

Optimizing Catfish Farming to Improve Welfare in Sialang Kubang Village, Kampar

Ramadhan Abdul Aziz^{1*}, Armi²

^{1,2}Universitas Islam Riau

Corresponding Author e-mail: Aziz098@gmail.com

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Abstract: *This research aims to analyze the role of catfish farming in improving the welfare of the community in Desa Sialang Kubang, Kecamatan Perhentian Raja, Kabupaten Kampar. The study examines the economic contributions of catfish seed production to household income. Data from 26 respondents were analyzed using both qualitative and quantitative methods. The findings indicate that catfish farming provides a significant contribution to family income, with an average net income of Rp 10,871,739 per month and a contribution rate of 76.63%. Furthermore, the Benefit Cost Ratio (BCR) was calculated at 3.00, demonstrating the profitability and viability of the business. The research concludes that catfish farming plays a vital role in supporting the local economy and enhancing household welfare. Recommendations include improving feed quality, maintaining water cleanliness, and increasing government support to further develop the sector. This study provides valuable insights into the potential of aquaculture as a means for economic development in rural communities.*

Introduction

The optimization of catfish farming has emerged as a promising opportunity to enhance community welfare, especially in regions like Desa Sialang Kubang, where aquaculture is a major economic driver. The increasing demand for nutritious food has made fish, particularly catfish, an important protein source in Indonesia. Fish farming, specifically catfish farming, is an attractive alternative to traditional freshwater fish farming methods due to its resilience against environmental changes and diseases. In the village of Sialang Kubang, the success of catfish farming is not only evident in the local economy but also through the adoption of professional and intensive farming techniques, including the careful selection of seeds, growth, and distribution stages. These factors are interdependent, but each can operate independently as a separate business, offering greater flexibility and sustainability.

The business of catfish farming is particularly beneficial in Sialang Kubang, which has become a central hub for high-quality catfish seeds. Many farmers and distributors from outside the region source their catfish seeds from this village due to the superior quality. According to local data, fish farming, particularly catfish, has played a key role in improving the livelihood of the village's population. For example, by 2020, 5.6% of the village's workforce was engaged in catfish farming, with the industry growing year on year in terms of production and income. This steady increase in production points to the growing demand for catfish in both local and regional markets, underscoring the potential of this farming sector to contribute significantly to community development. As the demand for catfish increases, farmers in the region are scaling their production to meet both domestic and regional needs, further boosting their economic stability.

The primary object of this study is the catfish farming industry in Desa Sialang Kubang, Kecamatan Perhentian Raja, Kabupaten Kampar. This region has become a vital center for catfish seed production, serving not only local farmers but also larger-scale distributors who rely on the quality of the seeds produced here. The village of Sialang Kubang, with a population of approximately 3,596, has seen significant shifts in its workforce composition, with a portion of the population moving towards fish farming. In 2020, around 105 individuals were directly involved in catfish farming, representing 5.6% of the total working population. Despite being a relatively small percentage, these farmers play a crucial role in the local economy due to the village's reputation as a major supplier of catfish seeds.

The area of study is particularly significant as it involves an agricultural system heavily reliant on seasonal demand and fluctuating production cycles. The village's farmers are involved in semi-natural catfish farming, manipulating the environment to optimize production while maintaining ecological balance. The village's output of catfish seeds has increased from 149 million in 2014 to over 409 million in 2020, demonstrating the growth of the industry. Despite these successes, the industry faces challenges, including seasonal demand fluctuations, logistical difficulties in transporting live fish, and the perishability of catfish seeds. This research aims to examine how this thriving industry can be further optimized to enhance the welfare of the farmers and the broader community.

The phenomenon of increasing catfish farming in Desa Sialang Kubang presents both opportunities and challenges. Over the past several years, there has been a noticeable shift in the village's economic focus toward aquaculture, particularly in producing and distributing catfish seeds. This growth is partly due to the rising demand for catfish across Indonesia, driven by the popularity of catfish dishes in local restaurants and markets. As a result, farmers in Sialang Kubang have adopted more professional farming practices, ensuring that their products meet the quality standards required by both local and regional distributors.

However, this growth has also brought about new challenges. The production of catfish seeds is subject to seasonal variations, which can affect supply chains and market prices. Additionally, the logistical requirements for transporting live fish seeds, which must be accompanied by water to keep them alive, pose a significant hurdle for farmers looking to expand their distribution networks. Moreover, the industry is highly dependent on external

factors such as environmental conditions and market demand, both of which can fluctuate unpredictably. This phenomenon raises important questions about how catfish farming can continue to grow sustainably and how farmers can mitigate the risks associated with these challenges while maximizing their income and improving their livelihoods.

Despite the growing importance of catfish farming in Sialang Kubang, there remains a significant gap in the understanding of how this industry impacts community welfare, particularly regarding income generation and economic stability. Previous research has primarily focused on the technical aspects of fish farming, such as production techniques and seed quality (Alam et al., 2021; Fauzi et al., 2020). However, few studies have explored the socio-economic implications of this industry on local communities. The research by Fitriana et al. (2022) highlights the importance of integrating technological advancements in aquaculture to improve production efficiency, but there is a lack of detailed analysis on how these improvements affect farmers' livelihoods. Another study by Hartono et al. (2023) suggests that while fish farming can contribute to rural development, the benefits are not always evenly distributed among community members, leading to disparities in income.

The current research aims to fill this gap by analyzing the economic contributions of catfish farming in Desa Sialang Kubang, focusing specifically on how it impacts the income of local farmers and the broader community. By doing so, this study will provide valuable insights into how aquaculture can be optimized not only for production efficiency but also for enhancing community welfare. This research is particularly timely, given the growing global interest in sustainable food production and rural economic development (Kurniawan et al., 2024).

The primary objective of this research is to evaluate the role of catfish farming in enhancing community welfare in Desa Sialang Kubang, with a particular focus on the income levels of farmers involved in this industry. This study aims to provide a comprehensive understanding of how the optimization of catfish farming practices can lead to improved economic outcomes for farmers and contribute to broader rural development. By examining various aspects of the catfish farming value chain, from seed production to distribution, this research will identify key factors that influence the success of these farming enterprises and propose strategies for overcoming challenges related to seasonal demand and logistical constraints.

The findings from this research are expected to have significant implications for both local and regional policymakers. By providing empirical data on the economic impact of catfish farming, this study can inform decision-making processes related to agricultural policy, rural development, and community welfare programs. Additionally, this research will contribute to the academic literature on aquaculture and rural development by offering new insights into how small-scale farming enterprises can be optimized to achieve both economic sustainability and community well-being. Ultimately, this research seeks to support the development of more resilient and equitable agricultural systems that can provide stable incomes and improve the quality of life for rural populations.

Research Methods

The research methodology focuses on understanding the role of catfish farming in improving community welfare in Desa Sialang Kubang, Kecamatan Perhentian Raja, Kabupaten Kampar. The study location, chosen for its significance as a major producer of catfish seeds in Riau, makes it an ideal case for analyzing the socio-economic impacts of aquaculture. The research population consists of 105 catfish farmers, and the sample size was determined to be 26 using Slovin's formula with a 17% margin of error (Umar, 2008). Data collection includes both primary and secondary sources, such as production figures, costs, and prices of catfish seeds, as well as demographic data from the village office and Kampar's Bureau of Statistics (BPS, 2020). The analysis combines qualitative and quantitative methods, including interviews, questionnaires (Nursalim, 2005), and descriptive statistics to assess farmers' income over three-month periods. The study also considers fixed and variable costs (Rahardja & Manurung, 2002), calculating net income by subtracting total costs from gross revenue. To evaluate welfare, the study compares net income against the region's minimum living standards (KHL) in Kampar, which vary depending on family size (BPS, 2020). The analysis will determine whether catfish farming significantly contributes to the community's economic well-being by assessing how closely the farmers' income aligns with the KHL. The hypothesis posits that catfish farming plays a substantial role in enhancing community welfare by boosting farmers' income relative to regional living standards. This multi-faceted approach offers a comprehensive view of how local aquaculture activities contribute to economic development and social welfare in rural areas.

Result and Discussion

Desa Sialang Kubang, located in Kecamatan Perhentian Raja, Kabupaten Kampar, is geographically characterized by a vast land area of 20.18 million square meters and sits 35 meters above sea level with an average temperature of 26.6°C. The village consists of four hamlets, eight RW (neighborhoods), and 24 RT (community units). Its economy is predominantly agrarian, with residents engaged in palm oil farming, fish farming, and livestock. Known as "Kampung Lele" due to the prominence of catfish farming, the village's proximity to provincial and district capitals—37 km and 87 km, respectively—provides good access to markets and infrastructure. The village's demographic profile indicates a population of 3,602 in 2020, where males represent 52.16% and females 47.84%. The productive age group (15-54 years old) constitutes 39.53% of the population, while the rest are either too young or too old to work (Simanjuntak, 2003). Educational attainment in the village is diverse, with 28.73% of residents having completed high school, while only 3.4% have graduated from university. The primary occupation in Sialang Kubang is farming, specifically palm oil and catfish farming, with 9.81% of the population engaged in catfish seed production, contributing to the village's reputation as a major producer of high-quality catfish seeds (BPS, 2020).

The catfish farming business in Desa Sialang Kubang operates both as a primary and secondary source of income for many households. This industry is mainly commercial, with farmers selling their catfish seeds to local and regional markets rather than just for household consumption. The village's favorable environmental and social conditions make it ideal for fish

farming. From a social perspective, local resources, including human capital, are utilized efficiently, while from an economic standpoint, the village's location provides easy access to nearby markets, ensuring timely delivery of catfish seeds in optimal condition. Technically, the farming operations depend heavily on the availability of quality water sources and well-constructed pond systems. Most ponds are made from cement or tarpaulin and are filled with water sourced from bore wells, which is crucial for maintaining the oxygen levels required for catfish growth. The village's pond infrastructure includes breeding, spawning, and growing ponds, which are carefully managed to maintain water quality and support fish development. Maintaining proper oxygen levels in the water is essential, as poor water quality can hinder fish growth, delaying harvest and reducing profitability (BPS, 2020).

The findings of this research underscore the significant role that catfish farming plays in enhancing the welfare of communities in Desa Sialang Kubang, Kecamatan Perhentian Raja, Kabupaten Kampar. Based on the analysis of income data, it was found that the catfish farming business makes a substantial contribution to household welfare, with the highest monthly income reaching Rp 29,677,945 and the lowest at Rp 4,481,570, yielding an average monthly income of Rp 10,871,739 for farmers. When household income was included, the highest family income recorded was Rp 34,677,945 per month, while the lowest was Rp 8,395,987 per month, with an average monthly family income of Rp 13,760,200. The overall contribution of catfish farming to household income was found to be 76.63%, which highlights the business's importance in supporting family livelihoods. This finding aligns with previous research conducted by Faakhira Nadia Syakina (2018), which similarly demonstrated the significant contribution of catfish farming to household income in Kecamatan Natar, Lampung Selatan. These results reinforce the idea that catfish farming can be an effective tool for improving economic conditions in rural areas.

Additionally, the feasibility analysis using the Benefit Cost Ratio (BCR) demonstrated that catfish farming in Desa Sialang Kubang is a highly profitable and sustainable venture. The average BCR was calculated to be 3.00, indicating that for every unit of cost incurred, the business generates three times that amount in revenue. Since a BCR greater than 1 signifies that a business is economically viable, this result confirms that catfish farming is a sound investment for farmers in this region. Finally, the study also revealed that the income from catfish farming enables farmers to meet and exceed the minimum living standards (KHL) in Kabupaten Kampar. All 26 respondents in the study reported income levels above the KHL for their respective family sizes, further supporting the claim that catfish farming contributes significantly to improving the standard of living for farmers. This research provides valuable insights into the potential of aquaculture, particularly catfish farming, as a means to boost rural economies and enhance community welfare, offering both economic stability and growth opportunities for households in Desa Sialang Kubang (Nasrudin, 2010; BPS, 2020).

Conclusion and Recommendation

In conclusion, the study confirms that catfish farming, particularly seed production, plays a significant role in improving the economic welfare of the community in Desa Sialang Kubang, Kecamatan Perhentian Raja, Kabupaten Kampar. The findings reveal that the average

monthly net income from catfish farming can reach Rp 10,871,739, with a contribution rate of 76.63% to household income. The business has proven to be profitable and sustainable, as demonstrated by the Benefit Cost Ratio (BCR) of 3.00, indicating that for every Rp 1 invested, farmers generate Rp 3 in return, making the business viable for long-term continuation. Based on these findings, several recommendations are made: First, catfish farmers should focus on improving the quality of feed and worms to ensure healthier and more productive fish, which can lead to higher income. Second, farm operators should prioritize maintaining clean water conditions to prevent stress and disease in the fish, which can reduce mortality rates. Lastly, local governments and village leaders should provide greater support to catfish farming through government assistance programs to help farmers further develop their operations and enhance their economic impact on the community.

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