is located on the west coast of the island of Sumatra with a coastline of 200 km. The area of Tapanuli Tengah Regency consists of land and sea with an area of 2,194.98 km² by land and 4,000 km² by sea (BPS, 2017). So that the sea has such great potential for fishery resources, this potential is the spearhead of the local community's economy such as the people in Muara Nibung Village. Muara Nibung Sub-District is located on the coast, precisely on the beach and the Sub-District is part of the expansion of the Hajoran Sub-District that is one of the operating areas for the Bagan Tancap (Lift net) fishing gear. In general, the fishing gear Bagan Tancap is used by local fishermen to catch anchovies, this fishing gear has increased every year.

Bagan Tancap or (Lift net) is an anchovy fishing gear with a business period of 1 year and has a distance of 200 m between Bagan Tancap one another. Bagan Tancap is operated at night using a hannochs lamp as a lighting aid to attract the attention of fish which are positive phototaxis, plugged into the bottom of shallow waters with a depth of 11-14 m with a series or arrangement of areca nut, lime wood, bamboo and also board with a rectangular shape, so that it stands firmly in shallow waters. In the middle of Bagan Tancap there is a building shaped like a house with a net attached underneath.

The investment spent on fishing activities in Bagan Tancap consists of fixed capital and working capital for catching and processing anchovies. Fixed capital for anchovy fishing includes capital for making a Bagan Tancap and supporting money for anchovy fishing activities. Fixed capital for processing includes capital for the manufacture of anchovy processing facilities and supporting capital for anchovy processing activities. The size of the Bagan Tancap investment can be seen from its operating distance.

In 2010, there were four types of fishing gear recorded in Tapanuli Tengah Regency, namely Bagan Tancap, floating nets, purse seines, and drift gill nets. The number of fishing gear Bagan Tancap ranges from 105 units, floating nets 104 units, purse seines 104 units, and drift gill nets 132. Bagan Tancap, float nets, purse seines, drift gill nets, and shovels. The number of Bagan Tancap ranges from 173 units, 78 floating nets, 100 purse seines, 189 drift gill nets, and 41 shovels (DPKP, 2019).

The increase in the number of Bagan Tancap will affect the amount of fishermen's catch production. Production is the total number of fish caught by the Bagan Tancap fishermen. The potential production results of small pelagic fish in the waters of Tapanuli Tengah and Sibolga amount to 18 species with a total production volume and value, namely: Sibolga City is 23,699.2 Tons (IDR 382.45 billion) and Tapanuli Tengah Regency is 16,921.8 Tons (IDR 254.37) (DPKP, 2019). Limbong *et al.* (2019) said that fishermen's production in September 2019 in Tapanuli Tengah was anchovy (*Stolephorus* sp) with a total catch of 34% (49.8 kg), Selar (*Sepia* sp) 15% (22.4 kg), Kurisi (*Nemipterus nemathopurs*) 12% (18.2 kg), Tembang (*Sardinella fimbriata*) 11% (15.4 kg), Serinding (*Apogon* spp) 9% (12.9 kg),

The problem faced by the fisherman who owns the Bagan Tancap in the Muara Nibung Village is the decrease in the production of Bagan Tancap fishermen due to the increase in the number of Bagan Tancap in the Village. According to Ekawati (2015), the density of the fishing gear Bagan Tancap greatly affects the productivity of the fishing gear, the higher the density, the lower the productivity of the fishing gear. The large number of anchovy fishing activities carried out by the fishing community who own the Bagan Tancap in Muara Nibung Village, attracted the attention of the authors to see the financial feasibility of anchovy business using the Bagan Tancap fishing gear. For this reason, an analysis needs to be carried out in order to find out the

development of the business, whether it is feasible to use it or not, in terms of the benefits or profits obtained by the fishermen of the Bagan Tancap at a certain time. The aims of this research are to calculate how big the investment, income, profit, and financial feasibility of the anchovy business using the Bagan Tancap fishing gear.

2. Material and Method

2.1. Place and Time

This research was carried out from March 15 to April 15 2021 at Muara Nibung Village, Pandan District, Tapanuli Tengah Regency, North Sumatra Province. The location of this research was determined purposively with the consideration that the Muara Nibung Village area is one of the areas of fishing communities that use the Bagan Tancap fishing gear as their livelihood.

2.2. Method

The method used in this research is the survey method. The survey method is a research method conducted to obtain facts from symptoms and seek actual information, both relevant stakeholders in the field of fisheries, social and economics from a group that carries out a fishing business.

2.3. Respondents

The target of this research is the fisherman who owns the Bagan Tancap in Muara Nibung Village. The population to be taken is 37 fishermen who own the Bagan Tancap. In this study, the entire population was used as respondents and respondents were taken by census. According to Arikunto (2008) if the population is less than one hundred people, then the total population is taken as a whole. But if the population is greater than a hundred people, then 10-15% or 20-25% of the total population is taken.

2.4. Data Collection

The types of data used in this research are primary data and secondary data. Primary data was obtained from the field through interviews with fishermen who own the Bagan Tancap by using a questionnaire to find out how much investment was made and how much production was produced. While secondary data obtained from various literature, library sources, records or information related to the subject matter.

2.5. Data Analysis

Data obtained from the field is then collected, tabulated, analyzed descriptively to determine the amount of costs incurred. The data analysis used is an analysis of the short-term financial feasibility of catching and managing anchovies (*stoplehorus* sp) as follows:

2.5.1. Total Investment

Investment is the investment or use of capital in the form of wealth prices. To calculate the total investment (Hendrik, 2013), the formula can be used:

$$TI = MT + MK$$

Information:
IT = Total investment (IDR)
MT = Fixed capital (IDR)
MK = Working capital (IDR/trip)

2.5.2. Gross Income

Revenue is calculated using the formula:

$$TR = PQ$$

Information:
TR = Total income (IDR)
P = Product price (kg)
Q = Total Sales (IDR/kg)

2.5.3. Profit

Profit is calculated by the formula (Rahim & Hastuti, 2008):

$$\pi = TR - TC$$

Information:
π = profit
TR = total revenue
TC = Total cost

2.5.4. Revenue Cost of Ratio(R/C)

Revenue cost of ratio(R/C) is a comparison between revenue and total costs. Rahim & Hastuti (2008) can be expressed in the following formula:

$$R/C = \frac{TR}{TC}$$

Information :
RCR = Revenue Cost of Ratio
TR = Total Revenue
tc = Fixed cost

With business criteria:
a. R/C > 1, then the business is profitable and feasible to continue
b. R/C < 1, then the business suffers a loss and is not feasible to continue
c. R/C = 1, then the business has a breakeven point.

2.5.5. Financial Rate of Return (FRR)

Financial Rate of Return (FRR) is to find out whether the investment is profitable or not (efficiency in using capital in business) written by the formula (Hendrik, 2013):

$$FRR = \times 100\%\frac{NI}{TI}$$

Information:
FRR = Financial Rate of Return
NI = net income)
IT = Total Investment
With business criteria:
a. If FRR > bank interest rate, then the investment should be made in this business
b. If the FRR < the bank interest rate, then the investment should be deposited at the bank, because it will be more profitable.

2.5.6. Payback Period of Capital (PPC)

Calculation of Payback Period of Capital as follows:

$$PPC = \frac{TI}{NI}$$

Information:
PPC = Payback Period of Capital
IT = Total Investment
NI = Net income

Business Criteria:
a. The greater the PPC value, the longer the payback period of the business.
b. The smaller the PPC value, the faster the payback period of the business

3. Result and Discussion

3.1. Geographical Conditions and Location of the Region

Geographically, Muara Nibung Village is a village located in Tapanuli Tengah Regency, North Sumatra Province that has an area of 2,500 m^2 and evaporation 4.94 mm. The boundaries of the Muara Nibung subdistrict area are as follows: North: Hajoran Village, East: Mountain, South: Aek Orsik, and West: Sea

3.2. Population Conditions and Livelihoods

The population in the Muara Nibung sub-district is 2,474 people with a distribution based on gender of 1,254 men and 1,220 women. Muara Nibung Village consists of 800 households (families) who have a diverse ethnic population, namely Batak, Nias and Javanese. People in this kelurahan have fishermen, civil servants and others.

3.3. Facilities and Infrastructure in Muara Nibung Village

The facilities and infrastructure for the Bagan Tancap activity consist of 37 piers and 148 fish drying areas, each fisherman has one wharf and four fish drying areas. The number of facilities and infrastructure, such as 1 unit of mosque, 1 unit of prayer room, 1 unit of kindergarten, 2 units of SD, 2 units of soccer field, 1 unit of volleyball field.

3.4. Fisherman Production Bagan Tancap

Based on the fishermen's statement Bagan Tancap for 2021, as forfishermen's production Bagan Tancap in a period of 1 year including white anchovy, nylon anchovy, black anchovy, and striped anchovy. The anchovies

were caught in the Bagan Tancap fishing net during the season and out of season. Nuraga *et al.* (2018) said that anchovy is a small pelagic fish that is positively phototactic and swims in groups. Meanwhile, the types of small pelagic fish caught in the Bagan Tancap net are selar, peperek, squid, kembung, shrimp, crab, octopus, jellyfish, cuttlefish, beloso, snapper, lemuru, julung-julung, sembilang, mullet, alu-lau, bulu ayam, sebelah, putihan, keeper and layur (Fuad *et al.*, 2016).

In a period of one year, 70% striped anchovies, 10% nylon anchovies, 10% white anchovies, 10% black anchovies.The price for striped anchovies during the season is around Rp. 70,000.00/kg and during the off-season it reaches IDR 80,000.00/kg. For nylon anchovies, the price during the season is around IDR 80,000.00/kg and during off-season it reaches IDR 110,000.00/kg. The price for white anchovies during the season ranges from IDR 60,000.00/kg and during off-season IDR 70,000.00/kg, and for black anchovies the price during the season ranges from IDR 70,000.00/kg and during non-season IDR 80,000.00/kg. Anchovy is a fishery commodity that has important economic value, caught using light fishing technology (Susanto *et al*, 2017).

3.5. Marketing of Anchovies in Muara Nibung

Anchovy marketing is carried out from processors to consumers and collectors, collectors to retailers and consumers, retailers to consumers. Anchovy marketing is not only carried out in the local area, but is also marketed outside the area such as Padangsidimpuan City and its surroundings.

3.6. Analysis of Financial Feasibility of Anchovy Business in Muara Nibung

Fishermen's investment Bagan Tancap is an investment expenditure issued by fishermen to buy goods and other equipment. The investment issued by fishermen is for fixed capital for fishing, fixed capital for processing, working capital for fishing and working capital for processing. Can be seen in Table 1.

Table 1. Fisherman's Investment Bagan Tancap

No	Component	Amount (IDR/Year)
1.	Fisherman's Investment bagan dekat	
	a. Fixed Capital Arrest	94,692,000.00
	b. Processing Fixed Capital	6,004,000.00
	c. Arrest Working Capital	13,800,000.00
	d. Processing Working Capital	10,120,000.00
Investment (IDR/Year)		124,616,000.00
2.	Bagan jauh Fisherman Investment	
	a. Fixed Capital Arrest	100,292,000.00
	b. Processing Fixed Capital	6,004,000.00
	c. Arrest Working Capital	23,000,000.00
	d. Processing Working Capital	10,120,000.00
Investment (IDR/Year)		139,416,000.00

Source: Primary Data Processed, 2021

3.7. Total Cost of Catching and Processing Cost of Anchovy Fishermen of Bagan Tancap

The costs of catching and processing the anchovies of the bagan Tancap fishermen are of course different, namely by adding up the fixed costs and non-tax costs. The fixed costs of fishing consist of fuel oil (BBM), consumption, and depreciation from the fixed capital of fishing such as motor boats, nets, Bagan Tancap, house bagan, generators. While the variable costs of catching, consist of labor wages. Fixed costs for processing activities consist of firewood, salt, and depreciation from the fixed capital for making anchovy processing facilities. Meanwhile, variable costs consist of labor wages. Can be seen in Table 2.

Table 2. Average Cost of Catching and Processing Anchovies for Fishermen in Bagan Tancap

No	Component	Total Fees (Rp/Year)
1.	"Bagan Stepping' Near the Beach ± 1 Km	
	1. Depreciation Cost	20,139,200.00
	2. Arrest Fee	41,200,000.00
	3. Processing Fees	14,720,000.00
Total Cost (Rp/Year)		76,059,200.00
2.	"Bagan Stepping" Away from the Beach ± 3 Km	
	1. Depreciation Cost	21,259,200.00
	2. Arrest Fee	61,000,000.00
	3. Processing Fees	14,720,000.00
Total Cost (Rp/Year)		96,979,200.00

Source: Primary Data Processed, 2021

3.8. Income Fishermen Bagan Tancap

Income Bagan dekat fisherman per year during the season 2085 kg and 626 kg when not in season. Whereas the production of bagan jauh fishermen per year during the season 3018 kg and 791 kg when not season. Can be seen in Table 3.

Table 3. Income of Fishermen Bagan Tancap

No	Component	Income (IDR/Year)		Total income (IDR/year)
		Season	Not Season	
1.	Bagan Near from the Beach	145,960,000.00	51,340,000.00	197,300,000.00
2.	Bagan Far from the Beach	211,260,000.00	64,860,000.00	276,120,000.00

Source: Primary Data Processed, 2021

3.9. Profit Fishermen Bagan Tancap

The net income received by the Bagan Tancap fishermen varies, because in a business the profit depends on the income that has been spent. More clearly can be seen in Table 4.

Table 4. Profit or Net Income of Fishermen Bagan Tancap

No	Component	Amount (IDR/Year)
1.	Bagan Tancap Near the Beach ± 1 km	
	1. Total Revenue	197,300,000
	2. Total Cost	76,059,200.00
Profit (IDR/Year)		121,240,800.00
2.	Bagan Tancap Far from the Beach ± 3 km	
	1. Total Revenue	276,120,000
	2. Total Cost	96,979,200.00
Profit (IDR/Year)		179,140,800.00

Source: Primary Data Processed, 2021

3.9. Anchovy Business Financial Feasibility Fishermen of Bagan Tancap

To determine the feasibility of the business there are several parameters used, namely return Cost of Ratio (R/C), Financial Rate of Return (FRR), and Payback Period of Capital (PPC). Can be seen in Table 5.

Table 5. Feasibility Fishermen Bagan Tancap

No	Component	Amount (IDR/Year)
1.	Bagan Tancap Near the Beach ± 1 Km	
	A. Revenue Cost of Ratio (R/C)	
	1. Total Revenue	197,300,000
	2. Total Cost	76,059,200
	R/C	2.59
	B. Financial Rate of Return (FRR)	
	1. Net Income	121,240,800.00
	2. Total Investment	124,616,000.00
	FRR	97,29
	C. Payback Period of Capital (PPC)	
	1. Total Investment	124,616,000.00
	2. Net Income	121,240,800.00
	PPC	1.03
2.	Bagan Tancap Far from the Beach ± 3 Km	
	A. Revenue Cost of Ratio (R/C)	
	1. Total Revenue	276,120,000.00
	2. Total Cost	96,979,200.00
	R/C	2.85
	B. Financial Rate of Return (FRR)	
	1. Net Income	179,140,800.00
	2. Total Investment	139,416,000.00
	FRR	128,49
	C. Payback Period of Capital (PPC)	
	1. Total Investment	139,416,000.00
	2. Net Income	179,140,800.00
	PPC	0.78

Source: Primary Data Processed, 2021

4. Conclusion

Based on the research results show that: 1) the total investment for the bagan dekat is an average of IDR 124,616,000.00 and Bagan jauh IDR 139,416,000.00. 2) Net income or profits earned by bagan dekat fishermen average IDR 121,240,800.00/year and bagan jauh IDR 179,140,800.00/year. 3) The feasibility of the business is seen from the R/C value obtained from the average bagan dekat fishermen (2.59), FRR (97.29), PPC (1.03) and bagan jauh R/C values (2.85), FRR (128.49), PPC (0.78). This means that the fishermen's business Bagan Tancap gets profits, so that this business activity is feasible to be continued or developed for the future

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