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ANALYSIS OF SOCIO-ECONOMIC CHARACTERISTICS OF HOUSEHOLD CATFISH FARMERS IN PALEMBANG CITY

Analisis Karakteristik Sosial Ekonomi Rumah Tangga Pembudidaya Ikan Lele di Kota Palembang

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ABSTRACT

Catfish farming is one of the rapidly growing fisheries sectors in urban areas, including Palembang City. However, the success of this business is greatly influenced by the socio-economic conditions of the farmers. A common problem faced is the lack of information about the socio-economic characteristics of catfish farming households, which can serve as a basis for policy formulation in developing aquaculture businesses. This study aims to identify the socio-economic characteristics of catfish farming households in Palembang City.This research uses a descriptive method and collects data through questionnaires and direct interviews with farmers in the districts of Plaju, Sematang Borang, Gandus, and Sukarami. The results indicate that 63% of farmers have completed senior high school education, 43% are in the productive age range of 41–50 years, and 51% have less than 10 years of work experience. Most farmers (70%) own farming land measuring 1,100–2,000 m², classified as medium-scale enterprises. Economically, 53 respondents earn additional income from agricultural activities such as patin fish farming, while 47 respondents earn income from non-agricultural sectors. The average monthly operational cost of catfish farming reaches IDR 10,887,512, dominated by variable costs amounting to IDR 8,839,525. These findings reflect the importance of understanding socio-economic conditions in the sustainable development of catfish farming businesses.

Keywords: Productive Age, Business Scale, Additional Income

ABSTRAK

Budidaya ikan lele merupakan salah satu sektor perikanan yang berkembang pesat di daerah perkotaan, termasuk Kota Palembang. Namun demikian, keberhasilan usaha ini sangat dipengaruhi oleh kondisi sosial ekonomi pembudidayanya. Permasalahan yang sering dihadapi adalah kurangnya informasi mengenai karakteristik sosial ekonomi rumah tangga pembudidaya ikan lele yang dapat dijadikan dasar pengambilan kebijakan pengembangan usaha budidaya. Penelitian ini bertujuan untuk mengetahui karakteristik rumah tangga pembudidaya ikan lele di Kota Palembang dilihat dari aspek sosial dan ekonomi. Penelitian dilakukan dengan metode deskriptif dan pengumpulan data melalui kuisioner serta wawancara langsung kepada pembudidaya di Kecamatan Plaju, Sematang Borang, Gandus, dan Sukarami.

Hasil penelitian menunjukkan bahwa 63% pembudidaya berpendidikan SMA, 43% berada pada usia produktif 41–50 tahun, dan 51% memiliki pengalaman kerja kurang dari 10 tahun. Sebagian besar pembudidaya (70%) memiliki lahan usaha seluas 1.100–2.000 m² yang tergolong skala usaha menengah. Dari sisi ekonomi, 53 orang memperoleh pendapatan tambahan dari usaha tani seperti budidaya ikan patin, sementara 47 orang dari sektor non-tani. Rata-rata biaya usaha per bulan mencapai Rp10.887.512, yang didominasi oleh biaya variabel sebesar Rp8.839.525. Temuan ini mencerminkan pentingnya pemahaman kondisi sosial ekonomi dalam pengembangan usaha budidaya ikan lele yang berkelanjutan.

Kata Kunci: Usia Produktif, Skala Usaha, Pendapatan Tambahan

INTRODUCTION

Indonesia has vast freshwater bodies with significant potential for aquaculture, encompassing 141,690 hectares of rivers, reservoirs, and swamps, as well as 375,800 hectares of ponds. This potential, supported by abundant natural and human resources, has led to aquaculture growth exceeding capture fisheries, with production reaching 15.361 million tons in 2023, far exceeding the 7.489 million tons of capture fish production (Ministry of Maritime Affairs and Fisheries, 2023). Freshwater production is dominated by catfish, gourami, tilapia, carp, and pangasius, which account for more than 80% of total production. The remainder comes from marine fish farming, brackish water ponds, floating nets, and cages.

South Sumatra is a province with consistent year-over-year increase in freshwater pond aquaculture production, reflecting the high demand for freshwater fish supported by adequate natural and human resource potential. Production continued to increase from 230,454 tons in 2020 to 298,713 tons in 2023. In 2023, freshwater fish production was dominated by catfish, at 100,917,788 kg, followed by patin, tilapia, carp, and gourami, indicating that catfish is a leading commodity in freshwater aquaculture (Central Statistics Agency of South Sumatra Province, 2024).

Palembang City has significant potential for catfish cultivation, supported by open waters such as swamps and the Musi River (Utpalasari & Anwar, 2019). As an economic center and distribution center for agricultural and fishery commodities, Palembang encourages the growth of the catfish aquaculture sector using both traditional and modern methods. The use of tarpaulin or concrete ponds, along with simple technologies such as aerators and quality feed, contributes to increased yields, making catfish cultivation a primary source of income that contributes significantly to the regional economy (Perwita Sari & Mayasari, 2025).

Active catfish farmers in Palembang City are spread across several sub-districts, with varying numbers. Sukarami and Sematang Borang sub-districts have the largest number of farmers, with 50 each. Gandus and Plaju sub-districts also have a significant number of farmers, with 40 per sub-district. Meanwhile, sub-districts such as Ilir Barat I, Ilir Barat II, Kalidoni, Sako, Kertapati, and Ilir Timur I each have around 20 active farmers. Jakabaring and Seberang Ulu II sub-districts have the fewest farmers, with 10. All of these farmers demonstrate active catfish farming practices in their respective areas (Palembang City Fisheries Office, 2023).

According to Sari & Jaya (2019), in catfish farming, one important aspect that needs to be analyzed is the characteristics of the farmers. These characteristics include the socio-economic conditions of the farmer's household, such as age, education level, family size, and experience in fish farming. A thorough understanding of these characteristics is essential to support the sustainable development of catfish farming, particularly in Palembang City, a major center for this fish farming (Utpalasari & Anwar, 2019).

The success of catfish farming in Palembang City plays a crucial role in meeting market demand and improving the economy of farmers, particularly in the districts of Gandus, Sematang Borang, Sukarami, and Plaju—the centers of farming activity. Income from this

business serves as an indicator of success, while consumption expenditure reflects the level of well-being (Khodriah, 2019). Despite the increasing number of farmers, studies on socioeconomic conditions remain limited, yet this is crucial for assessing the sector's contribution to the well-being of its stakeholders.

METHODS

Time and Place of Research

This research was conducted in 4 (four) sub-districts, namely Sukarami, Sematang Borang, Gandus and Plaju in Palembang City. The selection of research locations was carried out intentionally (purposive) with the consideration that the four sub-districts are the centers of Catfish (*Clarias gariepinus*) cultivation businesses in Palembang City. The time of data collection and collection at the research location was carried out in 2025 until completion.

Research Method

The research method used in this study was a survey. This method involved a list of questions to obtain data that might not be possible through observation. The survey method involved sampling from the existing population. This method involved submitting a questionnaire as a means of data collection and conducting interviews with catfish farmers in Sukarami, Sematang Borang, Gandus, and Plaju Districts, as these four districts have the largest number of catfish farmers.

Sampling Method

This study used a Simple Random Sampling (SRS) technique with a proportional distribution based on the population of catfish farming households in the four districts: Gandus, Sukarame, Sematang Borang, and Plaju. The sample size in each district was determined by considering several factors, including the varying population sizes in each district, and the availability of time and resources for data collection. Sampling based on a percentage of the population can be done if the population size is moderate and sampling the entire population is not possible due to time, cost, and manpower constraints (Sugiyono, 2017). The total population targeted for this study was 180 catfish farming households spread across four sub-districts: Gandus, Sukarame, Sematang Borang, and Plaju.

Table 1. Distribution of Catfish Farmers in Gandus, Sematang Borang, Sukarame, and Plaju Districts

No	Districts	Population	Sample	Percentage (%)
1.	Gandus	40	22	22.22
2.	Sematang Borang	50	28	27.78
3.	Sukarami	50	28	27.78
4.	Plaju	40	22	22.22
	Total	180	100	100.00

The total sample size in this study was 100 catfish farming households from four selected sub-districts. This sampling was conducted using simple random sampling to ensure that each household had an equal chance of being selected, and the data obtained reflected the socio-economic conditions and welfare levels of catfish farming households in each sub-district.

Data Collection Method

The data collected in this study used primary and secondary data. Primary data were obtained directly from respondents from farmers in Sukarami, Sematang Borang, Gandus, and Plaju sub-districts through interviews, observations, and questionnaires. Secondary data were

obtained through literature review, including books, journals, theses, the Central Statistics Agency (BPS), and other reliable sources.

Data Processing

To answer the first objective, which examined the characteristics of farming households and catfish farming businesses in Palembang City, the analysis used a quantitative descriptive approach, using frequency distributions, percentages, and averages. The aim was to describe the actual conditions based on the data obtained from respondents. The components analyzed include:

- Characteristics of the farming household from a social perspective, such as the age of the head of the household, number of family members, marital status, highest level of education, and experience in catfish farming.
- Characteristics of the farming household from an economic perspective, such as monthly income, primary source of income, and business capital.
- Characteristics of the farming business, including production facilities, production inputs and outputs, and the catfish farming system.

Furthermore, to address the second objective of household income, the calculation begins with production costs, revenues, income, household income, and the proportion of income.

Production Cost

$$BP = BT + BV$$

Where:
BP = Production Cost
BT = Fixed Cost
BV = Variable Cost

RESULTS

Education of Catfish Farmers

Education is a crucial social factor for farmers, as it influences their ability to adopt technology. Low levels of education can be a barrier to understanding and using new technology. The educational attainment of catfish farmers in Palembang City includes elementary school (SD), junior high school (SMP), senior high school (SMA), diploma, and bachelor's degree (S1). Differences in education levels among catfish farmers in this study can be seen in Table 2.

Table 2. Education of Catfish Farmers

Education	Amount (Person)	Percentage (%)
Elementary School	5	5.00
Junior High School	22	22.00
Senior High School	63	63.00
Diploma	7	7.00
Bachelor's Degree	3	3.00
Total	100	100.00

Age of Catfish Farmers

Age is one factor that can reflect a person's way of thinking and behaving. Generally, with age, a person becomes wiser in responding to various situations. Demographically, people aged 0–14 are classified as non-productive, while those aged 15–64 are included in the

productive age group. Those aged 65 and over are classified as less productive. The results of the study on the ages of catfish farmer respondents can be seen in Table 3.

Table 3. Education of Catfish Farmers

Age (years)	Amount (Person)	Percentage (%)
0 < 30	4	4.00
31 – 40	26	26.00
41 – 50	43	43.00
< 50	27	27.00
Total	100	100.00

Length of Experience of Catfish Farmers

Length of business is an important indicator of the level of experience and stability of the fish farmer in carrying out cultivation activities. Generally, the longer someone has been in business, the greater their knowledge, skills, and understanding of business management, cultivation techniques, and risk management.

Table 4. Length of Experience of Catfish Farmers

Length of Business	Amount (Person)	Percentage (%)
< 10	51	51.00
11 – 20	49	49.00
Total	100	100.00

Number of Dependents of Catfish Farmers

Family size is an important aspect of a fish farmer's social situation, as the larger the family, the greater the needs that must be met (Laksono & Wulandari, 2021). Information regarding the number of dependents in a catfish farmer's family can be seen in Table 5.

Table 5. Number of Dependents of Catfish Farmers

Family Dependencies	Amount (Person)	Percentage (%)
< 3	32	32.00
4 – 5	68	68.00
Total	100	100.00

Housing of Catfish Farmers

Housing is an important indicator in assessing the socioeconomic conditions of households, including catfish farmers. Housing ownership status can reflect the level of economic stability and the financial ability of an individual or family to meet basic needs, including housing. Information regarding the housing of catfish farmers is provided in Table 6.

Table 6. Housing of Catfish Farmers

Status	Amount (Person)	Percentage (%)
Owned	61	61.00
Rented	26	26.00
Ride-along	13	13.00
Total	100	100.00

Land Area of Catfish Farming Businesses

Land area is a crucial factor in catfish farming, influencing production scale, business efficiency, and the farmer's potential income. The larger the land area, the larger the pond capacity and the number of fish that can be farmed. Therefore, land area is often used as an indicator of the development of a fish farming business. Information regarding the land area of catfish farming businesses can be seen in Table 7.

Table 7. Land Area of Catfish Farming Businesses

Land Area (m^2)	Amount (Person)	Percentage (%)
< 1000 m^2	5	5.00
1100 – 2000 m^2	70	70.00
2100 – 3000 m^2	25	25.00
Total	100	100.00

Sources of Additional Income for Catfish Farmers

A secondary income source is an additional source of income earned by catfish farmers in addition to their primary source of income. This secondary income is essential for supporting household economic needs, especially when yields decline or harvest time is approaching. The results of the study on secondary income sources for catfish farmers are shown in Table 8.

Table 8. Sources of Additional Income for Catfish Farmers

Additional Income Source	Amount (Person)	Percentage (%)
Farming Income	53	53.00
Non-farming Income	47	47.00
Total	100	100.00

Catfish Farming Business Costs

Business costs are a crucial factor influencing the continuity and success of production. These costs encompass all expenses incurred during the cultivation process, from the preparation stage to post-harvest. Business costs are divided into two main categories: fixed costs and variable costs. Fixed costs are expenses that remain constant despite changes in production volume, as they are generally incurred for long-term facilities and infrastructure, such as ponds and equipment. Meanwhile, variable costs are expenses that fluctuate according to production scale and frequency of activities, such as feed, seeds, and daily labor. Understanding this cost structure is crucial for determining the amount of capital required and serves as a basis for making efficient and sustainable business decisions. The cost results for catfish farming can be seen in Table 9.

Table 9. Catfish Farming Business Costs

No	Component	Total (IDR/month)
A	Fixed Costs	2,047,987
1.	Netting Pond	166,000
2.	Sorting Equipment	125,167
3.	Scales	125,167
4.	Basin	53,120
B	Variable Costs	8,839,525
1.	Seeds	3,108,000
2.	Feed	4,326,400
3.	Drugs and Vitamins	316,000

No	Component	Total (IDR/month)
4.	Daily Wages	428,125
5.	Electricity	375,500
6.	Post-Harvest Packaging	165,000
7.	Transportation	210,500
	A + B Total Cost	10,887,512

DISCUSSION

Characteristics of Catfish Farming Households

Education of Catfish Farmers

Table 2 shows that the highest level of education most respondents had was high school (SMA), representing 63% of the total respondents. This indicates that the majority of catfish farmers have a secondary education. This indicates that most entrepreneurs have completed primary and secondary education, thus possessing basic skills in reading, writing, arithmetic, and general information comprehension. With a high school education, farmers generally have a good potential to receive new information, including cultivation technology, business management, and marketing. However, they may still face limitations in accessing or implementing more complex technologies, especially those requiring in-depth technical understanding. This situation also presents an opportunity for extension agencies or related agencies to develop training and mentoring programs tailored to their level of understanding, to optimize the adoption of innovations and cultivation technologies. According to (Zhafirah et al., 2023), the social welfare of catfish farmers is influenced by education and social status, with more educated households and those involved in social networks tending to have a higher standard of living.

Age of Catfish Farmers

Table 3 shows that the majority of catfish farmers are aged 41–50 (43%), representing a mature and productive age group with experience, emotional stability, and a high level of responsibility in managing their businesses. At this age, people are more discerning in their decision-making and are quite open to innovation, although technology adoption tends to be slower than that of younger generations. According to Wulur et al., 2019, age influences a person's perspective and wisdom in responding to situations. Those aged 15–64 are categorized as productive, while those under 15 and over 65 are less productive. Therefore, support in the form of training and technical guidance tailored to these age characteristics is crucial to continuously improve the ability to adopt technology and innovation in aquaculture and drive business progress.

Length of Experience of Catfish Farmers

Research results show that the majority of catfish farmers (51%) have less than 10 years of experience, indicating that many are still beginners. This lack of experience can impact the efficiency and success of farming, as novice farmers are still learning the technical and managerial aspects. According to (Sofiati, 2025), experience plays a positive role in overcoming farming challenges. This dominance of new farmers demonstrates the potential for growth in the aquaculture sector, but also presents challenges that require ongoing mentoring, training, and counseling to increase their capacity and manage their businesses professionally. With proper guidance, novice farmers have a strong opportunity to develop into successful entrepreneurs in the future.

Number of Dependents of Catfish Farmers

The results in Table 5 show that the majority of catfish farmers (68%) have 3–5 dependents, reflecting a relatively large nuclear family. According to (Saktiawan et al., 2020), despite having many dependents, farmers are able to support their families and send their children to school using their farming income. This large number of dependents increases the household's economic burden due to increased basic needs, thus encouraging farmers to be more active in managing their businesses. Furthermore, a large family also has the potential to become a source of labor, actively supporting farming operations.

Housing of Catfish Farmers

The results in Table 6 show that the majority of catfish farmers in Palembang City (60%) live in their own homes, indicating greater economic and psychological stability and supporting their focus on managing their farming businesses (Yuniwati et al., 2025). Twenty-six percent live in rented housing, and 13% share a shared home, indicating greater dependency and economic limitations. Home ownership status is an important indicator of socioeconomic conditions, as farmers with their own homes have a greater opportunity to develop their businesses and obtain access to necessary credit or social assistance (Suhaimi et al., 2024).

Land Area of Catfish Farming Businesses

The results in Table 7 show that the majority of catfish farmers in Palembang City (70%) have land areas between 1,100–2,000 m², making them classified as medium-scale businesses. Twenty-five percent have land areas of 2,100–3,000 m² (large-scale), and only 5% are small-scale with land areas under 1,000 m². This distribution reflects the dominance of medium- to large-scale businesses with more stable capital and production capacity than small-scale ones. According to (Titik & Rayhan, 2021), business scale influences livelihood strategies and capital, with micro- and small-scale farmers relying more on social capital for livelihood diversification.

Sources of Additional Income for Catfish Farmers

The results in Table 8 show that catfish farmers in Palembang City have two main sources of side income: from farming (53 people), such as patin fish farming, and from non-farming activities (47 people), such as trading, laboring, driving, or working as civil servants or private sector employees. Although their primary focus is catfish farming, many still rely on farming as a supplementary income due to the region's socio-economic conditions, which still rely heavily on agriculture. This income diversification also serves as a strategy to mitigate the risk of losses due to disruptions in farming production. Furthermore, due to the long catfish harvest period (approximately six months), many farmers take on other jobs to supplement their income, so farming is not always their primary occupation (Adrian, 2023). This side income plays a crucial role in improving the stability and economic resilience of farmer households.

Catfish Farming Business Costs

The results in Table 9 show that the total monthly costs of a catfish farm in Palembang City reach IDR 10,887,512, with variable costs of IDR 8,839,525 dominating the expenditures, primarily for feed (IDR 4,326,400) and fry (IDR 3,108,000). Fixed costs of IDR 2,047,987 cover expenses such as net ponds, sorting equipment, and basins, which are typically non-routine. Other variable cost components include daily wages, electricity, medicines, packaging, and transportation. These data emphasize the importance of efficient feed management and selecting quality fry to reduce production costs and increase profits, while investments in fixed costs must be planned to support the sustainability of the farming business.

CONCLUSION

The research results show that catfish farmers in Palembang City generally have a secondary education (high school), are of productive age (41–50 years), and are mostly new entrepreneurs with less than 10 years of business experience. They have an average family of 4–5 people and live in their own homes, with business land measuring 1,100–2,000 m², which is classified as medium-scale. Their sources of income are quite diverse, both from the agricultural and non-agricultural sectors, while the business cost structure is dominated by variable costs such as feed and seeds. The potential for business development is very large, but still requires support in the form of training, access to capital, and institutional strengthening from the local government and related institutions so that catfish farming businesses can develop sustainably.

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