

Profitability Analysis of Vannamei Shrimp (*Litopenaeus Vannamei*) Cultivation Business in Tarpaulin Ponds in Jangka District, Bireuen Regency



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ABSTRACT: The fisheries sector is a sector that plays a very important role in the economy of the community in Bireuen District, Aceh Province because it has great potential for the development of fishery areas. One of the businesses that is developing in the fisheries sector is the pond business, and Bireuen Regency is one of the regions that has consistently developed pond cultivation businesses, especially vannamei shrimp. However, there is a problem in developing vanamei shrimp, namely the price of feed is relatively high compared to the selling price, therefore it is necessary to analyze the profitability of the vanamei shrimp farming business. This study aims to determine the level of profitability obtained by vannamei shrimp farming in tarpaulin ponds in Jangka District, Bireuen Regency. Test result the profitability of the vannamei shrimp business in the Term District of Bireuen Regency to farmers who use tarpaulin ponds who are members of the Wahana Biru business group is that the percentagethe profits obtained by farmers are very profitable with a profitability percentage of 50.36% following the reference bank interest rate of 12%.

KEYWORDS: Profitability, vannamei, pond cultivation

1. INTRODUCTION

One of the agricultural sub-sectors that plays an important role in contributing to the country's foreign exchange is fisheries. Fisheries can be divided into three types, namely: sea water fisheries, brackish water fisheries, and inland water fisheries (Aceh Maritime and Fishery Service, 2019). Shrimp cultivation is still a beacon of hope for pond farmers in various coastal areas of Indonesia. Shrimp farming has several patterns, including traditional, semi-intensive and intensive patterns (Takarina, 2009). Traditional patterns are patterns that have not used modern technology, such as not using a water wheel. Semi-intensive is a technique that has begun to use technology but is still simple technology, such as using a water pump to enter water from the river into the pond. While intensive is a cultivation technique that already uses modern technology such as a waterwheel.

Aceh Province is one of the provinces that has the potential in developing the capture fisheries and aquaculture sectors. The fisheries sector is one of the mainstay sectors of Aceh Province, approximately 55% of Aceh's population depend on this sector either directly or indirectly. Aceh Province has great opportunities for the development of fishery areas in several districts/cities, namely Aceh Jaya District, Aceh Besar District, East Aceh District, and Bireuen District. (Muchlisin, 2015).

Bireuen Regency has sufficient potential for marine and fishery resources, both capture fisheries and aquaculture. One of the sub-districts in Bireuen that is still consistently developing vannamei shrimp cultivation is the Kecamatan Jangka, because there are still many residents who still depend on the results of ponds and indeed part of their livelihood is as fish farmers. Term District has a relatively large pond area and also has a relatively large number of farmers. The number of farmers in the Jangka Sub-District is 1,715 people with a pond area of 1,439.60 Ha, indicating that many residents in the Jangka Sub-District work as farmers.

In general, pond farmers choose to cultivate Vaname shrimp with two types of ponds, namely land ponds and tarpaulin ponds. Vaname shrimp is a type of shrimp that is in great demand by the public for cultivation. Vaname shrimp is a type of shrimp that has been in great demand lately because it has the advantage of disease resistance, relatively short rearing time of around 90-100 days/harvest, high survival rate (SR) or degree of life, greater stocking density and technical lighter cultivation (Amri, 2006). Pond farmers in Gampong Jangka Mesjid, Kecamatan Jangka, have attempted to cultivate vanamei shrimp using a type of tarpaulin pond, namely using tarpaulin as a layer on the surface of the soil. The advantages of tarpaulin ponds for vannamei shrimp farming are the sustainable shrimp farming process, because it doesn't take a long time to carry out the next shrimp farming process. The

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seeds used were golden fun with a total of 150 fry/m. The problem faced by farmers is the price of vannamei shrimp feed which has increased from 2019 to 2021, causing farmers to incur high feed costs but the results obtained from selling vannamei shrimp are not balanced. The prices for vannamei shrimp feed from 2019 to 2021 can be seen in Table 1.

Table 1. Vanname Shrimp Feed Prices (2019-2021)

No.	Feed Type	Year	Price of Feed/Sack 25 Kg (Rp)	Shrimp Price/Kg (Rp)
1.	Irawan 683 SP	2019	400,000	95,000
		2020	415,000	90,000
		2021	430,000	98,000

Source: Primary Data (processed), 2021.

Table 1 shows that feed prices have increased from year to year so that the costs incurred in the vannamei shrimp farming business have also increased. Meanwhile, the selling price of vannamei shrimp has decreased and fluctuated from 2019 to 2021. The selling price of vannamei shrimp usually increases during the month of Ramadan and holidays. While other months follow the price from Medan, which is IDR 90,000/Kg, and the price is determined by the market. The size of the costs incurred for the vannamei shrimp production process will definitely affect profitability. Therefore it is necessary to examine the level of profitability. This research is only limited to vanamei shrimp pond farmers who use tarpaulin ponds that are members of the blue vehicle group.

II. LITERATURE REVIEWS

Cost Concept

According to economic principles, costs are all burdens that must be borne as a tool used to provide goods or services so that they are ready for use by consumers (Hanafie, 2010), whereas according to the understanding of production costs are all the burdens that need to be borne by producers in order to produce a product (Nuraini, 2016). If seen from the view of Hansen and Mowen (2006), cost means cash or cash equivalent value sacrificed to obtain goods or services that are expected to provide current or future benefits for the organization.

According to (Suratiah, 2015), cost analysis can be classified into several types of costs, namely: a). Total cost (Total cost), is a fixed cost added to the variable costs. b) Fixed costs are costs that do not depend on how much or how little production is obtained. Variable costs are costs whose size depends on how much or how little production is produced, such as labor costs and raw material costs. d) The average cost is the cost that must be sacrificed to produce one unit of output. The average cost is the total cost divided by the amount of output, and e). Marginal cost is the additional cost caused by the additional production of one unit of output.

Revenue and Profits

According to Pracoyo (2006), in measuring the economic condition of a person or household, one of the main concepts that is often used is the level of income. Income can be defined as the total of all money received by a person or household during a certain period of time.

According to Suratiah (2015), income is divided into two, namely net income and gross income. Net income is income that has been reduced from production. Meanwhile, gross income is income from the results of operations minus the need for running a business and the use of fuel and other auxiliary personnel. Profit is the difference between the sale of the thing obtained and the total cost offered. In doing business, an entrepreneur will think about how to allocate inputs as efficiently as possible to obtain maximum results. Improvement can be achieved by carrying out several efficiency concepts, namely technical, price, and economic (Shinta, 2011).

Break Even Point Analysis

Break Even Point (BEP) or break-even point is a situation where a company does not experience losses and does not make profits. It can be said to be break even if the total revenue equals the total costs or if the profit contribution can only be used to cover fixed costs. A way to find out the minimum sales volume so that a business does not experience a loss, but has not yet made a profit, or it can be said that the profit is equal to zero is called a break-even analysis. The break-even point is used to control ongoing operational activities, as a material consideration in setting the selling price to achieve certain profits in consideration of making production decisions (Suratiah, 2015).

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Suratiyah (2015) suggests that there are two formulas for finding Break Even Points, namely BEP in units and BEP in rupiah. BEP unit aims to calculate how many units of product must be sold in order for a Break Even Point to occur. BEP rupiah aims to calculate to what extent the rupiah obtained from the sale of new products occurs Break Event Point.

Profitability Concept

Profitability is the ability of a business or company to gain profit (profit) in a certain period. Profitability is the ability of a company to generate profits at a certain level of sales, assets and share capital. Yunus (2016), profitability is the company's ability to generate profit or profit which will become the basis for the distribution of company dividends. The purpose of profitability is to measure a company's ability to earn profits both in terms of sales, assets, or own capital. Thus the results of profitability can be interpreted as a benchmark as well as an illustration of the effectiveness of management performance seen from the profit earned compared to the results of sales and investment from sales. Hanafi and Halim (2012), explain the profitability ratios measure the company's ability to generate profits at a certain level of sales, assets, and share capital. Kasmir (2012), the purpose of using profitability is: To measure or calculate the profit earned by the company in a certain period, assess the company's profit position in the previous year with the current year, and assess the profit development from time to time.

Mulyadi (1999) suggests that the value of profitability is obtained by multiplying the Margin Income Ratio (MIR) or the Profit Volume Ratio with the Margin of Safety (MOS). Duyo (2013), states that the Margin of Safety (MOS) or the level of security is the relationship or the difference between certain budgeted sales and sales at the breakeven point. That is, the safe limit is used to find out how much sales are budgeted to anticipate a decrease in sales so that the company does not suffer losses. The greater the MOS, the greater the company's opportunity to earn profits, conversely the smaller the MOS, the more vulnerable the company is to a decrease in sales revenue targets (Mulyadi, 2001)

Margin Income Ratio (MIR) is the portion of sales proceeds available to cover fixed costs and profits. MIR can provide information about what portion of a sale is available to cover fixed costs and earn a profit. MIR or contribution margin ratio can be obtained from profit sharing contribution with sales revenue above variable costs (Endriansyah et al., 2018). The higher the MIR value, the better the company's condition because the company's ability to cover fixed costs and earn profits will be greater (Fuad et al., 2006) and (Aldila et al., 2017). According to Mulyadi (1999), if the Margin of Safety (MOS) is linked to the Margin Income Ratio (MIR), this Margin of Safety figure will be directly related to profit, so that the greater the MOS and MIR value of a business, the greater the ability to attempts to make a profit, and vice versa. The profitability criteria are:

If the profitability value is $>$ the bank interest rate, then the business is profitable.

If the profitability value is $<$ the bank's interest rate, then the business suffers a loss.

If the value of profitability = bank rate, then the business is not profitable and also does not suffer losses.

III. RESEARCH METHODOLOGY

This research was conducted in Jangka District, Bireuen Regency, Aceh Province. The location selection was carried out purposive sampling with the consideration that the Jangka is the sub-district that has the largest pond area. The object of this research is vannamei shrimp pond farmers who use tarpaulin ponds in Jangka District. The scope of this research is only limited to the analysis of the profitability of the Vannamei Shrimp (*Litopenaeus vannamei*) business in the Jangka District of Bireuen Regency.

The type of data used in this research is quantitative data. Data sources are primary data and secondary data. Primary data is data obtained through field observations, and from the results of interviews with business owners using questionnaires. Meanwhile, secondary data was obtained from literature studies, journals and visits to related institutions that aim to support this research.

The population in this study were all pond farmers using tarpaulin ponds cultivating Vannamei shrimp with a total of 17 pond farmers. The sampling technique in this study was total sampling. Total sampling is a sampling technique where the number of samples is the same as the population (Sugiyono, 2021).

Data analysis method

The method used in this study is a quantitative descriptive analysis method. The quantitative method is used in research where the data is obtained in the form of numbers or numerical qualitative data. The data obtained is then processed, then transferred in tabular form according to the purposes of analysis. To analyze profitability, the following formulas are used.

Profitability Analysis

a. Profit

$$\Pi = TR - TC$$

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b. Revenue

$TR = P \times Q$ (Price x Quantity)

c. Acceptance BEP

Revenue BEP (Rp) = $FC / (1 - VC/TR)$ (Suratijah, 2015)

Information:

FC = Fixed costs

VC = Variable cost

TR = Revenue (TR = PQ)

d. Margin of Safety (MOS)

$MOS (\%) = (TR - BEP \text{ Revenue}) / TR$ (Mulyadi, 1999)

e. Margin Income Ratio (MIR)

$MIR (\%) = (TR - VC) / TR$

f. Profitability

Profit (%) = $MOS \times MIR \times 100\%$ (Mulyadi, 1999)

Information:

MOS = Margin of Safety

MIR = Margin Income Ratio

Profit = Business profitability

TR = Total revenue

VC = Total variable costs

BEP (Rp) = Acceptance BEP

The criteria for profitability are according to (Mulyadi, 1999):

If the profitability value > the bank interest rate, then the business is profitable.

If the profitability value < the bank interest rate, then the business is not profitable.

The profitability reference is guided by the bank interest rate in effect in 2019 of 12% (Bank Aceh Primary Data, 2021).

IV. RESULTS AND DISCUSSION

General Description of Vannamee Shrimp Cultivation Business

The vannamee shrimp farming business is one of the businesses that is developing in Gampong Jangka Mesjid, Term District and there are some farmers using tarpaulin ponds. Tarpaulin ponds are ponds covered with tarpaulin on the ground. Tarpaulin ponds have advantages for vannamee shrimp farming, because by using tarpaulin for sustainable vannamee shrimp cultivation, the production is faster and more resistant to disease. Because dirt is always cleaned. Not only that, tarpaulin ponds are also faster for re-producing vannamee shrimp, because it doesn't take long to clean the pond.

In the cultivation of vannamee shrimp carried out by pond farmers for one seed distribution (friday) reached 4,335,000 fry on 17 farmers who are members of the blue vehicle group. The seed stocking follows the efficiency of vannamee shrimp cultivation, namely with a stocking density of 150 fry/m². From the number of ponds available, the stocking of fry ranges from 180,000 to 375,000 fry and depends on the area of cultivation land. The purchase of vannamee shrimp fry by a group of farmers in Bireuen Regency was because there was already a vannamee shrimp breeding company, and orders for fry were made at PT. Surya Windu Pertiwi Bireuen Branch, located in Ujong Blang Village, Kuala District, Bireuen Regency, which has fulfilled the laboratory test requirements for the feasibility test so that the quality of the fry produced already has a high quality certificate.

As time goes by, the yields of shrimp yields always fluctuate but tend to settle down and there have been crop failures due to disease. The pond farmers buy the fry at a price of Rp. 44./head. Intensive pond area, namely ponds using tarpaulins with tarpaulins from 1,200 m² to 2,500 m² for a total area of tarpaulin required reaching 28,900 m², and the price of tarpaulin per meter after installation reaches Rp. 24,000.

In vannamee shrimp farming, harvesting is usually carried out in 2 stages, for the first stage it is usually called partial harvest carried out on the 104th day with the amount harvested reaching 30% of the total mass of shrimp to reduce the density of shrimp in the pond, the aim is to do a partial harvest to avoid slowing down the growth of shrimp, damage to water quality, increase the efficiency of feed utilization and reduce mortality due to cannibalism by vannamee shrimp. The second harvest, also called the total harvest, is carried out at the age of 126 days, the average vannamee shrimp carried out at the total harvest has met the selling

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requirements or been accepted by agents with an average weight per shrimp reaching 20.5 grams, with an average weight per head. The shrimp can be sold at a price of Rp. 67,000 were picked up by collection agencies. Usually in a year pond farmer are able to produce (harvest) vannamei shrimp up to 3 times. Shrimps that have been harvested will be selected according to their grade, for grade A, they will be picked up by collectors and sent to Medan to be exported abroad, while the grades below will be sold in local markets.

To calculate the amount of profitability in this study derived from several calculations, as follows.

a. Profit

Profit is the difference between the sale of the thing obtained and the total cost offered. In doing business, an entrepreneur will think about how to allocate inputs as efficiently as possible to obtain maximum results. Improvements can be achieved by carrying out several efficiency concepts, namely technical, price, and economics

According to the revenue cost ratio is the value obtained from the comparison between the total revenue earned and the total costs used. Every business owner always wants big profits from their production, as well as pond farmers who continue to make production costs efficient and optimize production results in increasing profits. The following is a profit table for 2021 vannamee shrimp farming.

Table 2. Advantages of Vaname Cultivation for the Wahana Biru Business Group in 2021

No	Description	Amount (IDR)
1	Total Revenue (TR)	15,834,875,475
2	Total Cost (TC)	7,860,881,340
Total Profit		7,973,994,135

Source: Processed Primary Data (2022)

Based on Table 2 above, it can be explained that the total profits from vannamee shrimp farming for pond farmers who are members of the blue vehicle group in 2021 will reach Rp. 7,973,994,135., with an average profit for each group member of Rp. 469,058,479.,

Total costs or total costs are all fixed costs, including variable costs that must be incurred to produce an item in a certain period. The total cost of production once for all pond farmers reaches IDR 7,860,881,340, with an average operational cost of IDR. 462,404,785., which means that each member needs an annual budget for vannamee shrimp cultivation of nearly 500 million rupiah.

b. Revenue (Revenue)

The amount of white vannamei production is very dependent on survival and stocking density, water quality and also feed quality and efficiency, to support the availability of oxygen in the water so that every vannamei shrimp farming pond must have a water wheel. The stocking density for vannamei shrimp is around 150 heads/m² and this is the ideal stocking density which has been carried out in recent years so as to get maximum results. During the enlargement period to harvest the survival rate of vannamei shrimp is relatively high, which ranges from 85-90% and for a year each pond is able to carry out 3 cultivation harvests. In addition, the size of the shrimp that are ready to be harvested is usually 50 heads/Kg, which means that each shrimp weighs approximately 20 grams per head, which can be seen in the table below.

In one year, pond farmers who are members of the Wahana Biru business group are able to produce approximately 11,528,850 vannamei shrimp with a total production weight of 236,341 kg (236.3 tons) and a production value of Rp. 15,834,875,475. For the price of shrimp taken by the agent, follow the price of shrimp in Medan, namely Rp. 67,000/Kg. The total profits from the vannamee shrimp cultivation of the Wahana Biru business group in 2021 will reach Rp. 7,973,994,135., with an average profit of Rp. 469,058,479.

c. Break Event Point (BEP) Acceptance

Break Even Point analysis is used to study the relationship between fixed costs, variable costs, profits and volume of activity. A business with a certain volume can suffer losses because sales revenue is only able to cover variable costs and can only cover a small portion of fixed costs (Handoko, 2009). For BEP acceptance of members of the vannamei shrimp farming business group "Wahana Biru" can be seen in the following table.

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Table 3. BEP Acceptance of Vaname Shrimp Cultivation for the Wahana Biru Business Group in 2021

No	Description	Amount (IDR)
1	Fixed Cost (FC)	1,652,045,952
2	Variable Cost (VC)	6,208,835,388
3	Total Revenue (TR)	15,834,875,475
Acceptance BEP		2,717,622,376

Source: Processed Primary Data (2022)

Based on the data presented in Table 9 above, it can be explained that the total BEP for vannamei shrimp cultivation in the Wahana Biru business group is Rp. 2,717,622,376., with an average income for business group members reaching Rp. 159,860,140. According to Handoko (2009) a business is declared feasible if the value of the revenue BEP is smaller than the revenue received. Feasibility can be seen from the value of the production BEP, where the business is said to be feasible if the production BEP is smaller than the amount of production obtained, the greater the difference between the production BEP and the resulting production, the more feasible the business is.

If you are guided by Handoko's theory, you can see the results of the receipt (income) of Rp. 15,834,875,475., greater than the BEP value of the revenue itself, so the vanname shrimp farming business in the Wahana Biru group is very feasible to develop, in line with research (Luthfi et al., 2018) and (Santosa & Kusumawati, 2014) that pumpkin farming is profitable and provides added value.

d. Margin of Safety (MOS)

Margin of Safety (MOS) or the level of security is the relationship or difference between certain budgeted sales and sales at the breakeven point. That is, the safe limit is used to find out how much sales are budgeted to anticipate a decrease in sales so that the company does not suffer losses (Duyo, 2013). For more details, the Margin of Safety (MOS) of vannamei shrimp farming members of the Wahana Biru business group can be seen in the table below.

Table 4. Margin of Safety (MOS) for Vaname Shrimp Cultivation by the Wahana Biru Business Group in 2021

No	Description	Amount (IDR)
1	Total Revenue (TR)	15,834,875,475
2	Acceptance BEP	2,717,622,376
Margin of Savety (%)		0.828

Source: Processed Primary Data (2022)

Based on Table 4 above, it can be concluded that the margin of safety for vanname shrimp farming in the Wahana Biru business group is 0.828, meaning that the vanname shrimp farming business in the Wahana Biru group is still very far from the risk of loss in business. As for the margin of safety, the average group members reached 0.783, which as a whole is still at a safe level. This can be seen from the value of the revenue BEP which is still around Rp. 2,717,622,376. The greater the Margin of Safety (MOS), the greater the opportunity for the business to earn profits, conversely the smaller the Margin of Safety (MOS), the more vulnerable the business is to a reduction in sales revenue targets (Mulyadi, 2001). Sugiono (2017) gets a profitability analysis calculation, enlargement of tiger prawns – milkfish is more profitable because the selling price of tiger prawns is very high. But tiger prawns are very susceptible to disease. So it needs extra attention, if you want to raise tiger prawns. While Mustofa (2016), found that the profitability obtained was 0.89 for normal harvest farmers and 0.24 for early harvest farmers. In line with Rosnidar (2019), conducted research on profitability and found that CV. Twins Windu is a pioneering business in the field of tiger shrimp hatchery which is capable of producing a profitability of 46%/6 times the production process or 7.7% of the production process with a Margin Income Ratio (MIR) of 0.56% and a Margin of Safety (MOS) of 0.82%. So it needs extra attention, if you want to raise tiger prawns. While Mustofa (2016), found that the profitability obtained was 0.89 for normal harvest farmers and 0.24 for early harvest farmers. In line with Rosnidar (2019), conducted research on profitability and found that CV. Twins Windu is a pioneering business in the field of tiger shrimp hatchery which is capable of producing a profitability of 46%/6 times the production process or 7.7% of the production process with a Margin Income Ratio (MIR) of 0.56% and a Margin of Safety (MOS) of 0.82%. So it needs extra attention, if you want to raise tiger prawns. While Mustofa (2016), found that the profitability obtained was 0.89 for normal

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e. Margin Income Ratio (MIR)

Margin Income Ratio (MIR) is the portion of sales proceeds available to cover fixed costs and profit. MIR can provide information about what portion of a sale is available to cover fixed costs and earn a profit. Margin Income Ratio (MIR) or contribution margin ratio can be obtained from profit sharing contribution with sales revenue above variable costs (Mulyadi, 2001). For more details, the Margin Income Ratio (MIR) for vannamei shrimp farming in the Wahana Biru business group can be seen in the table below.

Table 5. Margin Income Ratio (MIR) of Vaname Shrimp Cultivation in 2019

No	Description	Amount (IDR)
1	Total Revenue (TR)	15,834,875,475
2	Acceptance BEP	2,717,622,376
	Margin of Savety (%)	0.828

Source: Processed Primary Data (2022)

Based on Table 5 above, it can be explained that the margin income ratio for vanname shrimp cultivation in the Wahana Biru business group is 0.608, while the average margin income ratio for group members is 0.609. The higher the value of the Margin Income Ratio (MIR), the better the condition of the company because the company's ability to cover fixed costs and earn profits will be greater (Fuad et al., 2006) and (Aldila et al., 2017).

f. Profitability

Profitability is the ability of a business or company to gain profit (profit) in a certain period. Profitability is the ability of a business to generate profits at a certain level of sales, assets and share capital. Meanwhile, according to Yunus (2016), explaining profitability is the company's ability to generate profit or profit which will be the basis for the distribution of company dividends. The profitability reference is guided by the bank interest rate that applies in 2021 of 12% (Bank Aceh Primary Data, 2021). For more details, the profitability of vannamei shrimp farming for pond farmers who are members of the Wahana Biru business group can be seen in the table below.

Table 6. Profitability of Vaname Shrimp Cultivation in 2021

No	Description	Percent
1	Margin of Savety (%)	0.83
2	Margin Income Ratio (%)	0.61
	Acceptance BEP	50,36
	Information	Profit

Source: Processed Primary Data (2022)

Based on the test results from the presentation of Table 6 above, it can be seen that the profitability of vannamei shrimp farming for pond farmers who are members of the Wahana Biru business group reaches 50.36%, while the average percentage of profitability for members of the vannamei shrimp farming group is 47.71%. . If you are guided by the Bank Aceh interest rate for 2021 which is set at 12%, vannamei shrimp cultivation is very profitable, both calculated as a whole group and calculated individually for each pond farmer. In line with research (Asfahani, 2020), that Japanese organic spinach farming is feasible. In contrast to research (Rismawanto et al., 2016), which got MIR and MOS values of only 15%.

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The total income from the net profit (break event point) of pond farmers who are members of the Wahana Biru group in cultivating vannamee shrimp is also relatively high, namely Rp. 2,717,622,376., with an average profit of Rp. 159,860,140, while in the calculation of the Margin of Safety (MOS) it is obtained 0.828 then the calculation of the Margin Income Ratio (MIR) is obtained 0.608. Then the profitability of the vannamee shrimp cultivation reached 50.36%, which means that every business activity carried out in cultivating vannamee shrimp is still very profitable because it exceeds the benchmark bank interest rate of 12%. In line with research (Alham et al., 2017) who get that the shrimp paste business is still profitable.

V. CONCLUSION

Based on the results of this study, the profitability of the vannamee shrimp business in the Term District of Bireuen Regency for pond farmers who are members of the Wahana Biru business group is very profitable with a profitability percentage of 50.36% because it exceeds the reference bank interest rate of 12%.

SUGGESTION

For the Bireuen Regency Government, it is recommended that the government form a quality control team and provide training to pond farmers, especially vannamee shrimp. For farmers it is suggested that pond farmers are able to innovate in vannamee shrimp cultivation.

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