

## **Patterns and Business Scale of Milkfish Growing in East Tanete Riattang District, Bone Regency**

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### **ABSTRACT**

Pond cultivation is an effort to maintain and enlarge aquatic organisms in pond waters or ponds that are deliberately made by humans. This study aims to determine the pattern and scale of the milkfish enlargement business at the level of feasibility per unit of pond land. The research was conducted from January to July, 2020, in the Tanete Riattang Timur District, Bone Regency. Pond business patterns are grouped into three strata, namely monoculture milkfish (*Chanos chanos* fork), polyculture milkfish (*Chanos chanos* fork) and seaweed (*Gracellaria verrucosa*), polyculture milkfish (*Chanos chanos* fork) and shrimp with a narrow scale, medium and wide. Aquaculture business scale and pattern are analyzed by analyzing farmer income, R/C ratio analysis, Payback Period analysis, business feasibility analysis namely NPV analysis, IRR analysis and B/C Ratio analysis. The research results from a sample of Fisheries Households (RTP) Respondents. The highest financial feasibility of the milkfish (*Chanos chanos* fork). The financial feasibility of the milkfish (*Chanos chanos* fork) shrimp polyculture. The conclusion is that in general the ponds in Tanete Riattang Timur District that are already operating are managed privately. The business feasibility category in East Tanete Riattang District is divided into two categories, namely very suitable and appropriate. From the NPV feasibility analysis, the IRR and BC ratio are included in the feasible category to be continued.

**Keywords:** Aquaculture, farm income, R/C Ratio, payback period

### **INTRODUCTION**

Pond aquaculture business carried out in Indonesia is an economic activity that is capable of being sustainable, especially in the use or utilization of natural resources. Theoretically, milkfish pond cultivation can provide more promising economic prospects because milkfish remains the most widely produced and consumed fish culture commodity in Indonesia. Milkfish (*Chanos chanos*) is a type of fish that is widely cultivated in Indonesia. The development of milkfish farming technology in society is inseparable from its comparative and strategic advantages. Milkfish can be cultivated in brackish water, sea, tolerant of changes in environmental quality and resistant to disease. Milkfish can also be used as live bait for tuna and skipjack, and has become an export commodity (Kordi, 2009).

Pond cultivation is an effort to maintain and enlarge aquatic organisms in pond waters or ponds that are deliberately made by humans. Ponds have brackish salinity (a mixture of fresh water and sea water) for a certain time where the results are obtained by harvesting (Suratiah, 2015). Ponds in Indonesia are generally managed in an extensive (traditional) system so that management is not complicated. The resulting production is low, which is between 50-500 kg/ha/season (Kordi, 2007). From the real picture in the field, it is necessary to find a way for the cultivators, both technically and economically, to

know about the types of commodities that can increase the income of the cultivators according to the environmental characteristics in the area.

In Bone Regency, there are areas that are quite potential for the development of aquaculture businesses, one of which is in Tanete Riattang Timur District. This area has a coast length of about 10.80 km (Department of Maritime Affairs and Fisheries of Bone, 2019). The increase in the area of ponds and the development of pond cultivation areas is an opportunity and can also cause problems for the management of coastal natural resources. Opportunities for increasing pond business production can be increased with a pattern that is adapted to environmental conditions and does not damage the existing environmental sustainability so that pond cultivation can be sustainable.

The coastal area of Tanete Riatang Timur District is directly adjacent to mangrove forests that have the potential to be developed into aquaculture areas. The area of mangrove forest in this area that can still be developed is around 436.74 ha (Dinas Perikanan Bone, 2019). Of the several types of businesses carried out by pond cultivators in the East Tanete Riatang sub-district, it is necessary to carry out an economic analysis for each type of business according to the level of production and the condition of the character of the region.

Application of cultivation business patterns and appropriate cultivation technology by taking into account environmental aspects that are suitable for aquaculture, so as to create an alternative livelihood for the community. Reduced area of mangrove forest as a result of conversion to aquaculture areas such as polyculture of vannamei shrimp (*Litoprneaus vannamei*) and milkfish (*Chanos-chanos* fork)  $\pm 175.015$  ha, polyculture of milkfish (*Chanos-chanos* fork) and seaweed (*Gracillaria verrucosa*)  $\pm 434$  ha, vanamai shrimp monoculture (*Litoprneaus vannamei*), milkfish (*Chanos-chanos* fork) monoculture,  $\pm 78$  ha, 130 ha respectively (Dinas Perikanan Bone, 2019).

Cultivation activities with intensive technology are very productive businesses in increasing the country's economic welfare and foreign exchange, but sustainability is determined by the resulting impacts that will damage the environment (Muqsith 2015). Bone Regency is located on the east coast of South Sulawesi which borders the Bone Bay. The area of Bone Regency is 4,559 km<sup>2</sup> with a built-up area of 2,747.36 km<sup>2</sup>, a population of  $\pm 751,026$  people, and a distance of about 174 km from the city of Makassar (BPS 2018). Tanete Riatang Timur District has a potential coastal area of around 1,247 ha, which is realized for aquaculture around 810.26 ha (Dinas Perikanan Bone, 2019)

Based on the available coastal land area, there are still opportunities to increase pond production through increased productivity and sustainable use of coastal land, which greatly determines the sustainability of the aquaculture business in the region. Planning for management of coastal areas must be adjusted to the pattern of pond business so that it can improve the welfare of farmers. One of them is by using socio-economic analysis, farming income analysis, R/C Ratio analysis, Paybeck Priod analysis, B/C Ratio analysis, NPV analysis and IRR analysis.

Other analyzes such as analysis of land suitability, analysis of technology level potential and pond cultivation patterns, and analysis of aquaculture development need to be integrated so as to obtain the right pattern of cultivation business and cultivation technology at a suitable location to be used as an aquaculture area. This research was

conducted to determine farm income, RC ratio, Payback Period, business feasibility analysis using the B/C Ratio and Financial NPV and IRR formulas.

Milkfish cultivation has a number of benefits that can be a reason for people to involve themselves in this activity. Some of the reasons why people should cultivate milkfish are the market which is quite stable, with maintenance. Milkfish is a popular food ingredient and has a relatively stable demand in the market, both locally and internationally. This can provide a strong market potential for fish farmers. Also related to economic potential, milkfish cultivation has a promising economic potential (Afan, 2015). With the right business scale and good management, milkfish farming can be a profitable source of income.

The high nutritional value makes milkfish rich in nutrients, including protein, healthy fats, vitamins and minerals. This makes it a healthy and nutritious food choice. Contribute to food and its security. Milkfish cultivation can contribute to food security, especially in order to meet the protein needs of the community. Moreover, if sustainable practices are also accompanied by good cultivation practices, milkfish cultivation can be carried out in a sustainable manner by taking into account the balance of the ecosystem and the environment.

Helping to open jobs for milkfish farming can create local job opportunities, both in pond management, distribution, or processing of fish products. By diversifying sources of income for farmers or fishermen, milkfish cultivation can be an alternative source of additional income apart from marine catches (Ayub, 2020). Also giving rise to research and innovation, by focusing on milkfish cultivation also provides opportunities for research and innovation in terms of cultivation techniques, feed, water management, and others. Ecosystem contribution using environmentally friendly cultivation techniques can help reduce pressure on fish populations in the wild.

Technological improvements resulting from milkfish cultivation encourage the use of sophisticated agricultural and aquaculture technologies, which in turn can improve farmers' abilities and technological knowledge in society. However, it is important to remember that milkfish farming, like any other form of business, also requires commitment, knowledge, and hard work to achieve success (Arikunto, 2006). Before starting cultivation, it is highly recommended to obtain sufficient information and understand the challenges and opportunities that exist in this industry.

## **METHODS**

The research was carried out from January to July 2020 in the Tanete Riatang Timur District, Bone Regency. Data collection used a survey method through interviews, observation and literature study while for the sampling technique using simple random sampling (*sample random sampling*). Primary data obtained from the results of direct interviews with respondents. The research sample consisted of 59 heads of fisheries households from 316 heads of fisheries households. Arikunto (2006) states that if the object of research is less than 100, it is best if all the subjects of the population under study are taken, if the subject is more than 100 or greater, it is permissible. Sampling was carried out in two sub-districts, namely Waetuo Sub-District and Pallete Sub-District with the reason that the two sub-districts had a large area of fishponds and fisheries potential

compared to Toro, Bajoe and Panyulla Sub-Districts (Office of Maritime Affairs and Fisheries Bone, 2019).

To find out the potential, the level of cultivation technology and pond business patterns, the research data analysis used includes socio-economic analysis, farm income analysis, R/C Ratio analysis, payback period analysis, business feasibility analysis using NPV analysis, IRR analysis, and B/C analysis. C Ratio. Socio-economic components of farmers using descriptive analysis. Parameters include: pond cultivator characteristics (age, education, experience, side job and number of family members) and the aquaculture business environment (pond size, business pattern, use of labor, use of production facilities, and level of production). Analysis of farmer income aims to determine the input and output components involved in the pond business and the amount of profit derived from the business carried out (Gray, 2005).

## RESULTS AND DISCUSSION

This paper presents the results of an in-depth study of milkfish farming, a topic that has significant relevance in the context of modern agriculture and aquaculture. In this paper, we will discuss in detail the process of milkfish farming, including important aspects such as pond management, feed, fish health, and marketing strategies. This study is based on a rigorous scientific approach, incorporating empirical data, analysis, and the latest research in fisheries and agriculture (Candra, 2019). The main objective of this study is to provide a deeper understanding of sustainable and effective milkfish farming practices, as well as identify opportunities and challenges that may be faced by fish farmers.

This paper will describe the important findings from this study, starting from optimal pond management techniques to innovations in the processing of milkfish products. We will also discuss the practical implications of the results of this study, both in the context of economics, environmental sustainability and food security. Summarizing quality information, this paper aims to provide a useful guide for those interested in milkfish farming practices, as well as to encourage further thinking in the development of sustainable and innovative aquaculture practices.

### Site Selection, Seeds, Feed and Pond Management

Analysis of pond cultivation business on monoculture milkfish (*Chanos chanos fork*), polyculture of milkfish (*Chanos chanos fork*) and seaweed (*Gracellaria verrucosa*), and polyculture of milkfish (*Chanos chanos fork*) and seaweed (*Gracellaria verrucosa*) on pond cultivators (respondents) at the study site. Income analysis was carried out for two growing seasons based on real data, namely during the first growing season (January - June, 2019) and the second growing season (July - December 2019). Revenue or income earned by pond cultivators from both seasons comes from the production of milkfish (*Chanos chanos fork*), vanamei shrimp (*Litopenaeus vannamei*), and seaweed (*Gracellaria verrucosa*).

Suekartawi (2002) states that farming income is the difference in revenue from all costs used. Farming revenue is the multiplication of yields and selling prices, while costs are all costs incurred and used for farming activities. In accordance with this opinion that

profit or income comes from the sales value of the product produced minus all costs used for production, revenue comes from the sales value of all production results, while expenses are costs incurred to produce production. The amount of production results depends on the amount of variable costs used or incurred.

It is important to continuously monitor and analyze the performance of your marketing strategy. Web and social media analytics tools can provide insight into what is working and what needs to be improved. By implementing an online sales marketing strategy that focuses on interaction, added value and performance measurement, businesses can optimize the potential of the digital market and face existing challenges (Irmawati, 2020). In a rapidly changing environment, the flexibility to adapt strategy to new trends and market developments will be the main key to achieving success in online sales marketing.

### **Monitoring, Management and Marketing**

According to Suratiyah (2015) that income is a reflection of the value obtained from the pond business reduced by all costs used for farming activities. Furthermore, Hermanto *in* Perdana (2015) states that the factors that greatly affect income are the area or land area, production level, business pattern, planting intensity, and efficient use of labor. The feasibility analysis of pond cultivation business is an activity of assessing a business so that it can obtain benefits in carrying out its business. The results of this business feasibility analysis can be used as a consideration for making a decision by taking into account costs as a measuring tool used, including NPV, Net B/C ratio, and IRR.

(*Chanos chanos fork*) pond cultivation business. Polyculture of milkfish (*Chanos chanos fork*) Vanamei shrimp (*Litopenaeus vanamei*), and polyculture of milkfish (*Chanos chanos fork*) seaweed (*Gracellaria verrucosa*) at these three scales is feasible or not implemented in Tenete Riattang Timur District, Bone Regency. With this business feasibility analysis, it is expected that the risks due to failure in the cultivation of milkfish monoculture (*Chanos chanos fork*) ponds, milkfish polyculture (*Chanos chanos fork*) Vanamei shrimp (*Litopenaeus vanamei*), and polyculture milkfish (*Chanos chanos fork*) and seaweed (*Gracellaria verrucosa*) in East Tanete Riattang District, Bone Regency will be spared.

Financial feasibility of monoculture milkfish (*Chanos chanos fork*), polyculture milkfish (*Chanos chanos fork*) and Vanamei shrimp (*Litopenaeus vanamei*), polyculture milkfish (*Chanos chanos fork*) and seaweed (*Gracellaria verrucosa*) at the basic KUMK credit interest rate from several banks of year, the value fulfills the criteria for financial investment feasibility. The largest NPV from the large-scale seaweed (*Gracellaria verrucosa*) polyculture business is followed by the polyculture business of milkfish (*Chanos chanos fork*) and large-scale Vanamei shrimp (*Litopenaeus vanamei*). This is due to the wide business pattern, there is an efficient use of costs, higher yields, bigger sizes of milkfish (*Chanos chanos fork*) and shrimp, and higher prices (Jumriani, 2020). Narrow scale and medium scale i.e. the smallest NPV values are medium scale monoculture of milkfish (*Chanos chanos fork*), and polyculture of milkfish (*Chanos chanos fork*) Vanamei shrimp (*Litopenaeus vanamei*), as well as polyculture of milkfish (*Chanos chanos fork*) and seaweed (*Gracellaria verrucosa*).

### **Sustainableility**

The IRR criterion is a criterion used to measure the efficiency of capital use by comparing the IRR value with *the discount rate* (interest rate). If the IRR is higher than the specified interest rate, then the business is worth continuing, if it is lower it is not worth continuing and if the IRR is the same as the interest rate, then it can be implemented. *Benefit Cost Ratio* (B/C) to compare *benefits* and *costs*, if the value is less than one project it is less economical, if more than one project, then the project is feasible, and if it is equal to one project it is break even. This B/C ratio analysis is an easy-to-do project selection analysis (Kordi, 2007).

Pay attention to the diet of milkfish. If a fish suddenly refuses to eat or starts eating less than usual, this could be an indication of a health or environmental problem. Monitor fish growth by comparing size and weight over time. If there is significant growth retardation or size variation among fish, this could be a sign of a nutritional or health problem. If any milkfish exhibit aggressive behavior, such as biting or chasing other fish constantly, this could indicate a problem in the pond such as high population density. Note if there is a change in color on the skin of the fish. Sudden or unnatural color changes can signal health or environmental problems (Kordi, 2009). Regular inspection of fish fins. If you notice changes or damage to the fins such as tears or swelling, this could be a sign of injury or disease. Watch the fish's breathing pattern. Rapid breathing, gasping, or visibly struggling to breathe could indicate a water quality problem such as low dissolved oxygen. Fish that are experiencing stress may exhibit unusual behavior such as jumping on the surface of the water or swimming restlessly.

This can be caused by factors such as environmental changes or rough handling. Careful examination of the surface of the fish's body to detect any cuts, bumps, or signs of the parasite such as white spots. It is important to have a good understanding of the normal behavior of milkfish and understand how various environmental factors can affect them. By monitoring regularly and identifying suspicious changes or symptoms, fish farmers can take quick action to maintain the health and growth of milkfish more effectively.

### **Discussion**

#### **Site Selection, Seeds, Feed and Pond Management**

Selection of the appropriate location is very important in the enlargement of milkfish. Factors such as water temperature, salinity, water flow, and water quality must be considered to create a suitable environment for milkfish growth. Choosing healthy and quality milkfish seeds is very important. Selection of good seeds will provide a solid foundation for optimal growth. Provision of good and balanced feed is very important for the growth of milkfish. An understanding of the nutritional needs of milkfish in various stages of growth is very important. Management of aquaculture ponds is a key factor in milkfish enlargement. This includes maintenance of proper water temperature, monitoring of water quality, disease control and other preventive measures.

Milkfish rearing requires an in-depth understanding of the factors that affect fish growth and health. The following is a guide on site selection, seeds, feed, and pond management for milkfish enlargement (Dinas Kelautan Kutau Barat, 2020). Water Conditions: Make sure the water temperature and salinity are suitable for the milkfish. The

optimal temperature ranges from 25-32°C. Milkfish is tolerant of fluctuations in salinity, but extreme conditions must be avoided. Water Quality: Water must be clean and uncontaminated. Routine monitoring of parameters such as pH, dissolved oxygen, ammonia and nitrate is necessary. Determining a sufficient water flow is important to maintain proper oxygenation and circulation in the pond.

Protection in choosing a safe location from threats such as theft or other disturbances. Same goes with health. Choose seeds that are healthy and free from disease. Visual inspection and laboratory tests can help assess the health of the seedlings. Size and age of select seeds that have a uniform size and according to the desired growth phase. Make sure the feed nutrition given contains the nutrients needed for optimal growth. High-quality feed contains protein, fat, carbohydrates and a variety of vitamins and minerals (Mustafa, 2022). Routine Feeding, give feed regularly and in sufficient quantities. Monitoring fish growth can help adjust feeding patterns. Also related to pond management, pond design must consider the appropriate size and depth for the number of fish raised. Ensuring adequate oxygenation in the pond is very important. Aeration systems such as aerators or streams can help increase dissolved oxygen levels.

### **Monitoring, Management and Marketing**

Continuous monitoring of fish growth, health and environment is necessary. Corrective action should be taken if any problems arise. A larger business scale will require a good marketing strategy to sell enlarged milkfish. Connections with local markets or other potential markets are important. Scientific monitoring, management and marketing of milkfish involves an approach based on knowledge and data supported by scientific research and methodology. Here are ways to carry out these three aspects scientifically. First by regulating water quality, the use of accurate measurement instruments to monitor water quality parameters. The data collected must be analyzed and compared to established standards to ensure an optimal environment for the fish.

Then look through the health of the fish, by carrying out regular checks and documenting the health condition of the fish. If there are health problems, identify the cause through laboratory tests and consultation with experts. Fish Growth: Use accurate monitoring methods to measure fish growth over time. Analysis of growth data can provide insight into fish health and performance. Next is pond management by always emphasizing pond management practices based on the latest research (Perdana, 2015). This includes nutrition management, population density, and disease prevention measures. New disease control can be implemented through an evidence-based approach to disease prevention and control. This can involve vaccinations, use of recommended medications, and isolation of diseased fish. Next is population control based on research on pond capacity and fish needs, manage fish populations wisely to prevent stress and excessive competition.

Also as an environmental manager who must apply sustainable practices supported by scientific research to maintain the balance of the ecosystem around the aquaculture pond. Next is scientific marketing based on market research conducted market research to understand consumer preferences and needs. This can be done through surveys, interviews or analysis of market data. Branding based on research that builds a brand based on research about the image you want to project to the market. This can involve appropriate packaging designs, logos and branding messages. What is also important is a data-based

promotion strategy by using market data to develop the right promotion strategy. Identify the most effective promotional channels based on consumer preferences. Then carry out an analysis of marketing results while still considering evaluating the results of marketing efforts based on sales data, consumer feedback, and market developments.

In the digital era that continues to grow, online sales marketing has become the main foundation for businesses that want to face increasingly fierce competition. Online marketing strategies not only allow businesses to reach a wider audience, but also provide opportunities to interact more closely with consumers and measure campaign effectiveness more accurately (Witoko, 2018). In this course, we will explore relevant and effective online sales marketing strategies. Before formulating a marketing strategy, it is important to understand consumer trends, preferences and behavior in the digital space. Identifying your target market and understanding how they interact with online platforms will help you better direct your marketing efforts.

Branding is the foundation of any marketing strategy. Building a consistent and attractive brand image across online platforms will help identify your business more easily and build consumer trust. A website that is optimized for search engines (SEO) is important for increasing online visibility. Relevant, high-quality content, as well as the proper use of keywords, can help your site appear higher in search results. Creating useful and engaging content, such as articles, blogs, videos or infographics, not only educates your audience, but also builds authority in your field. Great content can increase consumer engagement and expand your brand reach.

### **Sustainableility**

The practice of milkfish enlargement must be carried out with the principles of sustainability. This includes the wise use of resources, environmental protection, and positive contributions to local communities. Sustainability in the milkfish marketing process involves a sustainable strategy in marketing your milkfish products to the market. In addition, the diversification of milkfish processing results can help create added value and reach a wider market segment. Sustainability in the consistent supply marketing process is to ensure a consistent supply of milkfish. Retailers and customers expect constant product availability. Also by placing and understanding a sustainable culture as communicating sustainable values in your marketing. For example, an emphasis on environmentally friendly cultivation practices or the use of environmentally friendly materials in packaging. And don't forget digital marketing for using social media and online platforms to promote your product. This is an effective way to reach a wider audience.

Furthermore, what should be a concern is the relationship with customers, the most important aspect is building a strong relationship with customers. By understanding their needs and feedback, you can continuously improve your products and services (Suratiah, 2015). The most realistic behavior is consumer education about the benefits of milkfish and how to cook it. This can help increase their interest in and understanding of the product. Furthermore, what needs to be considered is to diversify processing results. Processed products other than fresh milkfish, consider developing processed products such as smoked milkfish, canned milkfish, or fried milkfish. So that it has added value as the

creation of value-added products, such as ready-to-eat dishes based on milkfish, milkfish sauce, or snacks made from milkfish.

With taste innovation in mind, explore various processing methods and recipes to create a variety of flavors and textures that appeal to consumers. Also with attractive packaging, attractive and functional packaging designs can attract consumers' attention on store shelves. Don't forget to do a market test before launching a new product, do a market test first to measure consumer interest and preferences. Research-based marketing can support new product development with in-depth research on market trends, consumer preferences, and potential new products in the market by combining a sustainable approach to marketing with product diversification.

Social media platforms are powerful tools for interacting with consumers. Actively participating, responding to comments, and setting up targeted advertising campaigns can help you reach a wider audience and interact more closely with them. Email remains an effective marketing tool (Afan, 2015). By crafting relevant and personalized email campaigns, you can communicate directly with your customers, send them special offers, and remind them of new products or services. Several businesses have achieved success through collaborations with digital influencers. They have a huge impact on their audience and can help introduce your brand to people they may not already know.

## CONCLUSION

The three farming patterns are milkfish monoculture (*Chanos chanos fork*), milkfish polyculture (*Chanos chanos fork*) and seaweed (*Gracellaria verrucosa*), milkfish polyculture (*Chanos chanos fork*) and vanamei shrimp (*Litopenaeus vannamei*) seen from the feasibility analysis of Net Present. This also includes disease control with milkfish, pattern control is carried out by routine inspection of fish to detect signs of disease. If there is a disease, preventive and treatment measures should be taken as soon as possible. Same with management in waste management, managing pond waste properly so as not to disturb water quality and the surrounding environment. These pattern checks are important in fish farming to detect health or environmental problems that may affect the growth and welfare of fish. Here are some aspects that can be examined patternally in milkfish.

## REFERENCES

- Afan, N, T. Hidayat dan E, Budiraharjo. (2015). Analisa Kelayakan Usaha Budidaya Udang Vaname (*Litopenaeus vannamei*) Pada Tambak Intensif (Studi Kasus Kewirausahaan Tambak Udang di Desa Blendung, Kecamatan Ulujami, KabupatenPemalang). *Journal Universitas Pancasila*, 11(2): 25-31.
- Arikunto, S. (2006). *Metode Penelitian Kualitatif*. Bumi Aksara. Jakarta.
- Ayub, Z., Rianti, M., Awaluddin, M., & Triadi, F. (2020). Community Participation in Village Fund Management within Palakka District, Bone Regency of South Sulawesi, Indonesia. *GNOSI: An Interdisciplinary Journal of Human Theory and Praxis*, 3 (3), 38-48.
- Badan Pusat Statistik Kabuapten Bone. 2018.

- Candra Adi Intyas, Agus,T & Fattah,M (2019) Finansial Feasibility Analysis Of Small-Scale Fish Smoking By Fishermen In Home Industries. *Russan Journal of Agricultur and Socio-Ekonomic Science*, 12 (1): 175-181.
- Gray, C., Simanjuntak, P., Sabur, L. K., Maspaitella, P. F. L. dan Varley, R. C. G. (2005). *Pengantar Evaluasi Proyek*. Jakarta: Garamedia Pustaka Utama: Edisi Kedua Ceakan Kelima.
- Irmawati, I., Rahmah, S., Awaluddin, M., Dos Santos, H. A., & Triadi, F. (2020). The Role of Compensation in Improving Work Performance of Mattampa Bulu Village Officials, Lamuru District, Bone Regency. *Jurnal Ad'ministrare: Jurnal Pemikiran Ilmiah dan Pendidikan Administrasi Perkantoran*, 7 (2). 45-58.
- Jumriani, S. R., Cahaya, A., Awaluddin, M., & Triadi, F. (2020). Work Ethic of Muslim Traders in Palakka Central Market, Bone Regency and its Effect on Increasing Economic Welfare. *Jurnal Administrare: Jurnal Pemikiran Ilmiah dan Pendidikan Administrasi Perkantoran*, 7 (2), 347-354.
- Kordi (2009). *Sukses Memproduksi Bandeng Super untuk Ekspor*. Penerbit Bina Mandiri: Banten
- Kordi, M. G. H dan Tancung, A. B. (2007). *Pengelolaan Kualitas Air dalam Budidaya Perairan*. Jakarta: Rineka Cipta.
- Laporan Tahunan Dinas Kelautan dan Perikanan Kutai Barat. (2020).
- Laporan Tahunan Dinas Kelautan dan Perikanan Kabupaten Bone. (2019).
- Mustafa, M., Hardianto, T., Suleman, Y., & Triadi, F. (2022). The Study of Seaweed Cultivation Development in Bone District. *Jurnal Ad'ministrare: Jurnal Pemikiran Ilmiah dan Pendidikan Administrasi Perkantoran*, 9 (1). 24-36.
- Perdana, A. P. S. (2015). *Analisa Pendapatan dan Resiko Usahatani Ikan Lele dan Ikan Mas Di Kecamatan Pagelaran, Kabupaten Pringsewu*. Bandar Lampung: Skripsi Fakultas Pertanian Universitas Lampung.
- Soekartawi. (2002). *Prinsip Dasar Ekonomi Pertanian: Teori dan Aplikasi*. Jakarta : PT Raja Grafindo Persada.
- Suratiyah, K. (2015). *Ilmu Usaha Tani*. Edisi Revisi. Penebar Swadaya: Jakarta.
- Witoko P, Ninik P dan Nuning M. N. (2018). Analisis Kelayakan Usaha Budidaya udang Vanamei *Litopenaeus vannamei* Vanname (*Litopenaeus vannamei*) di Keramba Jaring Apung Laut. *Manajemen IKM*. 13 (2): 175–179.