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Analysis of Animal Fish (*Stolephorus sp*) Processing Business in Galang Baru District, Galang Batam City, Riau Islands Province

Zulkarnaini¹, Hendrik², Khailani³



ABSTRACT: This research was carried out in Galang Baru Village, Galang District, Batam City, Riau Islands Province in February 2023 with the aim of analyzing how much investment, income and profit, and feasibility of an anchovy processing business would be. The method used was a survey with a total of 14 respondents and respondents were taken by census. The results of the research are that the investment spent by Toke for the anchovy processing business on ships has a total value of IDR783,860,000.00. The gross income received by toke from the anchovy processing business on ships amounted to IDR1,103,220,000.00/year and the net income received by toke amounted to IDR353,755,833.33/year. The feasibility of an anchovy processing business on ships using the R/C formula has a value of 1.47, which means the business is feasible to continue, develop and run in the future, the PPC formula gets a value of 2.2, meaning the return on capital in anchovy business activities within 2 year 2 months with an economic life of 10 years, meaning that the return on capital from an anchovy business takes a long time, and the FFR formula gets a value of 45, meaning it is best to invest in that business.

KEYWORDS: Anchovies (Stolephorus sp), Processing, Business

INTRODUCTION

Galang Baru Village is one of the new villages in Galang District. Galang Baru Village consists of a large island and small islands. Based on secondary data, the capital owners in the anchovy processing business activities are toke, totaling 14 toke people and fishermen as crew members (ABK), toke makes fishermen as crew members (ABK) in Galang Baru Village. Anchovy processing activities are usually carried out in cottages or anchovy processing houses, whereas in Galang Baru the anchovy processing is carried out by the fishing community on board the ship with the aim that the anchovy fish caught can be processed directly and also save costs on anchovy processing. The dominant fishing gear used by fishermen is fine-mesh nets (waring), and in general the work of the people in Galang Baru Village is fishermen who serve as crew members (ABK) to process anchovies (*Stolepholus sp*) in boats. The vessels used in anchovy fishing and processing activities have an engine power of 160 HP.

In the anchovy fishing and processing business activities, investments made by fishermen include fixed capital (MT) and working capital (MK). Fixed capital required for anchovy fishing and processing activities such as boats, nets, anchovy detection equipment, petrol jerry cans, ropes, stoves, kanca, scoops, baskets, fiber. Meanwhile, the working capital spent by fishermen for fishing activities and processing of anchovies includes fuel oil (BBM), consumption, labor wages, firewood, salt and labor wages. This investment is not only to maximize output, but also to determine labor distribution, population growth and quality, technology and also income (Herlianto, 2013).

Income is the amount of input obtained from the sale of anchovy products to consumers obtained in an anchovy fishing and processing operation activity. Notowinarto (2021) said that the anchovies caught by fishermen are red anchovies (*Stolephorus heterolobus*), jengki anchovies (*Stolephorus indicus*), white anchovies (*Stolephorus devisi*), rice anchovies (*Stolephorus spp*), flat anchovies (*Stolephorus waitei*) which are always caught. during season and out of season, overall the highest catch volume occurred in January, namely 2,110 kg and overall it was also found that the type of anchovy that was mostly caught in Air Lingka waters was the jengki anchovy (Stolephorus indicus) with an average catch -average 270.83 kg/month. For other types of anchovies, namely jengki anchovies (*Stolephorus indicus*), white anchovies (*Stolephorus devisi*), flat anchovies (*Stolephorus waitei*), and also red anchovies (Stolephorus heterolobus) with the average number of catches respectively are 173.33 kg, 250 kg, 250 kg, and 186.67 kg. Ayubi (2021) said that until now the total production of anchovy catches is not clearly known, so there is a need for important information for the management of anchovy resources in the future.

The anchovy (*Stolephorus sp*) processing business is one of the businesses that has been carried out by many coastal communities. According to Purwoko (2012), many anchovy processing businesses have been carried out because they have prospects for

development which are supported by the availability of anchovy resources, the high level of demand, and the large number of home industries processing anchovies. Anchovies are a well-known fishery resource commodity in Indonesia (Mahfuza *et al*, 2020). Anchovy is a type of food fish that is affordable among the public and can be used as a very good business area in daily life, for this reason anchovy processing needs to be done (Afandi *et al*, 2022). The aim of this research is to analyze how much investment, income and profits, and feasibility of an anchovy processing business are carried out in an anchovy processing business.

RESEARCH METHODOLOGY

The research was carried out in February 2023 in Galang Baru Village, Galang District, Batam City, Riau Islands Province. The method used in this research is a survey method with a total of 14 respondents. Arikunto (2008) explains that if the population is less than one hundred people, then the entire population is taken, but if the population is greater than one hundred people, then 10-15% or 20-25% of the population is taken. Respondents were determined by census. According to Sugiyono (2017) census or saturated sampling is a sampling technique when all members of the population are used as samples. The data analysis used in this research is:

1. Investment

Investment consists of fixed capital (MT) and working capital (MK). To calculate the total investment, use Hendrik's (2013) formula, namely:

TI = MT + MK

Information :

IT: Total investment (IDR) is the sum of fixed capital and working capital.

MT: Fixed capital (IDR) includes the cost of ships, engines, payangs and other equipment that supports the fishing business.

MK: Working capital (IDR/trip) includes purchasing costs for steel materials, consumption, etc.

2. Income (Gross Income)

Income is obtained from sales of production (fishing results) with the selling price of anchovies calculated in a certain period (Soekartawi, 2006), using the formula:

$\mathbf{TR} = \mathbf{PQ}$

Where,

TR : Total income (IDR)

P : Product price (Kg)

Q : Total Sales (IDR/Kg)

3. Profit

Profit is the difference between gross income and total costs incurred (TC) using the formula (Rahim & Hastuti, 2007).

$\pi = TR - TC$

Where :

- π = Profit (profit)
- TR = Total revenue (total receipts)
- TC = Total cost (total costs)

4. Business Feasibility

According to(Khasmir, 2012)A business feasibility study is an activity that studies in depth about a business that will be run, in order to determine whether or not the business is worth running.

1) Revenue cost of ratio (R/C) is a comparison between revenue and total costs. To find the Revenue cost of ratio (R/C), use the Rahim & Hastuti (2007) formula, namely:

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

Where :

- RCR = *Revenue Cost of Ratio*
- TR = Total*Revenue*or acceptance
- T.C = Total*Cost* (Fixed cost)

With business criteria:

a. R/C > 1, then the business is profitable and worth continuing

b. R/C < 1, then the business experiences losses and is not worth continuing

c. R/C = 1, then the business breaks even.

2) Payback Period of Capital (PPC) is used to see how long it takes to return capital, with the formula:

$$PPC = \frac{TI}{JI} x \text{ period}$$

Where :

PPC	= Payback Period of Capital
IT	= Total Investment
JI	= Profit
Period	= Length of business time

Decision criteria: If the value of the payback period > economic life, then the investment is rejected. If the value of the payback period < economic life, then the investment is accepted. So the assessment using the payback period method is, if the payback period is smaller than the maximum time required, then the project is accepted and conversely, if the payback period is greater or longer than required, then the investment is rejected (Nainggolan, 2018).

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

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

Information :

FRR =Financial Rate of Return

NI =*Net Income*(net income)

IT = Total Investment

With business criteria:

a. If FRR > bank interest rate, then investment should be made in that business

b. If the FRR < bank interest rate, then it is better to deposit your investment in a bank, because it will be more profitable.

RESULTS AND DISCUSSION

Galang Baru Village, Galang District, Batam City is one of the sixty-four villages in Batam City. Geographically, the administrative presence of Galang Baru Village covers most of the area of Galang Baru Island. The area is characterized by lowland hills that extend on two sides to the west and south with a land area of ± 50.92 km2 and is surrounded by the waters of the Narrow Strait and small islands totaling ± 20 islands with a beach depth of 15-25 m. The condition of the mangrove coastal vegetation is quite dense in several places, but in terms of the ecosystem the area is very worrying and the Galang Baru Village area is designated as a residential area, bordering Karas Village to the north; South side with Abang Island Village; East side with Senayang District; To the west is Sijantung Village. The male population is 1,548 people and the female population is 1,351 people and the total population of Galang Baru Village is 2,899 people with 802 heads of families.

INVESTMENT

Fixed Capital for Anchovy Business

Table 1. Average Fixed Capital for Anchovy Fishing

No	Anchovy Fishing Needs	Fixed Capital (IDR)	
1	Boat	300,000,000.00	
2	Net	200,000,000.00	
3	Fish Finder	12,000,000.00	
4	Gasoline Jerry Cans	900,000.00	
5	Machine	110,000,000.00	
6	Boat	8,000,000.00	
7	Light	300,000.00	
8	Fish Fiber	2,500,000.00	
Amo	unt (IDR)	633,700,000.00	

Source: Primary Data, 2023

Table 2. Average Fixed Capital for Anchovy Processing

No	Anchovy Processing Needs	Fixed Capital (IDR)
1	Furnace	12,000,000.00
2	Kanca	7,500,000.00
3	Serok	500,000.00
4	Salt Fiber	750,000.00
5	Oven	50,000,000.00

6	Warehouse	70,000,000.00
7	Para-Para	3,400,000.00
Amount (IDR)		144,150,000.00

Source: Primary Data, 2023

Working Capital for Anchovy Business

Table 3. Average working capital for anchovy fishing

No	Component	Working Capital for Anchovy Fishing (IDR)
1	BBM	1,680,000.00
2	Consumption	100,000.00
Amount	(IDR)	1,780,000.00
Source:	Primary Data, 2023	

No Component		Working capitalProcessingAnchovies (IDR)
1	Consumption	100,000.00
2	Solar Boiler	840,000.00
3	Salt	375,000.00
4	Labor Wages	2,915,000.00

Source: Primary Data, 2023

Anchovy Business Investment

Table 5. Average Anchovy Business Investment in Galang Baru Subdistrict

	· ·		
No	Anchovy Business Investment Components	Amount (IDR)	
1	Fixed Capital for Anchovy Fishing	633,700,000.00	
2	Fixed Capital for Anchovy Processing	144,150,000.00	
3	Working Capital for Anchovy Fishing	1,780,000.00	
4	Working Capital for Anchovy Processing	4,230,000.00	
Inves	stment (IDR)	783,860,000.00	
a			

Source: Primary Data, 2023

The investment made by Toke as an anchovy business owner amounted to IDR783,860,000.00 which consists of fixed capital for anchovy fishing of IDR633,700,000.00 and fixed capital for anchovy processing of IDR144,150,000.00, while working capital for anchovy fishing is IDR1,780,000.00 and working capital for anchovy processing as much as IDR4,230,000.00.Wulandari (2017) explains that investing can provide something useful in the future. Furthermore, Merawati *et al* (2015) said that investment knowledge influences interest in investing. This is confirmed by Situmorang *et al* (2014) who state that there is an influence between motivation and interest in investing.

Anchovy Business Income

Table 6. Average Gross Income of Anchovy Business

No	Gross Income	IDR /Trip	IDR /Month	IDR/Year
1	Season	6,810,000.00	149,820,000.00	898,920,000.00
2	Out of Season	3,405,000.00	51,075,000.00	204,300,000.00
Total	(IDR)	10,215,000.00	200,895,000.00	1,103,220,000.00

Source: Processed Primary Data, 2023

The income received by Toke as a capital owner amounts to IDR1,103,220,000.00/year. For wages for fishermen who act as crew members (ABK) can be seen in Table 7.

No	Wages	IDR/Trip	IDR/Month	IDR/Year
1	Season	1,770,000.00	38,940,000.00	233,640,000.00
2	Out of Season	1,145,000.00	17,175,000.00	68,700,000.00
Total	(IDR)	2,915,000.00	56,115,000.00	302,340,000.00

Table 7. Average wages for ship crew members (ABK)

The wages of fishermen as crew members (ABK) in Table 7 amount to IDR302,340,000.00/year. Sugara (2016) explains that wages are based on Article 12 of Government Regulation Number 78 of 2015 concerning Wages as follows: wages are determined based on units of time or units of results, which means that they can use units of time or units of results (profit sharing) and are further mentioned in Article 15 of the Regulations Government Number 78 of 2015 determines wages based on units of output as stated in article 12, determined based on the results of work that has been agreed upon. Details of labor wages for anchovy business activities.

Benefits of Anchovy Business

Fixed cost

Table 8. Average Depreciation Costs for Anchovy Fishing Equipment

No	Anchovy Fishing Needs	Fixed Capital (IDR)	Economic	Age	Depreciation	Costs
NU	Anchovy Fishing Needs	Fixed Capital (IDK)	(Years)		(IDR/Year)	
1	Boat	300,000,000.00	10		30,000,000.00	
2	Net	200,000,000.00	5		40,000,000.00	
3	Fish Finder	12,000,000.00	5		2,400,000.00	
4	Gasoline Jerry Cans	900,000.00	3		300,000.00	
5	Machine	110,000,000.00	10		11,000,000.00	
6	Boat	8,000,000.00	10		800,000.00	
7	Light	300,000.00	5		60,000.00	
8	Fish Fiber	2,500,000.00	3		833,333.33	
Amour	nt (IDR /Year)				85,393,333.33	

Source: Primary Data, 2023

Table 9. Average Depreciation Costs for Anchovy Processing Equipment

	0	• • • • •	Economic	Age	Depreciation	Costs
No	Anchovy Processing Needs	Fixed Capital (IDR)	(Years)	1150	(IDR/Year)	00010
1	Furnace	12,000,000.00	5		2,400,000.00	
2	Kanca	7,500,000.00	5		1,500,000.00	
3	Serok	500,000.00	5		100,000.00	
4	Salt Fiber	750,000.00	4		187,500.00	
5	Oven	50,000,000.00	5		10,000,000.00	
6	Warehouse	70,000,000.00	7		10,000,000.00	
7	Para-Para	3,400,000.00	3		1,133,333.33	
Amou	unt (IDR/Year)				25,320,833.33	
<i>a</i>						

Source: Primary Data, 2023

Table 10. Average Cost of Maintenance for Anchovy Fishing Equipment

No	Treatment Needs Arrest	Arrest Maintenance Costs (IDR/Year)
1	Boat	2,000,000.00
2	Net	200,000.00
3	Machine	150,000.00
4	Fish Finder	100,000.00
5	Boat	700,000.00
Total Ma	aintenance Costs (IDR/Year)	3,150,000.00

Source: Primary Data, 2023

No	Treatment Requirements Processing	Processing Maintenance Costs (IDR/Year)
1	Furnace	200,000.00
2	Kanca	150,000.00
3	Oven	200,000.00
4	Warehouse	700,000.00
5	Para-Para	150,000.00
Total	Processing Fee (IDR/Year)	1,400,000.00

Table 11. Average Cost of Maintenance for Anchovy Processing Equipment

Source: Primary Data, 2023

Table 12. Average Fixed Costs of Anchovy Business

No	Fixed Cost Components of Anchovy Business	Amount (IDR/Year)		
1	Depreciation Costs for Anchovy Fishing Equipment	85,393,333.33		
2	Depreciation Costs for Anchovy Processing Equipment	25,320,833.33		
3	Cost of Maintenance for Anchovy Fishing Equipment	3,150,000.00		
4	4 Cost of Maintenance for Anchovy Processing Equipment 1,400,000.00			
Fixed	Costs of Anchovy Business (IDR/Year)	115,264,166.66		

Source: Primary Data, 2023

Variable cost

Table 13. Average Variable Costs of Anchovy Fishing

No	Component	Variable Costs of Anchovy Catching (IDR/Year)
1	BBM	181,440,000.00
2	Consumption	9,600,000.00
Amou	nt (Rp)	191,040,000.00
Source	· Primary Data 2023	

Source: Primary Data, 2023

Table 14. Average Variable Costs of Anchovy Processing

No	Component	Variable costProcessingAnchovies (IDR)	
1	Consumption	9,600,000.00	
2	Solar Boiler	90,720,000.00	
3	Salt	40,500,000.00	
4	Labor Wages	302,340,000.00	
Amo	unt (IDR)	443,160,000.00	

Source: Primary Data, 2023

Table 15. Average Variable Costs of Anchovy Business

191,040,000.00
443,160,000.00
634,200,000.00

Source: Primary Data, 2023

Total cost

Table 16. Average Total Costs of Anchovy Business

1 Fixed Costs of Anchovy Business 115,264,166.66	
2 Variable Costs of Anchovy Business 634,200,000.00	
Total Cost (IDR/Year) 749,464,166.67	

Source: Primary Data, 2023

No	Component	Amount (IDR/Year)
1	Total Gross Income	1,103,220,000.00
2	Total cost	749,464,166.67
Net Income or Receipts (IDR/Year)		353,755,833.33

The net income or profit obtained by Toke from the anchovy business is IDR353,755,833.33/year. According to Dumaria (2012), anchovy business activities are widely carried out in various coastal areas because they have prospects for development which are supported by the availability of anchovy resources, the high level of demand, and the large number of home industries that carry out anchovy business. This anchovy is a fish species that is always caught almost all year round with the highest average catch compared to other species.

Feasibility of Anchovy Business

Profit

Table 18. Revenue Cost of Ratio(R/C), Payback Period of Capital (PPC), and Financial Rate of Return (FRR)

No	Component	Amount (IDR/Year)
1	Revenue Cost Of Ratio	
	A. Gross Income	1,103,220,000.00
	B. Total Cost	749,464,166.67
R/C		1.47
2	Payback Period Of Capital	
	A. Investment	783,860,000.00
	B. Net Income	353,755,833.33
PPC		2,2
3	Financial Rate Of Return	
	A. Net Income	353,755,833.33
	B. Investment	783,860,000.00
FRR		45

Source: Processed Primary Data, 2023

The results of the Revenue Cost Of Ratio (R/C) calculation are IDR 1.47, meaning that every IDR 1 spent will result in a revenue of IDR 1.47. The results of this R/C show that the anchovy business is worthy of development in the future. According to Hardito *et al* (2021), if R/C is >1, it means the business is worthy of development. The value of the Payback Period of Capital (PPC) in anchovy business activities is 2.2, meaning that the return on capital in anchovy business activities is 2 years and 2 months with an economic life of 10 years and this means that the return on capital from the anchovy business is fast. Nainggolan (2018) said, if the value of the payback period > economic life, then the investment is rejected. If the value of the payback period < economic life, then the investment is accepted. So the assessment using the payback period method is that if the payback period is smaller than the maximum time required, then the project is accepted and conversely, if the payback period is greater or longer than required, then the investment is rejected. The value of the Financial Rate of Return (FRR) in anchovy business activities is 45%, meaning that investment should be made in this business. Hendrik (2013) explains that if FRR > bank interest rate, then it is better to invest in the business and vice versa if FRR < bank interest rate, then it is better to deposit your investment in the bank, because it will be more profitable. The applicable bank interest rate is the annual BRI bank interest rate of 8%.

CONCLUSION

- 1. The total investment spent by Toke for the anchovy processing business on ships has a total value of IDR783,860,000.00.
- 2. Gross income received by toke from fish processing businessesanchovies on board totaling Rp1,103,220,000.00/year and the net income received by Toke amounted to IDR353,755,833.33/year.
- 3. The feasibility of an anchovy processing business on ships using the R/C formula has a value of 1.47, which means the business is feasible to continue, develop and run in the future, the PPC formula gets a value of 2.2, meaning the return on capital in anchovy business activities for 2 years 2 months with an economic life of 10 years, meaning that the return on capital from an anchovy business takes a long time, and the FFR formula gets a value of 45, meaning it is best to invest in this business.

Suggestion

The advice that researchers can give is that Toke should do more fishing during the anchovy season and consider fishing when it is not the fishing season so that the results obtained remain maximum. For ship crew members to be more active in collecting capital so they can open an anchovy processing business on ships or by looking for investors to provide capital for an anchovy processing business on ships.

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