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ANALYSIS OF TECHNICAL AND FINANCIAL ASPECTS OF THE CRAB TRAP FISHERY BUSINESS IN SALEMO ISLAND, NORTH LIUKANG TUPABIRING DISTRICT, PANGKEP REGENCY

Analisis Aspek Teknis dan Finansial Usaha Perikanan Bubu Rajungan di Pulau Salemo Kecamatan Liukang Tupabiring Utara Kabupaten Pangkep

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ABSTRACT

Crab (Portunus pelagicus) is one of the economically important marine products produced from Indonesian coastal waters. Market demand for crab commodities continues to increase. Crab traps are a fishing tool that is very popular with fishermen for catching crab because this fishing tool is passive, cheap and easy to operate and selective for fish (environmentally friendly). Based on the above, bearing in mind the importance of efforts to improve the standard of living and welfare of fishermen, it is necessary to have a fishing business to make it more profitable and responsible. The aim of this research is to analyze the technical and financial aspects of the crab trap fishing business on Salemo Island in February and April 2018. This research uses a survey research method, with data collected using a questionnaire using a random sampling method for fishermen who operate crab traps. Based on the research results, technical aspects include the fishing ground for crab traps, which has muddy bottom topography. The fishing season in a year is the peak season in May–September, the normal season in March–April and the lean season in October–February. The production of catches by crab trap fishermen on Salemo Island, Pangkep Regency, ranges between 1.01 and 1.95 kg/trip/unit of fishing gear and 264 and 591 kg/year/unit of fishing gear. The average value of the R/C ratio for crab trap businesses is 1.26, so the crab trap business is feasible to develop.

Keywords: Crab Trap, Fishery Business, Technical and Financial Aspects

ABSTRAK

Rajungan (*Portunus pelagicus*) merupakan salah satu komoditi hasil laut ekonomis penting yang dihasilkan dari perairan pantai Indonesia. Permintaan pasar terhadap komoditas rajungan terus meningkat. Bubu rajungan merupakan alat tangkap yang sangat digemari oleh nelayan untuk menangkap rajungan karena alat tangkap ini bersifat pasif, murah dan mudah dioperasikan dan selektif terhadap ikan (ramah lingkungan). Berdasarkan hal tersebut di atas dengan mengingat pentingnya usaha meningkatkan taraf hidup dan kesejahteraan nelayan maka perlu adanya suatu usaha penangkapan ikan agar lebih menguntungkan dan bertanggung jawab.

Tujuan penelitian ini adalah untuk menganalisis aspek teknis dan finansial usaha perikanan bubu rajungan di Pulau Salemo Februari – April 2018. Penelitian ini menggunakan metode penelitian survei, data yang dikumpulkan menggunakan daftar kuesioner metode random sampling terhadap nelayan yang mengoperasikan alat tangkap bubu rajungan. Berdasarkan hasil penelitian aspek teknis meliputi daerah penangkapan (*fishing ground*) bubu rajungan yang memiliki topografi dasar perairan yang berlumpur. Musim penangkapan dalam setahun yaitu musim puncak bulan Mei – September, musim biasa bulan Maret – April dan musim paceklik bulan Oktober – Februari. Produksi hasil tangkapan nelayan bubu rajungan di Pulau Salemo Kabupaten Pangkep berkisar antara 1,01 – 1,95 kg/trip/unit alat tangkap dan 264 – 591 kg/tahun/unit alat tangkap. Rata-rata Nilai R/C ratio usaha bubu rajungan adalah 1,26 maka usaha bubu rajungan layak untuk dikembangkan.

Kata Kunci: Bubu Rajungan, Usaha Perikanan, Aspek Teknis dan Finansial

INTRODUCTION

Pangkajene and Kepulauan Regency is an area in South Sulawesi Province that has quite large regional potential in the fisheries and marine sector. Pangkep Regency (Pangkajene and Kepulauan) has waters with a cluster of islands spread across the Makassar Strait. This area forms a coastline on the mainland of 42.57 km, while the coastline of the archipelago is 63.57 km (DKP Pangkep, 2014).

Crab (*Portunus pelagicus*) is an important economic marine commodity with increasing market demand. According to the Pangkep Regency Marine and Fisheries Service, in 2010 the production of crabs from captures in the waters of Pangkep Regency was 1819.7 tons.

Crab traps are fishing gear that are very popular with fishermen to catch crabs because this fishing gear is passive, cheap and easy to operate and selective towards fish (environmentally friendly). Bubu is a traditional passive fishing gear in the form of traps made of bamboo, rattan, wire, iron, wooden nets and plastic. The basic principle of the trap is to trap the fish's vision so that the fish are trapped in it, this tool is often called fishing pots or fishing baskets (Brandt, 1984).

Based on the above, considering the importance of efforts to improve the standard of living and welfare of fishermen, it is necessary to have a fishing effort to be more profitable and responsible. Therefore, this study aims to analyze the technical and financial aspects of the crab trap fishery business on Salemo Island, Liukang Tupabbiring Utara District, Pangkep Regency.

METHODS

Place and Time

This research was conducted in February - April 2018 in the waters of Salemo Island located at coordinates 40 41' 20" LS, 1190 28' 10" BT, Mattiro Bombang Village, Liukang Tupabbiring Utara District, Pangkajene and Kepulauan Regency. The map of the research location can be seen in (Figure 1).

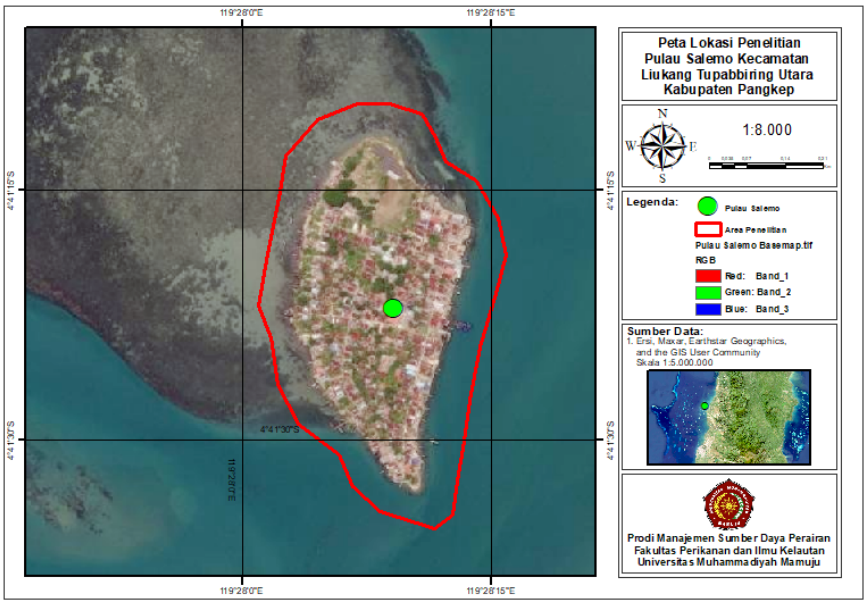

Figure 1. Map of Research Locations on Salemo Island, Pangkep Regency

Tools and Materials

The tools and materials used during the research can be seen in the following table:

Table 1. Tools and Materials

Tools and Materials	Unit	Utility
Crab Trap	Piece	Fishing gear used by fishermen
Scale	Piece	Knowing the weight of the catch
Camera	Piece	Documentation
Calculator	Piece	Calculating data
Stationery	Piece	Recording data obtained in the field
Questionnaire List	Sheet	To obtain data from local fishermen
Materials (Fish)	Fish	Catch

Data Collection Method

Based on the objectives of this study, a survey research method was used. The data collected in this study used a questionnaire list with a random sampling method for fishermen who own and operate crab fishing gear. Direct measurements and observations were carried out regarding the technical and financial aspects of the crab trap business unit, then participating in crab fishing operations and conducting interviews with 10 respondents consisting of fishermen who use crab trap fishing gear.

Data Analysis

a. Technical Aspect Analysis

Technical aspect analysis includes aspects related to the description of fishing gear, operation of fishing gear (trip/season/year), amount of catch (kg/season/year), while for ships (length, width, and height) and ship engines (PK).

b. Financial Aspect Analysis

The financial aspect is indicated by net income per year, net income per operating day and net income of workers. The level of business feasibility can be calculated using the R-C Ratio formula. This parameter is used to see or find out whether the business is profitable or experiencing losses (Soekarwati, 2002) with the following formula:

$$R/C = \frac{\text{Total Revenue}}{\text{Total Cost}}$$

Where:
R/C > 1 = Business Makes Profit
R/C = 1 = Business Breaks Even
R/C < 1 = Business Makes Loss

Soekarwati (2002) stated that total revenue is obtained from the sale of fish catch, while total cost is obtained from all costs incurred during one year. Profit is obtained from total revenue minus total cost consisting of variable cost plus fixed cost, with the following formula:

$$K = Pt - (Bt + Bv)$$

Where:
K = Net income earned (IDR)
Pt = Total income (IDR)
Bv = Variable costs (IDR)
Bt = Fixed costs

RESULT

Technical Aspects

The frame of this bubu fishing gear is made of bamboo with a height of ± 28 cm, a width of ± 42 cm and a mouth with a mouth opening width of ± 16 cm. This fishing gear has a weight inside, the weight is made of cement, this weight is also used as a place to support the bait clamp. This fishing gear will be replaced when there is a part of the bubu frame that is broken or lost during operation, this fishing gear is attached to the float so that it is easy to see the distance between the bubu and the float, about 20-30 meters. The distance between the bubu is about 6 meters (Figure 2).

Figure 2. Crab Traps Used by Fishermen on Salemo Island, Pangkep Regency

Crab Trap Boat

In the operation of the crab trap fishing gear, the boat used is a boat that uses an inboard engine with a power of 24, 27 and 28 HP with diesel/gasoline fuel (Figure 3).

Figure 3. Boats Used by Crab Trap Fishermen on Salemo Island, Pangkep Regency

Crab Trap Fishermen

The number of fishermen operating the crab trap is one or two fishermen, where each fisherman has a role as a puller of the trap to the surface of the water or lowering the trap and the other fisherman is in charge of steering the boat.

Auxiliary Tools

The auxiliary tools used by crab trap fishermen are: (1) Bait, used to direct the target catch and herd the target into the trap, (2) Bait Clamp, this tool functions to hold the bait in the desired position (made of bamboo).

Method of Operating the Crab Trap Fishing Gear

Preparation before leaving for the fishing ground location, first carry out an inspection and preparation needed in operating the crab trap fishing gear. The operation of crab traps is carried out by determining the fishing ground based on the experience of fishermen, fertile waters and can be done all year round by looking at the calendar, and if the waves are big and the currents are strong, fishermen look for areas protected from big waves.

After arriving at the fishing ground area, the speed of the ship is reduced and the anchor is lowered. Furthermore, the first setting is carried out by lowering the buoy marker at around 16:00 WITA. Then the bait is installed and the trap is lowered. The lowering of the trap is followed by lowering the trap hanging rope on the bottom layer of the water or at a depth of ± 2.5 meters. The setting process lasts ± 2 hours. During operation, the speed of the boat is attempted at a moderate speed. Then, hauling is carried out after the trap is soaked for ± 12 hours at around 05:00 WITA. The trap is pulled to prevent one trap from getting tangled with another.

Operational Area, Time and Fishing Season

The crab trap operating area on Salemo Island, Pangkep Regency has a muddy bottom topography. The operation of crab traps is carried out once a day. Fishermen depart from the fishing base at 16:00 WITA, then the setting is carried out and the fishermen return to the fishing area at 05:00 WITA. The hauling process is carried out for ± 4 hours until 09:00 WITA.

Crab trap fishermen operate their fishing gear throughout the year, but the volume and type of catch depend on the season. The west season starts in November - February is the rainy season, strong winds, and quite high sea waves, so fishermen look for fishing ground areas that have relatively calm wind and wave characteristics.

The east season starts in May - June, where the sea waves are quite calm so that the frequency of fishermen going to sea is higher. In March - April the frequency of fishermen's activities going to sea is very high because the weather factor is very supportive. The fishing

community recognizes three fishing seasons based on the catch obtained, namely the peak season, the normal season and the lean season.

In general, Indonesia, which has a tropical climate, is greatly influenced by 2 seasons, namely the rainy season (October to February) and the dry season (May to September). Therefore, the dry season is the peak fishing season with the number of fishing trips ranging from 24-26 trips/month/ while the rainy season is a lean season for fishermen because the weather conditions are less supportive, making it difficult for fishermen to operate their fishing gear with the number of fishing trips ranging from 8-13 trips/month. And in normal months, fishermen make the number of trips ranging from 17-20 trips/month.

Type of Catch

The type of catch from the crab trap during the study was crab (*Portunus pelagicus*). In addition, there are by-catch, namely squid and octopus. This fishing gear is operated every day, the price of this crab is an average of IDR 44,000/kg. This fishing gear is often operated in muddy and sandy waters.

Production of Catch Results

The catch of crab traps obtained by fishermen each month fluctuates depending on the fishing time (Figure 4). The figure shows that the catch of crab trap fishermen on Salemo Island, Pangkep Regency ranges from 668 - 1461 kg/unit of fishing gear. The highest catch occurred in September with a catch of 1461 kg/unit of fishing gear. This catch includes 1451 kg of crab, 4 kg of squid/unit of fishing gear and 6 kg of octopus/unit of fishing gear.

The low catch occurred in December which is the west season, where the catch did not experience major changes. The catch this month reached 668 kg/unit of fishing gear.

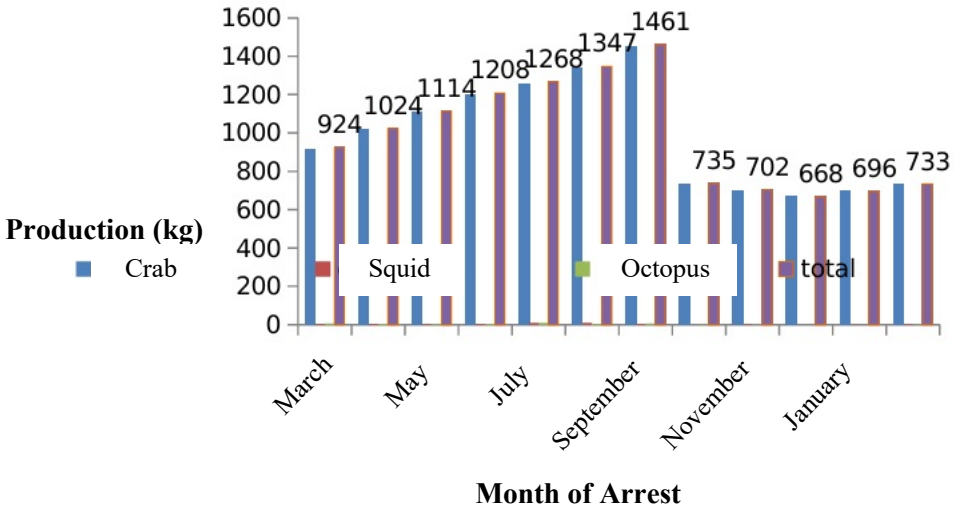

Figure 4. Production of Catch (kg) of Crab Trap on Salemo Island, Pangkep Regency in Different Months

The largest catch occurred in May - September because this month is the east season where the wind blows normally so that fishermen can operate their fishing gear well. Differences in catches each month occur because they are influenced by seasonal factors. In addition, the number of trips also greatly affects the production level of crab traps.

Based on the number of catches of crab trap fishermen on Salemo Island, Pangkep Regency, it shows a range of 4.41 - 7.96 kg / trip / fishing gear unit. The highest catch (kg / trip) occurred in October and February with a catch of 7.96 kg / trip / fishing gear unit (Figure 5).

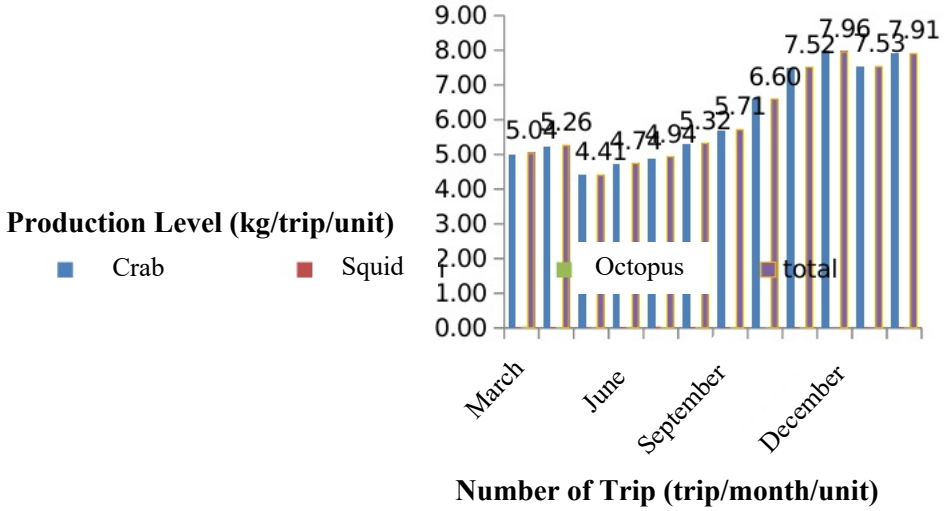

Figure 5. Average Production (kg/trip) of Crab Traps on Salemo Island, Pangkep Regency in Different Months

Financial Aspect

The financial aspect concerns the issue of income and expenses from implementing a business. The costs incurred include investment costs, fixed costs and variable costs (variable costs).

Financial analysis is carried out with the aim of measuring the level of feasibility of a business, including businesses in the fisheries sector. To measure the level of feasibility of the Crab Trap fishery business in Liukang Tupabiring Utara District, Pangkep Regency, a business analysis is used, namely the R / C Ratio.

According to Widianingsi (2008), the revenue-cost ratio analysis is carried out to determine how far the rupiah value of the costs used in the business can provide a number of income values as benefits.

Investment Capital

Investment capital is the cost incurred for the purchase of ships, fishing gear, engines and other supporting equipment. The amount of investment incurred for each crab trap business unit. In the capture fisheries business, the investment capital required is usually used for the cost of procuring machines, fishing gear, procuring ships, the amount of which depends on the type and size of the boat, engine and fishing gear used.

Based on the results of the data analysis carried out, it shows that the investment incurred by 10 crab trap fishermen with an average ship price of IDR 12,850,000 with an average fishing gear price of IDR 4,919,000 and an average engine price of IDR 4,900,000. Thus, the average investment cost for 10 crab trap fishermen is IDR 22,669,000. Furthermore, each fisherman spends different investment costs, this depends greatly on the size of the ship and the number of fishing gear and the size of the engine PK. The highest investment cost is IDR 26,440,000 and the lowest investment cost is IDR 20,000,000.

DISCUSSION

Business Costs

In general, the implementation of a crab trap fishing business has 2 types of costs incurred, namely fixed costs and variable costs. Fixed costs include investment costs and depreciation costs, while variable costs include maintenance costs and operational costs.

Fixed Costs

Fixed costs are costs that are incurred routinely without changing even though the production volume increases. The results of the analysis of 10 crab trap fishermen showed that fixed costs differed for each respondent. The average fixed cost consisting of investment costs and depreciation costs for crab traps is IDR 29,002,500, - which must be incurred.

The financial analysis obtained in the form of tax costs is also included in fixed costs. However, this business does not take into account tax costs because during the running of this business, fishermen have never paid levies to the local government. In addition, fishermen also do not have a permit.

Variable Costs

Variable costs are values with varying amounts because they are influenced by the size of the amount of production obtained. Variable costs include maintenance costs, operational costs and labor wages.

Maintenance costs are the total costs incurred for repairs, replacements, and maintenance of parts of the business unit used. Based on the table above, the amount of maintenance costs per year for each crab trap unit ranges from IDR 310,000 - IDR 950,000 / year.

Operational costs incurred to support fishing activities are influenced by fishing operations, the number of trips and the duration of fishing operations, the amount of operational costs incurred for each crab trap fishing gear unit ranges from IDR 4,860,000 - IDR 9,429,000 / fishing gear unit / year with an average operational cost of IDR 7,771,150 / fishing gear unit / year.

The range of operational costs / year is relatively greater than the investment. According to Soekartawi (2002), to achieve maximum profit, efforts are needed to reduce production costs as little as possible while maintaining total revenue.

In business analysis, labor wages are also included in variable costs. However, in the operation of this fishing gear, no crew is used because even though it is alone, the operation of this fishing gear continues.

Business Feasibility Analysis

The determination of the criteria for a business to be developed or not feasible is using the Investment Criteria. R/C is an abbreviation for return cost ratio, or known as the comparison (ratio) between income and costs. According to Soekartawi (2002) stated that if the R/C ratio = 1, then the business is not profitable and not at a loss, only covering costs, if the R/C ratio> 1, then the results obtained are greater than the total costs so that the business can be implemented, and if the R/C ratio <1, then the results obtained are smaller than the total costs of the business, then the business cannot be implemented, the higher the R/C ratio, the higher the priority that can be given to the business.

Based on the analysis that has been carried out, it is known that all crab trap fishery business units on Salemo Island, Pangkep Regency can continue and develop their businesses.

Pay Back Periods

The return period for investment capital that will be paid through the profits obtained by the owner of the fishing business unit is called Pay Back of Periods. The faster the payback period, the better it is to be tried (Pasaribu *et al*., 2001). Based on the results of the analysis conducted, it can be seen that the range of the length of the return on capital invested in the crab trap business unit with the highest value of 1.57 years and the lowest value of 1.17 years with an average of 1.39 years. The length of the return on capital is due to the large capital invested while the net profit of the owner of the business unit is very small.

CONCLUSION

Based on the results of research conducted on the crab trap fishery business on Salemo Island, Pangkep Regency, the following conclusions can be drawn:

a. Technical aspects include the crab trap fishing ground which has a muddy bottom topography. The fishing season in a year is the peak season in May - September, the normal season in March - April and the lean season in October - February.
b. The average R / C ratio value of the crab trap business is 1.47, so the crab trap business is feasible to be developed.

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