Analysis of Fish Farmers' Satisfaction In Banjarbaru City With The Tilapia Fish (*Oreochromis niloticus*) Seed Assistance Program of The Mandiangin Freshwater Aquaculture Center Using The Servqual Approach

Ermayani[1*], Emmy Sri Mahreda[2], Leila Ariyani Sofia[3]

[1]Student of the Master's Program in Fisheries Science, Lambung Mangkurat University, Banjarbaru, South Kalimantan, Indonesia
[2]Master's Program in Fisheries Science, Lambung Mangkurat University, Banjarbaru, South Kalimantan, Indonesia
[3]Socio-Economic Fisheries Study Program, Faculty of Fisheries and Marine Science, Lambung Mangkurat University, Banjarbaru, South Kalimantan, Indonesia
* Corresponding author:
Email: ermayanigaffar@gmail.com

Abstract.
The Tilapia fish seed assistance program implemented by the Mandiangin Freshwater Aquaculture Center (BPBAT Mandiangin) for fish farmer groups in Banjarbaru City is one form of government support for the development of aquaculture enterprises. This study aimed to analyze fish farmers' satisfaction with the BPBAT Mandiangin Tilapia fish seed assistance program using the SERVQUAL approach. The study was conducted in Banjarbaru City, South Kalimantan Province. Eleven respondents were purposively selected, consisting of seven fish farmer group leaders and four direct beneficiary farmers. The primary data collected were analyzed using the SERVQUAL approach, which comprises five service dimensions: tangibles, reliability, responsiveness, assurance, and empathy. The results showed that all service quality dimensions were classified as very good, with scores of 4.71 for Tangibles, 4.77 for Reliability, 4.80 for Responsiveness, 4.84 for Assurance, and 4.85 for Empathy. These findings indicate that the fish farmers were highly satisfied with the quality of services provided, including administration, timeliness, seed quality, staff competence, and assistance during program implementation.
Keywords: *BPBAT Mandiangin, Tilapia fish, satisfaction, assistance program and SERVQUAL..*

I. INTRODUCTION

Aquaculture is an important sector that supports food security, increases community income, and strengthens regional economies. One aquaculture commodity that is widely developed is Tilapia fish (Oreochromis niloticus). Tilapia fish has several advantages, including high adaptability, relatively rapid growth, simple culture techniques, and relatively stable market demand. Therefore, the development of Tilapia fish aquaculture is a strategic effort to increase fisheries production and improve the welfare of fish farmers.

Tilapia fish production in Banjarbaru City has fluctuated in recent years. Based on data from the Marine and Fisheries Agency of South Kalimantan Province (2025), Tilapia fish production in 2020 was recorded at 146.628 tons, contributing 0.57% to total provincial production. In 2021, production decreased by 61.74% to 56.099 tons. Production then increased in 2022 to 111.520 tons, representing a 98.74% increase, and increased again in 2023 to 120.242 tons. However, in 2024, production slightly declined to 117.683 tons, contributing approximately 0.40% to provincial Tilapia fish production.

These production fluctuations indicate that Tilapia fish farming in Banjarbaru City still faces various challenges. One important factor influencing aquaculture success is the availability and quality of seed (Poerwanto et al., 2020). Seed is a primary input that determines survival rate, growth, and fish harvest yields. The untimely availability of seed, non-uniform seed size, and poor seed quality can reduce aquaculture productivity. Padiyar et al. (2018) stated that suboptimal seed distribution may reduce production performance, while Haque and Little (2019) emphasized that the success of aquaculture enterprises is strongly influenced by input quality and farmers' technical capacity.

In addition to seed-related factors, the success of Tilapia fish aquaculture is also influenced by technical and environmental aspects. Feed management, water quality, farmers' experience, adoption of aquaculture technology, weather changes, and fish disease outbreaks may affect production outcomes (Sofia et al., 2021; Nur et al., 2021). Differences in farmers' ability to manage aquaculture activities may also lead

to variations in success among fish farmer groups (Nur et al., 2020). Environmental factors and external conditions contribute to production uncertainty in aquaculture enterprises.

To support the development of Tilapia fish aquaculture, the government, through the Mandiangin Freshwater Aquaculture Center (BPBAT Mandiangin), implemented the Tilapia fish Seed Assistance Program for fish farmer groups in Banjarbaru City. This program is a form of government intervention to provide superior production inputs so that fish farmers can improve their business productivity. Based on BPBAT Mandiangin data, Tilapia fish seed assistance was distributed gradually from 2023 to 2025, totaling 144,000 seed to 13 fish farmer groups. The distribution consisted of 15,000 seed for two groups in 2023, 20,000 seed for four groups in 2024, and 109,000 seed for seven groups in 2025.

The increase in seed assistance, particularly in 2025, reflects the government's efforts to strengthen the development of Tilapia fish aquaculture enterprises in Banjarbaru City. However, the success of an assistance program is determined not only by the number of seed distributed but also by the quality of services provided to fish farmers. Distribution accuracy, seed condition upon receipt, clarity of information, staff capacity to provide assistance, and attention to farmers' needs are important aspects that influence program beneficiaries' satisfaction. Kruijssen et al. (2020) emphasized that seed distribution systems need to be inclusive and responsive to the needs of business actors, while Rimmer et al. (2013) stated that the effectiveness of aquaculture programs is influenced by the quality of assistance and service support received by fish farmers.

Fish farmers' satisfaction with the seed assistance program needs to be analyzed because it is an indicator of public service success in aquaculture. Programs that are perceived positively by beneficiaries can increase farmers' trust in the government, strengthen program participation, and support the sustainability of aquaculture enterprises. The SERVQUAL approach can be used to assess satisfaction because it measures service quality based on five main dimensions: Tangibles, Reliability, Responsiveness, Assurance, and Empathy. Parasuraman et al. (1988) explained that these five dimensions can be used to assess users' perceptions of service quality delivered by an institution or service provider. This study aimed to analyze fish farmers' satisfaction in Banjarbaru City with the BPBAT Mandiangin Tilapia fish Seed Assistance Program using the SERVQUAL approach.

II. METHODS

Research Location and Time

The study was conducted from March to May 2026 in Banjarbaru City, South Kalimantan Province, specifically among fish farmers who received the Tilapia fish Seed Assistance Program from the Mandiangin Freshwater Aquaculture Center (BPBAT Mandiangin). The research location was selected purposively because Banjarbaru City is one of the recipient areas of the Tilapia fish seed assistance program from BPBAT Mandiangin.

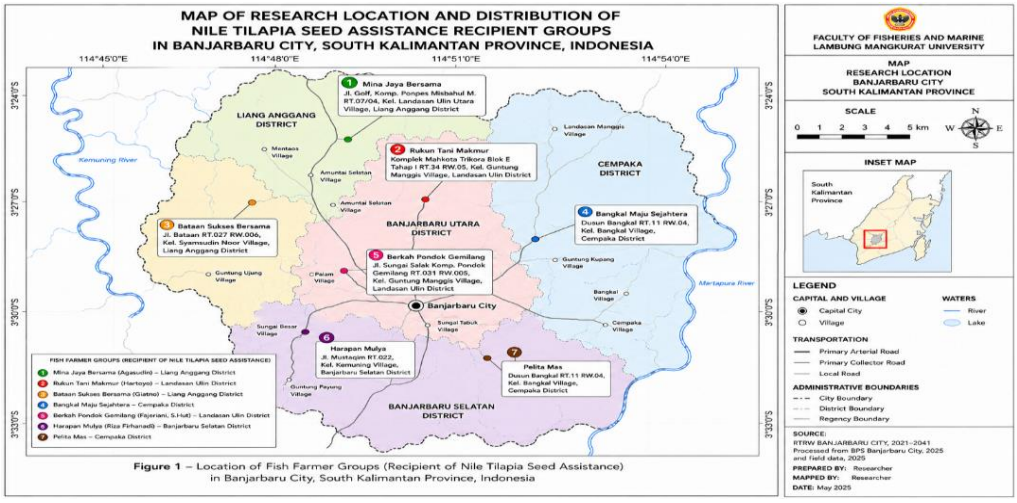

Fig. 1. Research Location

Population and Sample

The study population consisted of the beneficiary groups, namely seven fish farmer groups that received assistance. The sample was selected purposively and consisted of 11 respondents, including seven group leaders and four direct beneficiaries from groups that distributed the assistance to their members.

Data Analysis

Program service quality was analyzed using the SERVQUAL approach, which comprises five service dimensions: tangibles, reliability, responsiveness, assurance, and empathy.

The mean score for each dimension was calculated using the following formula (Sugiyono, 2019):

$$X = \frac{\sum X_i}{n}$$

Where:

X = mean score of the service dimension

Xi = respondents' answer score

n = number of respondents

The interpretation of the mean score was based on the following categories

Table 1. Categories of Program Service Quality

Mean Score	Category
1.00-1.80	Very Poor
1.81-2.60	Poor
2.61-3.40	Fair
3.41-4.20	Good
4.21-5.00	Very Good

Source: Sugiyono (2019)

The mean scores were then analyzed descriptively to determine fish farmers' perceptions of the service quality of the seed assistance program.

Table 2. Service Quality Indicators of the Tilapia fish Seed Assistance Program Based on the SERVQUAL Approach

Dimension	Indicator
Tangibles (Physical Evidence/Facilities)	Seed were delivered directly by BPBAT staff to the fish farmers' business locations. Seed delivery facilities (vehicles, containers, and oxygen) were in good condition. Seed remained alive and healthy when received. The handover process at the location was conducted properly. Information related to seed delivery was communicated clearly.
Reliability	Seed delivery was carried out according to the predetermined schedule. The number of seed delivered was in accordance with the provisions. Seed quality was consistent with the information provided. The delivery process was carried out according to established procedures. Staff were willing to deliver seed directly to fish farmers' locations.
Responsiveness	Staff responded quickly to problems in seed delivery. Staff were easy to contact when needed. Staff assisted during the seed receipt process. Information was provided promptly by staff.
Assurance	Staff had the ability to handle seed during delivery. Staff provided a sense of security during the delivery process.

	Staff ensured that seed were received in good condition. The assistance program provided certainty of benefits for the business. Fish farmers had confidence in the assistance program.
Empathy	Staff understood the business conditions of fish farmers. Staff adjusted delivery times to fish farmers' needs. Staff were friendly and polite. Staff paid attention to the problems faced by fish farmers. Communication between staff and fish farmers was effective.

Source: Primary data processed (2026) and adapted from the SERVQUAL concept by Parasuraman et al. (1988).

III. RESULT AND DISCUSSION

Fish Farmers' Perceptions of Program Service Quality

The service quality of the Tilapia fish Seed Assistance Program was analyzed using the SERVQUAL dimensions developed by Parasuraman et al. (1988), consisting of five main dimensions: Tangibles, Reliability, Responsiveness, Assurance, and Empathy. In this study, the SERVQUAL dimensions were used to measure fish farmers' perceptions of the service quality provided by BPBAT Mandiangin in the distribution and assistance processes of the Tilapia fish seed assistance program. Based on respondents' assessments, the mean scores for each service quality dimension are presented in Table 3.

Table 3. Service Quality Assessment Results Based on SERVQUAL Dimensions

SERVQUAL Dimension	Mean Score	Category
Tangibles	4.71	Very Good
Reliability	4.77	Very Good
Responsiveness	4.80	Very Good
Assurance	4.84	Very Good
Empathy	4.85	Very Good

The analysis showed that all dimensions obtained mean scores above 4.50, indicating that fish farmers had very good perceptions of the service quality of the BPBAT Mandiangin Tilapia fish Seed Assistance Program.

Tangibles (Physical Evidence)

The Tangibles dimension obtained a mean score of 4.71 and was classified as very good. This assessment indicates that the physical facilities used in the assistance distribution process were considered adequate by fish farmers. The assessed aspects included the condition of transport vehicles, seed containers, the use of oxygen during transportation, and the condition of seed upon receipt, which remained alive and healthy.

The high score for this dimension indicates that BPBAT Mandiangin was able to provide adequate supporting facilities and infrastructure for seed distribution. Good distribution facilities contributed to maintaining seed quality until the seed reached the farmers' locations. According to Parasuraman et al. (1988), physical evidence is an initial indicator that shapes users' perceptions of service quality. Amelia and Rizki (2024) also showed that the quality of service facilities positively affects the satisfaction level of government program beneficiaries. Although this dimension obtained the lowest score compared with the other dimensions, the score of 4.71 still indicates that distribution facilities and infrastructure met the expectations of most respondents.

Reliability

The Reliability dimension obtained a mean score of 4.77 and was categorized as very good. This result indicates that fish farmers perceived the services provided by BPBAT Mandiangin as consistent, punctual, and in accordance with the information previously provided.

Service reliability was reflected in the accuracy of the distribution schedule, the suitability of the number of seed received, seed quality that met the stated specifications, and distribution implementation

according to established procedures. The high reliability score indicates that the program implementer was able to fulfill service commitments to beneficiaries.

According to Parasuraman et al. (1988), reliability is a core dimension of service quality because it relates to the service provider's ability to deliver accurate and dependable services. This finding is consistent with Wahyuni and Ginting (2022), who stated that the timely distribution of aquaculture assistance affects beneficiaries' trust and satisfaction.

Responsiveness

The Responsiveness dimension obtained a mean score of 4.80 and was categorized as very good. This result indicates that BPBAT Mandiangin staff were perceived as responsive to the needs and problems faced by fish farmers during the assistance distribution process.

Fish farmers perceived that staff were easy to contact, provided information quickly, and were willing to help when problems occurred during seed receipt. Staff responsiveness is important because seed distribution requires rapid handling to maintain seed quality and survival rates.

According to Raka (2022), service responsiveness is an important factor influencing service user satisfaction because it is related to the speed and willingness of staff to assist the community. The high responsiveness score indicates that communication between staff and fish farmers functioned effectively during program implementation.

Assurance

The Assurance dimension obtained a mean score of 4.84 and was categorized as very good. This result indicates that fish farmers had a high level of trust in both the staff and the assistance program implemented.

The high assurance score indicates that staff were considered to have good technical competence in handling seed and providing information to fish farmers. In addition, fish farmers were confident that the assistance received was consistent with the program objectives and could be utilized to support aquaculture activities.

According to Pakurár et al. (2019), the assurance dimension refers to staff knowledge and courtesy as well as their ability to build trust and confidence among service recipients. The high level of fish farmers' trust in the program was also suspected to be one factor supporting the success of program implementation, as reflected in a 165.25% increase in production and a 355.11% increase in profit after receiving seed assistance.

Empathy

The Empathy dimension obtained the highest mean score, 4.85, and was categorized as very good. This result indicates that staff were perceived as able to understand fish farmers' needs, provide personal attention, and adjust services to the business conditions of assistance recipients.

Fish farmers perceived that staff were friendly, polite, communicative, and willing to provide assistance during program implementation. The high empathy score indicates that interpersonal relationships between staff and fish farmers were well established, creating comfort and trust in program implementation. Sofia (2017) stated that good communication between staff and communities can increase participation and positive perceptions of government programs. The results of this study show that the interpersonal approach applied by BPBAT Mandiangin staff was one of the strengths of the Tilapia fish seed assistance program.

Overall, the analysis showed that fish farmers' perceptions of the service quality of the BPBAT Mandiangin Tilapia fish Seed Assistance Program were categorized as very good across all SERVQUAL dimensions. The Empathy dimension obtained the highest score (4.85), while the Tangibles dimension obtained the lowest score (4.71), although both remained within the very good category. The high scores across all dimensions indicate that fish farmers were satisfied with the services provided, including distribution facilities, service reliability, staff responsiveness, service assurance, and attention given to beneficiaries. These results were also supported by qualitative findings showing that most respondents considered seed quality, distribution punctuality, and staff assistance to have been properly implemented.

Good service quality was suspected to contribute to the success of the Tilapia fish Seed Assistance Program. This can be observed from increases in production and fish farmers' profits in 2024 (after receiving the seed assistance program) compared with conditions in 2023 (before the seed assistance program). The

average increase in Tilapia fish production among fish farmers reached 165.25%, while the average business profit obtained by fish farmers reached 335.11%. Thus, service quality not only contributed to fish farmers' satisfaction levels but also supported the program's success in improving the performance of Tilapia fish aquaculture enterprises.

Based on these findings, it can be concluded that the service quality of the BPBAT Mandiangin Tilapia fish Seed Assistance Program met fish farmers' expectations and contributed positively to the success of Tilapia fish aquaculture development in Banjarbaru City.

Qualitative Findings from Recipients of the Tilapia fish Seed Assistance Program

In addition to conducting quantitative analysis of the impact of the Tilapia fish seed assistance program on production, business profit, and fish farmers' perceptions of service quality, this study also collected qualitative data through open-ended questions to respondents. These questions aimed to obtain more in-depth information on perceived program benefits, constraints faced during aquaculture activities, and fish farmers' recommendations for future program improvement.

Perceived Benefits of the Program among Fish Farmers

The interview results showed that all respondents provided positive responses to the BPBAT Mandiangin Tilapia fish Seed Assistance Program. Most respondents stated that the program helped reduce the need for business capital because fish farmers did not have to incur costs for seed purchases. In addition, seed assistance was considered capable of increasing the availability of high-quality seed to support Tilapia fish aquaculture activities.

Several respondents stated that the main benefit they experienced was an increase in business capital through reduced production costs. Five respondents (group leaders) stated that seed assistance provided additional business capital that could be allocated to other aquaculture needs. Meanwhile, another group leader stated that the seed assistance program enabled fish farmers to obtain high-quality seed without purchasing from outside the region, thereby reducing production costs and improving business efficiency.

In addition to economic aspects, several respondents also perceived that the seed assistance program contributed to improving the quality of aquaculture enterprises. Respondents stated that the program was highly useful in providing quality fish seed, and that the assistance supported the supply of superior seed for aquaculture activities. These findings indicate that program benefits were not only experienced through reduced production costs but also through improved quality of production inputs used by fish farmers.

These results support the quantitative findings of the study, which showed increases in production and business profit after the implementation of the seed assistance program. With the availability of high-quality seed in sufficient quantities, fish farmers had greater opportunities to improve the productivity of Tilapia fish aquaculture enterprises.

Constraints Faced by Fish Farmers

The seed assistance program provided substantial benefits; however, several respondents still faced a number of constraints in operating Tilapia fish aquaculture enterprises. The most frequently reported constraints were related to high feed prices, relatively small seed size upon receipt, and limited market access for aquaculture products.

High feed prices were one of the main constraints faced by fish farmers. Some respondents stated that feed costs remained the largest burden in Tilapia fish aquaculture. This finding is consistent with the production cost analysis, which showed that feed costs were the largest cost component in Tilapia fish aquaculture enterprises. This condition indicates that the success of the seed assistance program needs to be supported by strategies to control feed costs so that increased production can be followed by more optimal profit growth. One effort to address high feed prices is to reduce aquaculture operational costs by producing self-made feed using alternative raw materials available at the local level (Sofia et al., 2023).

In addition to feed costs, several respondents highlighted the size of the seed received. According to respondents, seed size was still relatively small, requiring a longer culture period before reaching market size. This condition has the potential to increase maintenance costs and lengthen the production cycle. Other constraints reported by respondents were related to marketing aspects of aquaculture products, including limited market access, frequent fluctuations in fish selling prices, and the absence of a marketing system

capable of ensuring price stability. These findings indicate that the development of Tilapia fish aquaculture enterprises requires support not only in production aspects but also in the marketing and distribution of aquaculture products.

Fish Farmers' Recommendations for Program Improvement

In general, all respondents appreciated the implementation of the Tilapia fish Seed Assistance Program and hoped that the program would continue. Nevertheless, several constructive recommendations were provided to improve program effectiveness in the future. The most frequently expressed recommendation was the need to increase the size of seed provided to fish farmers. Fish farmer groups expected the distributed seed to be larger and more uniform so that fish growth could be accelerated and mortality risk in the early culture stage could be reduced. In addition, several respondents proposed additional support in the form of feed assistance or feed subsidies. Seed assistance would provide more optimal benefits if accompanied by feed support, considering that feed costs are the largest cost component in Tilapia fish aquaculture enterprises.

Regarding marketing, respondents proposed a more organized mechanism for marketing or absorbing harvested products to maintain fish selling price stability. This recommendation indicates that fish farmers expect more comprehensive government support, not only at the production stage but also at the marketing stage of aquaculture products.

Overall, the qualitative findings show that the BPBAT Mandiangin Tilapia fish Seed Assistance Program provided tangible benefits for fish farmers, particularly in reducing business capital needs and increasing the availability of high-quality seed. However, program sustainability and effectiveness can be improved by providing seed of more uniform size, supporting feed needs, and strengthening market access for aquaculture products. These findings reinforce the quantitative analysis, which showed that the seed assistance program had positive impacts on production, business profit, and fish farmers' satisfaction levels.

IV. CONCLUSION

All SERVQUAL dimensions of service quality in the BPBAT Mandiangin Tilapia fish Seed Assistance Program for fish farmer groups were categorized as very good, with scores of 4.71 for Tangibles, 4.77 for Reliability, 4.80 for Responsiveness, 4.84 for Assurance, and 4.85 for Empathy. The beneficiary fish farmer groups were highly satisfied with the quality of services provided, including administration, timeliness, seed quality, staff competence, and assistance during program implementation.

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