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Financial Analysis of Mantis Shrimp (*Lysiosquillina maculata Fabricus, 1793*) Landed on Tanakeke Island

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Abstract

This study aims to analyze the financial aspects of mantis shrimp *(Lysiosquillina maculata Fabricus, 1793)* fishing conducted by local fishermen and landed on Tanakeke Island. Mantis shrimp is a marine species with high economic value but has not been optimally utilized. The research was conducted over a two-month period using a quantitative method and purposive sampling technique, involving surveys of thirty fishermen. Financial economic data were obtained through interviews and used to analyze costs, revenues, and profits. The results of the study show that economically, mantis shrimp fishing provides an average annual income of IDR 211,680,000, with a net profit of IDR 98,240,000, an R/C ratio of 2, and a payback period of three years. This study indicates that the community of Tanakeke Island can experience significant economic benefits from mantis shrimp fishing. However, the presence of shrimp being caught before reaching a viable catch size.

Keywords: financial; mantis shrimp; tanakeke island

Abstrak

Penelitian ini bertujuan untuk menganalisis sebuah finansial dari penangkapan udang mantis *(Lysiosquillina maculata Fabricus, 1793)* yang dilakukan oleh nelayan dan di daratkan di Pulau Tanakeke. Udang mantis merupakan spesies laut yang memiliki nilai ekonomi tinggi namun belum dimanfaatkan secara maksimal. Penelitian ini dilakukan selama dua bulan dengan metode kuantitatif dan menggunakan teknik purposive sampling terhadap tiga puluh nelayan yang disurvei.data nilai ekonomi finansial diperoleh dari wawancara dan digunakan untuk menganalisis biaya, penerimaan dan keuntungan. Hasil dari penelitian menunjukkan bahwa secara ekonomi, dalam usaha penangkapan udang mantis memberikan pendapatan rata-rata sebesar Rp. 211.680.000 pertahun, dengan kentungan bersih sebesar Rp. 98.240.000, rasio R/C sebesar 2, dan priode pengembalian modal *(payback priode)* selama tiga tahun. Dari penelitian ini menunjukkan bahwa masyarakat puau tanakeke dapat mengalami dampak ekonomi yang signifikan dari penangkapan udang mantis. dengan masih adanya udang yang tertangkap sebelum mencapai ukuran layak tangkap diharapkan keberlanjutan sumber daya perlu dijaga. Dengan demikian, temuan penelitian ini dapat digunakan sebagai dasar untuk rencana pengelolaan udang mantis yang berkelanjutan.

Kata Kunci: finansial; pulau tanakeke; udang mantis

INTRODUCTION

Indonesia's marine resources are extremely rich due to its archipelagic nature. The biodiversity of Indonesian waters encompasses various types of marine organisms, such as fish, shrimp, seaweed, shellfish, and other aquatic biota, which are utilized for the well-being of the community. One type of shrimp with high nutritional potential, yet still little known to the general public, is the mantis shrimp (*Lysiosquillina maculata* Fabricus, 1793). Mantis shrimp are a type of crustacean that have high consumption value, both locally and

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internationally. It is estimated that there are around 400 species of mantis shrimp worldwide, with the most common being found in tropical and subtropical waters (Sukarni *et al*., 2018). Several species and origins of mantis shrimp have been recorded in Indonesia, including several Harpiosquilla harpax, found along the coast of the Malacca Strait, North Java, and the Pacific Ocean. However, information on their numbers, other species, and geographic distribution has not been systematically documented or officially reported. This species is generally caught as bycatch, with limited biological and economic data, particularly in the coastal areas of Tanakeke Island, Takalar Regency, South Sulawesi.

The Tanakeke Islands boast abundant marine resources, including high biodiversity. One marine species with significant potential, yet underutilized by the local community, is the mantis shrimp *(Lysiosquillina maculata Fabricus, 1793)*. To date, mantis shrimp are still obtained through fishing activities by fishermen, where they are generally caught as bycatch, while the primary target is fish. Mantis shrimps are widespread and can be found in various coral coastal areas throughout Indonesia. This species is part of Indonesia's biodiversity and needs to be preserved. These shrimps have a high nutrient and micromineral content.

The high economic value and high nutritional value of mantis shrimp have led to their primary fishing activity, particularly on Tanakeke Island. However, overfishing pressure on marine resources can impact the sustainability of the mantis shrimp species. Increased fishing activity without regard for sustainability has also raised concerns about a decline in the mantis shrimp population, which could threaten the ecosystem and the economy of coastal communities, particularly those on Tanakeke Island.

Mantis shrimp (*Lysiosquillina maculata* Fabricus, 1793) It is widely known in various countries such as Malaysia, Singapore, Thailand, the Philippines, Hong Kong, China, Japan, the Mediterranean region, and Europe. This commodity has a high selling price, especially when fresh (Sukarni *et al.,* 2018). Although less popular for domestic consumption, mantis shrimp (*Lysiosquillina maculata* Fabricus, 1793) In fact, they are very popular in the international market. High interest from foreign consumers drives market demand and increases their economic value, making them a popular target for fishing in Indonesian waters. Mantis shrimp are a highly sought-after commodity, with international selling prices reaching around $3.50 per shrimp for a size of 17.5–22.5 cm, (Wardiatno & Mashar, 2010). Wardiatno *et al.*, (2011) The price of mantis shrimp on the national market is around Rp. 45,000 per kg. Considering their economic value, they have the potential to become a potential source of cultivated seafood. These shrimps have a relatively high nutrient and micromineral content.

Uncontrolled overfishing, particularly using non-selective fishing gear such as arad, results in many mantises' shrimp being caught at undersized sizes, far from reaching catchable size. This practice risks reducing wild mantis shrimp populations and can damage aquatic ecosystems due to the high likelihood of growth overfishing, (Djuwito *et al.,* 2013). This is crucial to maintaining the sustainability of mantis shrimp resources. Biological studies can be conducted through analysis of the size composition of the catch, such as size structure and average size, as well as through studies of growth patterns, including the relationship between body length and weight, as well as condition factors, (Djuwito, 2013).

The people of Tanakeke Island live off fishing and marine resources. Mantis shrimp (*lysiosquillina maculata* Fabricius, 1793) Mantis shrimp are a type of catch that is poorly managed, despite their economic value. Mantis shrimp fishing typically does not consider the appropriate size for catching, posing a risk to stock sustainability and potentially leading to

overfishing. Fishermen's income stability and ecosystem balance are also threatened by fishing conducted without using scientifically based methods.

Thus, this study focuses on analyzing the economic aspects of mantis shrimp (*Lysiosquillina maculata* Fabricius, 1793) landed on Tanakeke Island from a financial perspective. This research is expected to provide a scientific basis for creating sustainable fisheries management policies that also help improve the health of coastal communities. The aim of this study is to assess the economic value of mantis shrimp (*lysiosquillina maculata* Fabricius, 1793) which landed on Tanakeke Island.

METHOD

The method used was a quantitative method. Quantitative methods are systematic investigations of a phenomenon by collecting measurable data using statistical, mathematical, or computational techniques. Quantitative research is widely used in both the natural and physical sciences (Priadana & Sunarsi 2021). The research location was Tanakeke Island, where fishermen land their catch of mantis shrimp *(Lysiosquillina maculata Fabricius, 1793)*. This study used tools and materials such as a digital camera for documentation, stationery for recording data from interviews using a questionnaire about mantis shrimp as the research object, and a cellphone recorder for recording research activities. The technique used was recording, storing, and processing data on the total length of mantis shrimp, entered a research logbook. Meanwhile, data for economic parameters was collected through interviews using a questionnaire. After the data was collected, the data was stored. The data that had been obtained and recorded was presented in the form of a histogram curve and descriptive statistical calculations to obtain the minimum, maximum, mode, and median dimensions, using Microsoft Excel.

RESULT AND DISCUSSION

This study was conducted on Tanakeke Island, located in Takalar Regency, South Sulawesi. Known as a small island, this place is home to abundant marine life, such as seagrass, coral reefs, and mangroves. Because the local economy is heavily dependent on marine products, (Tungkal et al., 2011) including mantis shrimp, as bear people on this island work as fishermen.

For the past ten years, most of the fishermen on Tanakeke Island, whose average age is forty to fifty, have worked as mantis shrimp catchers. However, the fishermen on Tanakeke Island have received little education, with most only graduating from elementary school. In contrast, (Goma et al., 2021) menyatakan bahwa usia produktif, juga dikenal sebagai usia pekerja dimana usia pekerja. Working age is the age group capable of producing goods and services. Meanwhile, productive age includes people aged 15 to 64.

To catch mantis shrimp, fishermen use a traditional fishing gear called Patte', made from ironwood, plastic, and rubber. This tool is stationary, environmentally friendly, and easy to use. According to (Subehi et al., 2017), karena alat tangkap *Patte'* adalah alat tangkap pasif, itu harus ditempatkan secara tetap. Fishermen on Tanakeke Island use the Patte' fishing gear, which is particularly effective for catching mantis shrimp, as they are a marine species that inhabits burrows, considered their home, and around coral reefs. According to research conducted by (Hendra et al., 2024), Mantis shrimp live among intricate coral reefs and serve as indicators in marine ecosystems. They also perform life-saving activities by digging holes in the reefs, providing an opportunity to extract oxygen, which helps maintain coral reef

health Tungkal et al., (2011) Mantis shrimp prefer muddy and rocky sand. The length of time respondents have been mantis shrimp catchers can be seen in Figure 1.

Figure 1.
Long Time Being a Fisherman

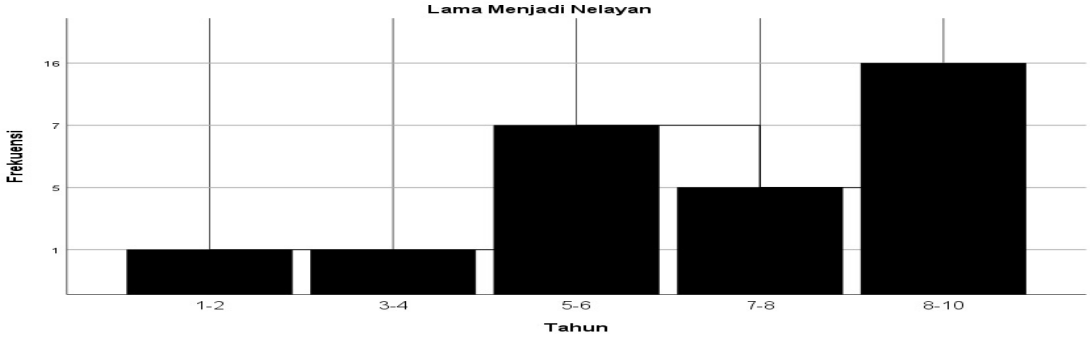


Figure 2.
Old Respondent Becomes Mantis Shrimp Catcher

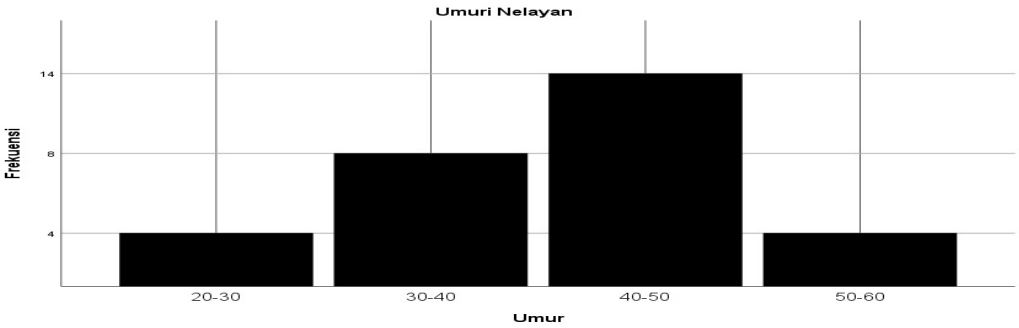
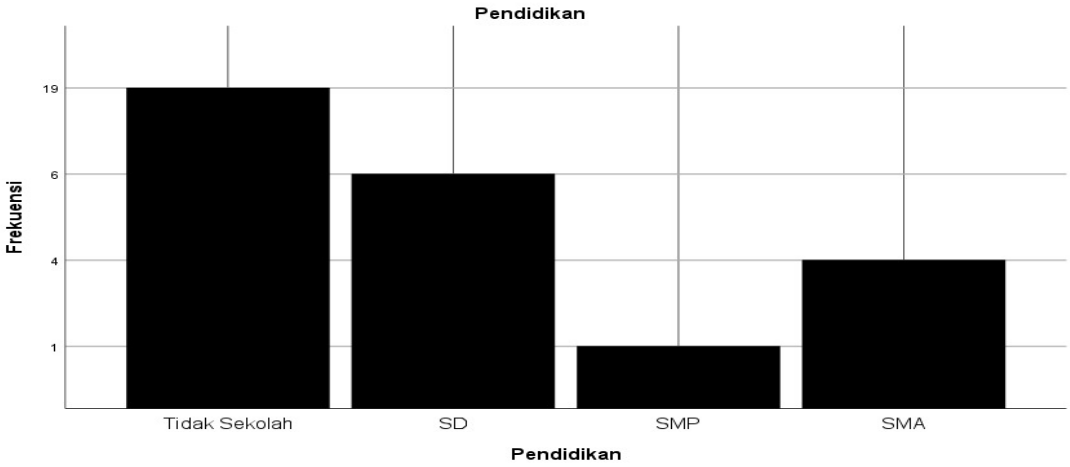
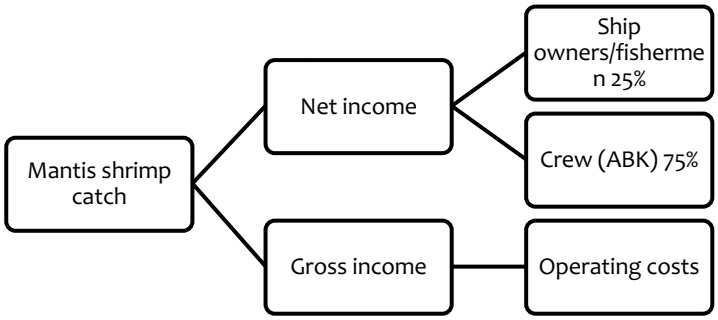


Figure 3.
Age of Mantis Shrimp Catching Respondents



The financial aspects of the economic value of mantis shrimp fishing activities carried out by fishermen on Tanakeke Island can be seen in the following table:

Figure 5.
Profit sharing system for catching mantis shrimp by fishermen on Tanakeke Island, South Sulawesi Province, Indonesia



Source: research results

Table 1.
Investment in mantis shrimp fishing business

No	Types of investment	Average depreciation (Rp)
1	Boat	26277116
2	Machine	6745833
3	Fishing gear	20000
	Total	**33042950**

Source: research results

Table 2.
Average variable costs and fixed costs of mantis shrimp fishing business

No	Types of variable costs	average per trip (Rp)	per month (Rp)
1.	fuel oil	3.600.000	7.200.000
2.	Basic needs	1.000.000	2.000.000
	Amount	**4.600.000**	**9.200.000**
No	**Types of fixed costs**	**Average depreciation**	
1.	Ship maintenance	Rp.3.040.000	
	Amount	Rp.3.040.000	
	Total	**TC**	**Rp. 113.440.000.**

Source: research results

Table 3.
Analysis of average income from mantis shrimp fishing business

No	Average business income analysis	
	Total revenue (TR)	211.680.000
	Total cost (TC)	113.440.000
	Investment	33.042.950
	Profit (TR-TC)	98.240.000
	R/C = TR/TC	2
	PP (investment/profit*1 year)	3

Source: research results

Table 1 shows investment data for the mantis shrimp fishing business, detailing the types of investments and the average annual depreciation in a mantis shrimp fishing business. The total depreciation of all investments reaches Rp. 33,034,250 per year, reflecting the significant depreciation costs that must be incurred. Table 2, meanwhile, shows the average fixed and variable costs incurred by fishermen in fishing activities, both annually and per trip. The total cost (TC) is Rp. 133,440,000, which likely includes all variable costs, fixed costs, and other components during a given period.

Fadhil et al (2021) The system of income from catches that links ownership of production assets to individuals involved in the fishing business is known as an individual ownership system, in which the investment aspect in fishing activities is also considered. According to (Darma et al., 2010) Fishermen often share their income. One example is the distribution of the results of pajelo fishermen. This fishing gear, often referred to as a mini purse seine, applies a 50% profit sharing system between the boat owner and the crew (ABK). For mantis shrimp fishing carried out by fishermen on Tanakeke Island, which is carried out by several people on one boat, namely one boat owner and 10-20 people (ABK) each ABK, catching it themselves, the income from each ABK catch will be distributed to the boat owner as shown in Figure 5. By multiplying the selling price and the catch, fishermen on Tanakeke Island can generate an average income from a mantis shrimp fishing unit in one trip. The selling price of mantis shrimp on Tanakeke Island is an average of IDR 215,333 per kilogram, and the average catch is 82.66 kilograms per month. The average catch of fishermen on Tanakeke Island is 82.66 kg per month, so the average income from the mantis shrimp fishing business carried out by fishermen on Tanakeke Island is Rp. 17,640,000 per month, while the average annual income is Rp. 211,680,000 per year.

In each fishing effort, the average profit (π) of mantis shrimp is Rp. 17,640,000 per month divided by 25% for the boat owner (Rp. 4,410,000) and 75% for the crew (Rp. 13,230,000). Based on the analysis results, the total value of income obtained exceeds the total amount of costs incurred, so that the activities of fishermen on Tanakeke Island benefit from the mantis shrimp fishing business. To calculate their income, they use the difference between income and total costs. The difference between income and total costs reflects the net profit obtained, where fishermen on Tanakeke Island earn an average of Rp. 98,240,000 per year. However, research conducted by (Nofrizal et al., 2020) In West Tanjung Jambu Regency, it was found that each mantis shrimp fishing activity provided an average profit (π) of IDR 850,000.00, which was allocated 75% or IDR 637,500.00 to the ship owner and 25% or IDR 212,500.00 to the ship's crew (ABK).

The R/C ratio, which is the ratio of total revenue to total costs, was greater than 1 for fishermen on Tanakeke Island. A value of 2 indicates that the fishing effort is considered profitable. However, research conducted by Yafiz et al., (2009) found that mantis shrimp catches had a high R/C value, comparable to other gillnet fisheries catches, which had an R/C value of 7.01.

By comparing revenue and costs, the revenue-cost ratio (RC) is used to determine the extent of profit. If the RC ratio is <1, the business is considered a loss, while if the RC ratio is >1, the business is considered profitable. The highest cost for catching mantis shrimp is diesel fuel. This is due to the frequent trips fishermen make and the distances they must travel to obtain mantis shrimp.

The payback period (PP) for mantis shrimp catches by fishermen on Tanakeke Island is three years, or the equivalent of seventy-two catches. This indicates that the cost and capital investment must be recovered within a sufficient timeframe, for example, on the 72nd trip,

which involves catching mantis shrimp. Nofrizal *et al.*, (2020) The Payback Period (PP) in a business feasibility study determines the time required for a company to recoup its investment. This study involved 39 fishing trips in West Tanjung Jambu Regency. This indicates that the payback period for costs and investment capital is relatively short, especially on the 39th trip, which was specifically aimed at catching mantis shrimp. Table 3 provides a more concise explanation.

CONCLUSION

The financial aspects of the mantis shrimp fishing business on Tanakeke Island are quite promising. The total operational and investment costs incurred by fishermen reach Rp113,440,000 per year, while the annual income reaches Rp211,680,000, resulting in a net profit of Rp98,240,000. An R/C ratio analysis of 2 indicates that every expense generated generates revenue. The 3-year payback period also indicates that this business is financially feasible and efficient.

RFERENCES

Darma, S., Wiryawan, B., & Nurani, T. W. (2010). *ANALISIS KERAGAMAN USAHA PENANGKAPAN IKAN PASCA PROGRAM PEMBERDAYAAN NELAYAN DI KABUPATEN HALMAHERA UTARA Performance Analysis After Fishing Unit Empowerment Program in North Halmahera Regency*.

Fadhil, M. A., Susanti, E., & Abdulillah, O. N. (2021). *Sistem Bagi Hasil Kapal Tangkapan Ikan Di Pelabuhan Perikanan Samudra Kutaraja Lampulo Kota Banda Aceh (Profit Sharing System Of Fishing Vessels At Kutaraja Lampulo Fishing Port Of Banda aceh city)*. www.jim.unsyiah.ac.id/JFP

Goma, E. I., Sandy, A. T., & Zakaria, M. (2021). Analisis Distribusi dan Interpretasi Data Penduduk Usia Produktif Indonesia Tahun 2020. *Jurnal Georafflesia: Artikel Ilmiah Pendidikan Geografi*, *6*(1), 20. https://doi.org/10.32663/georaf.v6i1.1781

Hendra, H. S., Zamdial, & Hartono, D. (2024). Analisis Hubungan Karapas dan Berat Udang Mantis (Harpiosquilla raphidea) Yang Tertangkap Nelayan Daerah Pulau Baai Kota Bengkulu. *AQUACOASTMARINE: Journal of Aquatic and Fisheries Sciences*, *3*(2), 107–115. https://doi.org/10.32734/jafs.v3i2.18026

Nofrizal, Ramdhani, F., & Jhonnerie, R. (2020). NILAI FINANSIAL DAN POTENSI KONFLIK PERIKANAN UDANG MANTIS DI KUALA TUNGKAL, JAMBI. *Jurnal Ilmu Dan Teknologi Kelautan Tropis*, *12*(1), 25–36. https://doi.org/10.29244/jitkt.v12i1.27223

Subehi, S., Boesono, H., & Nnd, D. A. (2017). ANALISIS ALAT PENANGKAP IKAN RAMAH LINGKUNGAN BERBASIS CODE OF CONDUCT FOR RESPONSIBLE FISHERIES (CCRF) DI TPI KEDUNG MALANG JEPARA Eco-friendly of Fishing Gear Analysis based on Code of Conduct for Responsible Fisheries at Kedung Malang Fishing Auction House, Jepara. In *Journal of Fisheries Resources Utilization Management and Technology* (Vol. 6, Issue 4). http://www.ejournal3.undip.ac.id/index.php/jfrumt

Tungkal, K., Tanjung, K., Barat, J., Jambi, P., Mashar, A., Wardiatno, Y., Manajemen, D., Perairan, S., Perikanan, F., Kelaulan, I., & Boger, I. (2011). Distribusi Spasial Udang Mantis Harpiosquilla raphidea dan Oratosquillina gravieri. *Jumal Perlanian-UMMI*, *1*.

Vario Gerba, S., Agustriani, F., & Isnaini, dan. (2015). *FINANCIAL ANALYSIS OF FISHING CAPTURE USING DRIFT GILLNET IN TOBOALI, SOUTH BANGKA, BANGKA BELITUNG PROVINCE* (Vol. 7, Issue 2).

Yafiz, M., Fedi, M., Sondita, A., Soemakaryo, S., & Monintja, D. R. (2009). FINANCIAL ANALISYS OF OF FISHING EFFORT IN A MODEL OF FISHERMEN PROSPERITY IMPROVEMENT AT THE REGENCY OF ROKAN HILIR RIAU PROVINCE (1). In *Jurnal PERIKANAN dan KELAUTAN* (Vol. 14).