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FINANCIAL ANALYSIS OF SEAWEED CULTIVATION (*Eucheuma cottoni*) IN SOUTHEAST MALUKU REGENCY

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ABSTRACT The sustainability and development of seaweed cultivation in Southeast Maluku have become a crucial focus in efforts to improve the welfare of coastal communities and optimize the sustainable utilization of aquatic resources. This study aims to analyze the financial aspects of seaweed cultivation in Southeast Maluku, including production costs, revenue, profit, and factors influencing the profitability of this business. The research methodology employs a quantitative descriptive approach using primary data from interviews and secondary data from various scientific journals and case studies in several aquatic regions in Indonesia. The results indicate that the obtained Net Present Value (NPV) is IDR 453,235,768,711, the Internal Rate of Return (IRR) is 108.55%, the Payback Period (PP) is 5 years and 6 months, and the Benefit-Cost Ratio (BCR) is 8.99 times higher than the investment made over a 20-year project lifespan. Based on the four investment criteria used as financial analysis tools, the seaweed cultivation project in Southeast Maluku Regency is considered feasible.

Keywords: *Financial, NVP, IRR, Payback Period, BCR*

INTRODUCTION

Seaweed cultivation is one of the fisheries sectors that plays a crucial role in the economy of coastal communities in Indonesia, including Southeast Maluku. Seaweed is not only a primary source of income for fishermen and coastal farmers but also holds high economic value as a raw material for the food, pharmaceutical, and cosmetic industries (Fatmala et al., 2023). The sustainability and development of seaweed farming in Southeast Maluku are key focuses in efforts to improve the welfare of coastal communities and optimize the sustainable utilization of marine resources (Rehi et al., 2024). Various studies have shown that seaweed cultivation contributes to the economic growth of communities through sustainable production and effective resource management (Sarmin et al., 2021; Fatmala et al., 2023). The advantages of this commodity lie in its production efficiency, competitiveness in the global market, and the support of a suitable aquatic ecosystem for its growth (Shaifarahma et al., 2023). Moreover, optimizing business management by applying proper cultivation methods such as the longline and floating raft systems can enhance production yields and reduce the risk of harvest failure due to environmental factors (Nurhalima et al., 2022). Based on this, a comprehensive financial analysis to assess the feasibility and potential for developing seaweed cultivation is very necessary in this region.

This study aims to analyze the financial aspects of seaweed farming in Southeast Maluku, including production costs, income, profits, and the factors influencing the profitability of this business. Additionally, the study will evaluate the sensitivity of seaweed farming to various economic and

environmental variables that may affect its sustainability (Mambai et al., 2020). By gaining a comprehensive understanding of financial aspects, it is expected that strategic recommendations can be provided for business practitioners and the government to develop the seaweed industry more efficiently and competitively (Shaifarahma et al., 2023).

Although numerous studies have discussed seaweed cultivation in various regions of Indonesia, there is still a research gap regarding the specific financial analysis of Southeast Maluku. Most previous studies have focused more on technical aspects and development strategies without presenting detailed financial analyses (Amir et al., 2022). Therefore, this study fills the gap by providing empirical data on the financial feasibility of seaweed farming in Southeast Maluku, which can serve as a reference for decision-making by stakeholders.

The novelty of this research lies in its comprehensive financial analysis approach, considering production costs, selling prices, and business risks faced by seaweed farmers in Southeast Maluku. Additionally, this study will integrate aspects of competitiveness and marketing strategies into its analysis, which have not been extensively discussed in previous research (Wullur et al., 2023). Thus, this research will provide new contributions to understanding how to improve the efficiency and sustainability of seaweed farming in this region.

In terms of the state of the art, this study references various previous studies that have evaluated the financial aspects of seaweed farming in different regions, such as in Tarakan (Amir et al., 2022), Central Lombok (Shaifarahma et al., 2023), and North Minahasa (Sumerah et al., 2020). These studies indicate that seaweed farming has significant economic potential but still faces challenges related to price fluctuations, production costs, and the availability of high-quality seedlings. Therefore, this research will enrich the literature with empirical data from Southeast Maluku, which has distinct socio-economic and environmental characteristics compared to other regions.

The benefits of this research are expected to contribute to various stakeholders, including seaweed farmers, local governments, as well as investors and academics interested in the development of the fisheries industry. For farmers, this study can serve as a guide to managing their businesses more efficiently and reducing the risk of losses. For the government, the findings of this research can serve as a foundation for formulating policies that support the sustainable development of seaweed farming. Meanwhile, for academics, this study can serve as a reference for further research on the financial aspects and development strategies of the seaweed industry in Indonesia.

METHOD

Time and Location of Research

This research was conducted from April 2024 to July 2024 in the seaweed farming area of Southeast Maluku Regency. This location was chosen because it is one of the most promising seaweed farming production centers in Eastern Indonesia.

In general, the location borders the Banda Sea (to the north and west) and the Tual Sea (to the south), with geographical coordinates: 5°12'19.427" - 6°6'18.275" S and 132°21'39.082" - 133°15'31.442" E. The following map illustrates the study area:

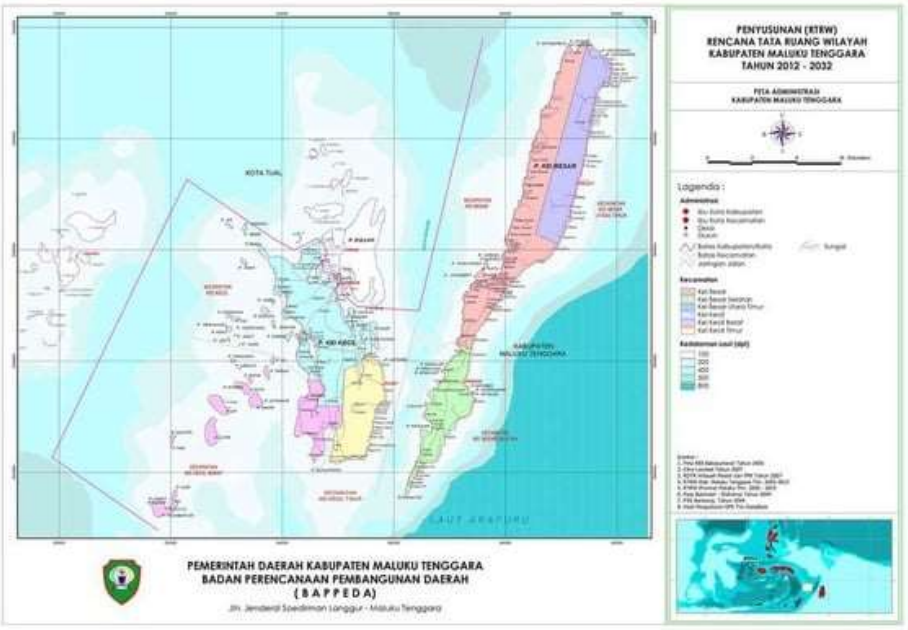

Figure 1. Location map of Southeast Maluku Regency

(Sumber: www.malukutenggarakab.go.id/web/ar/profil/peta-maluku-tenggara.html)

Methodology

This research methodology employs a quantitative descriptive approach, utilizing primary data obtained from interviews with seaweed farmers in the Southeast Maluku Regency and secondary data from various scientific journals and case studies in different marine areas of Indonesia.

The collected data includes financial aspects such as investment costs, operational costs, and revenue from seaweed farming activities. The analytical techniques used involve financial feasibility analysis with key indicators such as Net Present Value (NPV), Internal Rate of Return (IRR), and Payback Period (PP) to assess the long-term profitability of this farming business (Harryes et al., 2023; Rehi et al., 2024). Additionally, interviews with seaweed farmers are conducted to understand the challenges they face in daily farming practices. The development of this business has the potential to serve as a sustainable business model that contributes to food security and the economic growth of coastal communities in Indonesia (Madani et al., 2022).

Financial Analysis is the process of collecting, analyzing, and interpreting financial information to measure the financial performance of an entity. This financial analysis includes:

1. Evaluation of financial statements (Income Statement and Cash Flow Statement) to assess the entity's performance.
2. Financial ratio analysis to evaluate the financial health and operational effectiveness of an entity by comparing figures taken from financial statements.

3. Financial projections, which aim to forecast the future financial performance of an entity.

By considering these three aspects, financial analysis can be conducted to evaluate whether a business can be implemented or further developed.

Data Analysis

Project Investment Criteria

a. Net Present Value (NPV)

Net Present Value (NPV) is the comparison between the Present Value (PV) of net cash flows and the PV of the investment over the investment period. It calculates the present value of cash flows generated from capital investment in the future by applying a specific discount rate and then comparing The formula used to calculate NPV is as follows:

$$\mathbf{NPV = \Sigma PVt - A0}$$
$$\mathbf{NPV = (PV1 + PV2 + \ldots) - A0}$$
$$\mathbf{PV = NCF \times \textit{Discount factor}}$$
$$\textbf{\textit{Discount factor}} \mathbf{= 1/(1+r)t}$$

Description of Variables:

NPV = Net Present Value

PV = Present Value

NCF = Net Cash Flow

A_0 = Initial investment

r = Cost of capital (discount rate)

t = Investment/project period

Assumptions of the NPV Method:

If NPV0 > NPV1, the investment is not feasible as it may result in losses.

If NPV0 < NPV1, the investment is feasible as it is expected to be profitable.

If NPV0 = NPV1, the investment is not feasible as it may not generate profit.

b. Internal Rate of Return (IRR)

This analysis provides information on indicators to determine the efficiency level of an investment. It is also known as a method for calculating the interest rate of an investment and equating it with the present value of the investment based on the calculation of future net cash flows.

Formula for IRR Analysis:

$$\mathbf{IRR = R1 + (PV1 - PV0/PV1 - PV2) \times (R1 - R2)}$$

Description of Variables:

IRR = Internal Rate of Return

R1 = First interest rate

R2 = Second interest rate

PV = Present Value

Assumptions of the IRR Method:

If IRR > interest rate, the investment is feasible because it is profitable.

If IRR < interest rate, the investment is not feasible because it is unprofitable.

c. *Return on Investment and Benefit Cost Ratio (BCR) Calculation*

Benefit Cost Ratio (B/C Ratio) is a business term related to profit calculation. This calculation is used to determine whether a business is profitable or unprofitable. The B/C Ratio is also a concept often used to assess the feasibility of a project. To calculate the Benefit Cost Ratio, the required data includes the total costs incurred and annual revenue generated. The mathematical formula for calculating the B/C Ratio is as follows:

$$Benefit\ Cost\ Ratio\ (BCR) = \frac{Total\ Cash\ Flow}{Total\ Cash\ Out\ Flow}$$

Indicators of Project Feasibility Based on B/C Ratio:

If B/C Ratio > 1, the project's benefits exceed its costs, making it feasible and worth continuing.

If B/C Ratio < 1, the project's benefits are lower than its costs, making it unfeasible and requiring further review.

If B/C Ratio = 1, the project breaks even, meaning revenue and costs are balanced.

d. Payback Period (PP)

Payback Period is the time required to recover all costs incurred in an investment through the returns generated by that investment. The fundamental idea behind the payback period method is that the faster an investment can be recovered, the more desirable it is.

Before using the payback period as an evaluation criterion, a maximum payback period must be determined. In decision-making, the actual payback period of an investment is compared to the predetermined maximum payback period. If the actual payback period is shorter than the maximum allowed period, the investment is considered feasible.

The analysis shows that the Payback Period (PP) is 1 year**. Given that the project lifespan is** 10 years**, but the investment can be recovered** within just 1 year**, this indicates that the project is** feasible and worth implementing.

RESULTS AND DISCUSSION

Table 1: Initial Investment for Seaweed Farming in Southeast Maluku Regency

Summary	Value (IDR)
Initial Investment (Initial Outlay)	**29.199.420.000**
- Land	-
- Equipment and Other Facilities	23.613.444.000
- Others (IDC)	-
- Net Working Capital (NWC)	5.585.976.000

Source: Processed Data, 2024

The initial investment refers to the total amount of money spent to start a seaweed farming project, business, or investment in Southeast Maluku Regency, amounting to IDR 29,199,420,000. This cost consists of Equipment and facilities used for cultivation over an area of 846.36 hectares and Net Working Capital (NWC), which includes all expenses incurred during the production process, amounting to IDR 5,585,976,000. In the first farming cycle, the cultivation process is predicted to last one year, covering five (5) cycles.

Estimated CAPEX and OPEX According to Project Timeline

A. *Capital Expenditure (CapEx)*

Capital Expenditure (CapEx) refers to the funds used for acquiring, upgrading, and maintaining physical assets such as property, buildings, technology, or equipment. CapEx provides insight into how much the seaweed farming business is investing in existing and new fixed assets to sustain or expand operations.

The analysis results indicate that the CapEx used in the seaweed farming project in Southeast Maluku Regency is as follows:

Table 2: Result of Capital Expenditure (CapEx) for Seaweed Farming in Southeast Maluku

CAPITAL EXPENDITURE (CapEx)			
NO	**ITEM**		**Jumlah (Rp)**
	Land		
	Land Acquisition Costs		0
CAPEX (Lahan)			
	CAPEX (Warehouse, Office, Equipment, and Supporting Facilities)		
1	**Warehousing, Office, and Supporting Facilities**		
2	**Production Equipment**		
	- Anchors / Wooden Stakes	677.088.000	
	- Main Floats	338.544.000	
	- Secondary Floats	541.670.400	
	- Stretch Rope (4mm)	338.544.000	
	- Tie Point Rope (1mm)	84.636.000	
	- Raffia Rope	50.781.600	
	- Stretch Rope Floats	1.692.720.000	
	Total Production Equipment Costs		**3.723.984.000**
3	**Supporting Facilities**		
	- Boat / Sampan	3.808.620.000	
	- Drying Area	12.695.400.000	
	- Ketinting Engine	3.385.440.000	
	Total Supporting Facilities Costs		**19.889.460.000**
4	**Pre-Operational Costs**		
	- Total Pre-Operational Costs		**0**
	CAPEX (Production Equipment & Supporting Facilities)		**23.613.444.000**

Additional CAPEX (Other CAPEX)	
TOTAL CAPEX	**23.613.444.000**

Source: Processed Data, 2024

The seaweed farming project has allocated a total capital expenditure (CapEx) of IDR 23,613,444,000. The required land area for this activity is 846.36 hectares.

B. *Operational Expenditure (OpEx)*

Operational Expenditure (OpEx) refers to the ongoing costs incurred by a company to run its business operations, including unit costs per product or service. It can also be considered as the annual cost required for continuous production processes.

The seaweed farming project in Southeast Maluku Regency operates in 5 cycles, with 5 harvest periods. The total operational expenditure (OpEx) for this project is IDR 27,929,880,000, as detailed in the following table.

Table 3: Operating Expenditure (OpEx)

OPERATING EXPENSES	**Rupiah (Rp)**
OPERATING EXPENSES	
Cost of Goods Sold (COGS)	
Seaweed Seedling Costs	20.312.640.000
Supporting Material Costs	0
Direct Labor Cost	5.078.160.000
Total COGS	**25.390.800.000**
Operating Costs	
Indirect Labor Costs	-
Maintenance Costs	-
Marketing Costs	-
Insurance Costs	-
Fuel Costs	2.539.080.000
Total Operating Cost	**2.539.080.000**
Grand Total OpEx	**27.929.880.000**

C. *Financial Feasibility Analysis of Seaweed Seedling and Cultivation Project*

Based on various estimations, underlying assumptions, and financial reports generated over a 20-year project period, the financial feasibility analysis of seaweed cultivation in Southeast Maluku can be seen in the following table.

Table 4: Financial Feasibility Analysis of Seaweed Cultivation in Southeast Maluku

FINANCIAL FEASIBILITY ANALYSIS
Investment Duration 20 Years

Project Feasibility Indicators	Value (IDR)	Result
NPV (Net Present Value)	453.235.768.711	Feasible
IRR (Internal Rate of Return)	108,55%	Feasible
PBP (Payback Period)	5 Tahun 6 Bulan	Feasible
Benefit-Cost Ratio	8,99 kali	Feasible
Decision	**Investment is Feasible**	

Source: Processed Data, 2024

The analysis results indicate that the Net Present Value (NPV**)** obtained is IDR 453,235,768,711. This demonstrates that the project can generate a significant positive added value after considering the discount rate used to calculate the present value of money over the 20-year project lifespan. In other words, a positive NPV signifies that the total estimated cash flow generated during the 20-year project duration exceeds the initial investment and operational costs required to run the project.

The Internal Rate of Return (IRR) **is** 108.55%, which reflects a high investment return over the 20-year project period. This percentage is significantly higher than the applicable Weighted Average Cost of Capital (WACC) of 9.96%**,** indicating that the project offers substantial profitability. IRR measures the rate of return based on the project's internal cash inflows and outflows, providing a more comprehensive insight into the project's long-term financial performance. The Payback Period (PP) **is** 5 years and 6 months, meaning that the initial investment required to run the project will be fully recovered within this period. Given that the project's total lifespan is 20 years, this recovery time classifies the project as financially viable. The Benefit-Cost Ratio (BCR) **is** 8.99 times the investment over the 20-year project duration. This means that the project is expected to generate significant returns compared to the investment and operational costs required to sustain it.

D. *Sensitivity Analysis*

Sensitivity analysis is a technique used to measure how sensitive a model's outcome or projection is to changes in one or more input variables. The goal is to understand how variations in these variables can impact the results. This analysis is typically conducted to identify potential risks and opportunities that may arise in the future. By considering fluctuations in input variables, we can assess the stability and reliability of the model's outcomes. Sensitivity analysis also helps determine the most influential variables affecting the model's results, allowing us to focus on these key factors to improve model performance.

In the sensitivity analysis conducted, the following key indicators were identified as influential in shaping the model:

1. The composition of loan amounts or funding sources from external parties
2. Loan interest rates
3. Changes in selling prices
4. Changes in cost escalation

The analysis results can be seen in the table below:

Table 5: Sensitivity Analysis of Seaweed Cultivation in Southeast Maluku Regency

Loan Composition (Debt)						
	0%	30%	40%	50%	60%	70%
WACC	9.96%	9.93%	9.92%	9.90%	9.89%	9.88%
NPV	453.2 Billion	454.8 Billion	455.3 Billion	455.8 Billion	456.4 Billion	456.9 Billion
IRR	108.55%	108.55%	108.55%	108.55%	108.55%	108.55%

Loan Interest Rate Composition

		6.73%	**7.23%**	**7.73%**	**8.23%**	**8.73%**
WACC	9.96%	9.96%	9.96%	9.96%	9.96%	9.96%
NPV	453.2 Billion	453.2 Billion	453.2 Billion	453.2 Billion	453.2 Billion	453.2 Billion
IRR	108.55%	108.55%	108.55%	108.55%	108.55%	108.55%
Selling Price Changes						
		-5,00%	-2,50%	0,00%	2,50%	5,00%
WACC	9.96%	9.96%	9.96%	9.96%	9.96%	9.96%
NPV	424.2 Billion	438.7 Billion	453.2 Billion	467.7 Billion	482.2 Billion	424.2 Billion
IRR	102.66%	105.60%	108.55%	111.49%	114.43%	102.66%
Cost Escalation Changes						
		3,50%	3,75%	4,00%	4,25%	4,50%
WACC	9.96%	9.96%	9.96%	9.96%	9.96%	9.96%
NPV	455.8 Billion	454.6 Billion	453.2 Billion	451.9 Billion	450.5 Billion	455.8 Billion
IRR	108.64%	108.59%	108.55%	108.50%	108.46%	108.64%

CONCLUSION

Based on the four investment criteria (NPV, IRR, Payback Period, and BCR) used as financial analysis tools, the seaweed cultivation project in Southeast Maluku Regency is considered **feasible** to proceed.The sensitivity analysis results indicate that the key factors influencing the financial model include: Loan composition or external funding sources, loan interest rate composition, selling price changes, and cost escalation changes.

REFERENCES

Sarmin, S., Dangnga, M. S., & Malik, A. A. (2021). Strategi Pengembangan Usaha Budi Daya Rumput Laut (Eucheuma cottonii) di Daerah Perbatasan-Pulau Sebatik. *Buletin Ilmiah Marina Sosial Ekonomi Kelautan Dan Perikanan*, *7*(2), 147-158.

Shaifarahma, T. D., Yusuf, M., & Nursan, M. (2023). ANALISIS DAYA SAING USAHATANI RUMPUT LAUT DI KABUPATEN LOMBOK TENGAH. *AGROTEKSOS*, *33*(1), 139-147.

Mambai, R. Y., Salam, S., & Indrawati, E. (2020). Analisis Pengembangan Budidaya Rumput Laut (Euchema cottoni) di Perairan Kosiwo Kabupaten Yapen. *Urban and Regional Studies Journal*, *2*(2), 66-70.

Amir, A. A. A., Sugiharto, E., & Syafril, M. (2022). Analisis kelayakan finansial usaha budidaya rumput laut (eucheuma cottonii) di kelurahan pantai amal kecamatan tarakan timur kota tarakan. *Jurnal Perikanan Unram*, *12*(4), 670-680.

Fattah, N., & Anita, A. (2021). ANALISIS KELAYAKAN USAHA BUDIDAYA RUMPUT LAUT (Eucheuma spinosum). *Tarjih Fisheries and Aquatic Studies*, *1*(1), 001-013.

Fatmala, W., Sari, M., Yunarsi, Y., & Rahman, N. (2023). Pengembangan Ekonomi Lokal melalui Budidaya Rumput Laut sebagai Sumber Pendapatan Masyarakat. *Jurnal Maksipreneur: Manajemen, Koperasi, Dan Entrepreneurship*, *12*(2), 471-485.

Harryes, R. K., Astiyani, W. P., Alamsah, S., Sitanggang, W., Andiewati, S., & Ismail, M. (2023). ANALISIS TEKNIS DAN FINANSIAL BUDIDAYA RUMPUT LAUT DI PERAIRAN ATAPUPU, KABUPATEN BELU NUSA TENGGARA TIMUR. *MARLIN*, *4*(2), 65-70.

Wullur, G. E. L., Andaki, J. A., Tambani, G. O., Suhaeni, S., Jusuf, N., & Rantung, S. V. (2023). ANALISIS FINANSIAL USAHA BUDIDAYA RUMPUT LAUT DI DESA JAYAKARSA KECAMATAN LIKUPANG BARAT KABUPATEN MINAHASA UTARA. *AKULTURASI: Jurnal Ilmiah Agrobisnis Perikanan*, *11*(2), 440-449.

Sumerah, S. S., Andaki, J. A., & Dien, C. R. (2020). Analisis Sensitivitas Usaha Budidaya Rumput Laut Di Desa Nain Kecamatan Wori Kabupaten Minahasa Utara. *AKULTURASI: Jurnal Ilmiah Agrobisnis Perikanan*, *8*(1), 1-6.

Fatonny, N., Nurmalina, R., & Fariyanti, A. (2023, March). Analisis sistem agribisnis rumput laut di Kabupaten Takalar Provinsi Sulawesi Selatan. In *Forum Agribisnis: Agribusiness Forum* (Vol. 13, No. 1, pp. 35-49).

Habita, M., Retang, E. U. K., & Saragih, E. C. (2022). Analisis Pendapatan Budidaya Rumput Laut Di Desa Kaliuda Kecamatan Pahunga Lodu Kabupaten Sumba Timur. *Jurnal Education and Development*, *10*(1), 201-206.

Rehi, N. T., Sunadji, S., & Dahoklory, N. (2024). Analisis Finansial Usaha Budidaya Rumput Laut (Kappaphycus alvarezii) di Desa Tanaraing, Kecamatan Rindi, Kabupaten Sumba Timur. *JURNAL VOKASI ILMU-ILMU PERIKANAN (JVIP)*, *4*(2), 267-274.

Lilong, S. Y., Sunadji, S., & Oedjoe, M. D. R. (2024). Analisis finansial pada usaha budidaya rumput laut Kappaphycus alvarezii di Desa Akle, Kecamatan Semau Selatan, Kabupaten Kupang. *Jurnal Aquatik*, *7*(1), 62-69.

Asaf, R., Athirah, A., & Paena, M. (2021). Optimalisasi Pengembangan Usaha Budi Daya Rumput Laut (Kappaphycus Alvarezii) Di Perairan Teluk Kulisusu Kabupaten Buton Utara Provinsi Sulawesi Tenggara. *Jurnal Sosial Ekonomi Kelautan dan Perikanan*, *16*(1), 39-50.

Nurhalima, S., Sunaryo, A., & Suhrawardan, H. (2022). Teknik dan manajemen usaha budidaya rumput laut (eucheuma cottonii) menggunakan metode long line di pelaku utama waetuwo kecamatan tanete riattang timur, kabupaten bone provinsi sulawesi selatan. In *Prosiding Seminar Nasional Perikanan Indonesia* (pp. 281-293).

Damayanti, I. F., Purwadinata, S., & Fitriyani, I. (2021). Efektivitas Pelaksanaan Kegiatan Budidaya Rumput Laut Dalam Rangka Pemberdayaan Ekonomi Masyarakat Pesisir. *Jurnal Ekonomi & Bisnis*, *9*(3), 301-312.

Madani, N. S., Ibrahim, J. T., & Bakhtiar, A. (2022). Analisis kelayakan usahatani budidaya rumput laut (studi pada kelompok tani belandungan segoro pandung di desa pagar batu kecamatan saronggi kabupaten sumenep). *Jurnal Sosial Ekonomi Pesisir*, *3*(4), 1-11.

Neksidin, N., Triyono, T., & Murtini, S. (2024). Pengelolaan Budi daya Rumput Laut dengan Pendekatan Sosial-Ekonomi dan Ekologi di Pulau Pari. *Jurnal Ilmu Pertanian Indonesia*, *29*(2), 222-230.

Retang, E. U. K. (2023). Analisis Faktor–Faktor yang Mempengaruhi Keberlanjutan Usahatani Rumput Laut di Desa Kaliuda Kabupaten Sumba Timur. *Jurnal Education and Development*, *11*(1), 330-335.

Salim, H., Ilsan, M., & Boceng, A. (2023). Analisis Tingkat Pendapatan Petani Rumput Laut (Studi Kasus di Kecamatan Wara Timur, Kota Palopo, Provinsi Sulawesi Selatan). *Innovative: Journal Of Social Science Research*, *3*(3), 10162-10174.

Nurfadilah, N. (2021). *ANALISIS FINANSIAL USAHA BUDIDAYA RUMPUT LAUT Gracilaria Sp. DI KECAMATAN SANROBONE, KABUPATEN TAKALAR* (Doctoral dissertation, Universitas Hasanuddin).

Sukmawati, P. M., Makkunessa, P., & Tantu, A. G. (2021). KELAYAKAN DAN PENGEMBANGAN USAHA BUDIDAYA RUMPUT LAUT KAPPAPHYCUS ALVAREZII DI PERAIRAN KECAMATAN TANETE RIATTANG TIMUR KABUPATEN BONE. *Journal Of Aquaculture And Environment*, *4*(1), 17-20.

Tuahuns, A., St M, S., & Leimeheriwa, B. M. (2022). Pengembangan Usaha Budidaya Rumput Laut di Desa Nuruwe Kabupaten Seram Bagian Barat. *PAPALELE (Jurnal Penelitian Sosial Ekonomi Perikanan dan Kelautan)*, *6*(1), 1-9.

Haqiqiansyah, G., & Syafril, M. (2020). ANALISIS FINANSIAL USAHA BUDIDAYA RUMPUT LAUT (Gracilaria sp) DI TANJUNG SEMBILANG KECAMATAN SAMBOJA. *Jurnal Pembangunan Perikanan dan Agribisnis*, *7*(2), 144-153.

Dewi, S. S. (2022). *Peningkatan Kesejahteraan Ekonomi Masyarakat Kecamatan Suppa Melalui Budidaya Rumput Laut (Perspektif Hukum Ekonomi Syariah)* (Doctoral dissertation, IAIN PAREPARE).

Ilyas, I., Ridwan, M., Kasmi, M., Seniorita, S., & Natsir, A. B. A. (2020). Pengembangan Daya Saing Usaha Rumput Laut Melalui Secara Integratif Sebagai Peningkatan Income Masyarakat Pesisir Di Kabupaten Pangkep. *Jurnal IPTEKS Pemanfaatan Sumberdaya Perikanan*, *7*(13).

Randika, Z. A. (2022). Analisis finansial budidaya rumput laut (eucheuma cottonii) di Kelurahan Teritip Kecamatan Balikpapan Timur Kota Balikpapan: Seaweed (Eucheuma cottonii) cultivation financial analysis in Balikpapan East Village District, Balikpapan City. *Nusantara Tropical Fisheries Science (Ilmu Perikanan Tropis Nusantara)*, *1*(2), 124-132.

Hadi, A. N., & Gunawan, K. I. (2024). ANALISIS KELAYAKAN USAHA PETANI RUMPUT LAUT (STUDI KASUS DI DUSUN TANJUNGSARI DESA KUPANG KECAMATAN JABON KABUPATEN SIDOARJO). *Musytari: Neraca Manajemen, Akuntansi, dan Ekonomi*, *4*(2), 175-189.

Syahbuddin, S., & Habibah, H. (2021). Budidaya Rumput Laut dalam Meningkatkan Pendapatan Ekonomi Masyarakat (Studi Kasus di Desa Laju Kecamatan Langgudu Kabupaten Bima). *Jurnal Pendidikan Ips*, *11*(2), 101-106.

Sulistyo, A., & Wahyuni, T. (2020). Analisis Perbandingan Keuntungan Dan Risiko Agribisnis Rumput Laut (Eucheuma Cottonii) Dengan Menggunakan Teknik Budidaya Dan Alat Pukat Di Kelurahan Pantai Amal Kota Tarakan. *J-PEN Borneo: Jurnal Ilmu Pertanian*, *3*(2).

Anjas, A., & Pratama, M. F. (2023). ANALISIS PENDAPATAN USAHATANI RUMPUT LAUT DI DESA BAHONSUAI KECAMATAN BUMI RAYA KABUPATEN MOROWALI. *AGROTEKBIS: JURNAL ILMU PERTANIAN (e-journal)*, *11*(4), 1028-1037.

Widiyanti, N. M. N. Z., Nursan, M., Yusuf, M., Husni, S., FR, A. F. U., & Fadli, F. (2023). ANALISIS KEUNTUNGAN DAN PROFITABILITAS USAHATANI RUMPUT LAUT DI KECAMATAN JEROWARU KABUPATEN LOMBOK TIMUR. *AGROTEKSOS*, *33*(2), 661-667

Frisky, B. A., & Purnomo, D. (2022). Analisis Pola Pendapatan dan Pengelolaan Rumput Laut di Sumbawa Barat, Indonesia. *Jurnal Bisnis dan Manajemen*, *2*(2), 44-55.