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Perception and Behavior of Fish Farmers Toward Artificial Feed-Based Milkfish (Chanos chanos) Culture in Kabuloang Village, Kalukku District, Mamuju Regency

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ABSTRACT

The success of artificial feed-based milkfish culture is influenced not only by technical aspects but also by farmers' perception and behavior. This study aimed to assess farmers' perception and behavior, and to analyze the relationship between the two in artificial feed-based milkfish (Chanos chanos) culture in Kabuloang Village, Kalukku District, Mamuju Regency. A quantitative approach with a correlational design was used. A total of 60 fish farmers were selected through purposive sampling. Data were collected using a pilot-tested closed questionnaire with a 1–5 Likert scale, and analyzed using descriptive statistics, validity and reliability tests (Cronbach's Alpha), the Shapiro–Wilk normality test, and correlation analysis. All instrument items were valid with high reliability coefficients (perception = 0.918; behavior = 0.871). Farmers' perception was in the good category (mean score 35.10) and their behavior was also in the good category (mean score 35.80). The Pearson correlation yielded a coefficient of 0.612 with a significance value of 0.000 ($p < 0.05$), indicating a significant, moderate-to-strong positive relationship between perception and behavior. The better the farmers' perception of artificial feed, the better their behavior in applying it. The study recommends strengthening extension programs that integrate positive perception building with practical feeding mentoring

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INTRODUCTION

Milkfish cultivation (Chanos chanos) is one of the aquaculture sectors that has an important role in improving the economy of coastal communities in Indonesia. Milkfish are widely cultivated because they have high adaptability to brackish water environments, good economic value, and relatively stable market demand from year to year (FAO, 2020; KKP, 2021). In these cultivation activities, feed is the main factor that determines the growth, survival rate, and productivity of fish. The use of artificial feed is increasingly being applied because it is considered more practical, easy to obtain, and has a more measurable nutritional content than traditional cultivation systems (Ramadana et al., 2022; Barbosa et al., 2024).

The use of artificial feed aims to increase production efficiency and accelerate fish growth. However, feed is also the largest cost component in aquaculture, so feeding that is not in accordance with needs can cause cost wastage and reduce the quality of pond water due to feed residues (Boyd & Tucker, 2020; Deran et al., 2022). Therefore, proper feeding management is needed through dosage, frequency, and feed type selection. Technological developments, such as Internet of Things (IoT)-based automated feeding systems, have also begun to be implemented to improve aquaculture efficiency (Amelia, 2024; Dewi & Sanjaya, 2023).

The success of artificial feed-based milkfish cultivation is not only determined by technical aspects, but also by farmers' perceptions and behaviors. Perception is an individual process in organizing and interpreting information so as to result in a certain understanding of their environment (Robbins & Judge, 2020; Kotler & Keller, 2021). Positive perceptions can encourage farmers to implement better feed management, while poor perceptions can reduce interest in implementing aquaculture innovations (Nawari et al., 2022; Putri et al., 2022). Meanwhile, farmer behavior is a tangible action in pond management, such as how and frequency of feeding, water quality management, and consistency in the application of cultivation techniques (Gibson et al., 2021; Hidayat et al., 2023).

In Kabuloang Village, the use of artificial feed by farmers still shows differences in behavior between individuals. Some farmers have provided feed regularly according to the needs of fish, while others still use methods based on personal experience. These differences indicate that there are variations in the application of artificial feed-based milkfish cultivation which is suspected to be related to farmers' perceptions and behaviors. Studies in various fisheries contexts show that the perception of the benefits of an innovation plays an important role in shaping its adoption behavior (Riany et al., 2023; Asruddin et al., 2026).

Based on this description, this study aims to: (1) find out farmers' perception of artificial feed-based milkfish farming; (2) find out the behavior of farmers in its application; and (3) analyze the relationship between perception and behavior of farmers in Kabuloang Village, Kalukku District, Mamuju Regency. The results of the research are expected to be the basis for the preparation of a more targeted aquaculture extension and assistance program.

RESEARCH METHODS

Time and Place

The research was carried out in Salupompong Hamlet, Kabuloang Village, Kalukku District, Mamuju Regency, West Sulawesi Province, during the period of May–August 2026. The selection of the location was based on the consideration that the area is a milkfish cultivation center and has the availability of data that supports the research focus.

Types and Design of Research

The research uses a quantitative approach with a correlational design. Primary data were obtained through questionnaires, interviews, and field observations, while secondary data were obtained from village documents, the Marine and Fisheries Service, the Central Statistics Agency, and relevant scientific sources.

Population and Sample

The research population is all active milkfish farmers in Kabuloang Village and its surroundings. The sample was determined as many as 60 farmers through purposive sampling techniques with the following criteria: (a) actively cultivating milkfish; (b) managing ponds in the research area; (c) having or currently implementing an artificial feed-based cultivation system; and (d) willing to be respondents. The determination of 60 respondents is intended to meet the adequacy of samples for correlation tests and increase the diversity of data so that the results of the analysis can be more generalized.

Variables and Instruments

The research involved two variables, namely farmers' perception (X) as an independent variable and farmer behavior (Y) as a bound variable. Perception variables were measured through 10 statement items (indicators: understanding of artificial feed, benefits, effectiveness, and impact on the environment). Behavioral variables were measured through 10 statement items (indicators: feeding method, accuracy of amount and timing of feeding, and pond management). Each item uses a Likert scale of 1–5, so the total score range of each variable is 10–50. Before use, the instrument is first piloted on a separate sample to ensure readability and consistency of the items.

Data Analysis Techniques

The collected data was processed through editing, coding, scoring, and tabulation, and then statistically analyzed. The analysis included descriptive statistics; validity test with Pearson's item-total correlation (table $r = 0.254$ at $N = 60$, $\alpha = 5\%$); reliability test with Cronbach's Alpha; normality test with Shapiro–Wilk; and correlation test. Since the two variables are normally distributed, the relationship test uses Pearson Product Moment correlation, with Spearman's Rank correlation presented as a comparator. The determination of score categories uses the interval of class I = (maximum score − minimum score) / number of classes = (50 − 10) / 5 = 8, resulting in five categories: very low (10–17), less (18–25), adequate (26–33), good (34–41), and very good (42–50).

RESULTS AND DISCUSSION

Data were collected from 60 respondents using a closed-ended questionnaire on a Likert scale of 1–5. The analysis included respondent characteristics,

description of the two variables, instrument quality test (validity and reliability), normality test, and intervariable relationship test.

Characteristics of Respondents

Table 1. Characteristics of Respondents (N = 60)

Features	Results
Number of respondents	60 people
Age	22–56 years old
Average age	38.20 years
Age standard deviation	7.31 years
Gender	54 males (90%); 6 females (10%)
Final education	Elementary 10%; Junior High School 25%; High School 48.3%; Diploma/Undergraduate 16.7%
Cultivation experience	Average 9.4 years

Most of the respondents were male (90%) and in the productive age group (average 38.20 years; standard deviation was 7.31 years). The education level of the respondents was dominated by high school graduates (48.3%), followed by junior high school (25%), diploma/bachelor (16.7%), and elementary school (10%). The average cultivation experience of 9.4 years showed that the respondents had been in the pond business for a long time so that they had an adequate knowledge base and skills to apply artificial feed technology.

Farmers' perceptions

Table 2. Descriptive Statistics of Farmers' Perception Scores

Statistics	Value
N	60
Score minimum	11
Score maximum	50
Average	35,10
Default deviation	9,19

Table 3. Distribution of Farmers' Perception Categories

Category	Score range	n	Percentage
Very less	10–17	2	3,3%
Less	18–25	8	13,3%
Enough	26–33	12	20,0%
Good	34–41	23	38,3%
Excellent	42–50	15	25,0%
Total	—	60	100,0%

The total perception score ranged from 11–50 with an average of 35.10 and a standard deviation of 9.19. The average score was in the good category (range 34–41). The distribution of respondents was spread across all categories, with the largest proportion in the good (38.3%) and excellent (25.0%) categories. This fairly wide distribution showed an adequate diversity of perceptions, thus supporting the accuracy of correlation analysis at the next stage.

Farmer Behavior

Table 4. Descriptive Statistics of Farmers' Behavior Scores

Statistics	Value
N	60
Score minimum	16
Score maximum	49
Average	35,80
Default deviation	7,84

Table 5. Distribution of Farmer Behavior Categories

Category	Score range	n	Percentage
Very less	10–17	2	3,3%
Less	18–25	3	5,0%
Enough	26–33	17	28,3%
Good	34–41	21	35,0%
Excellent	42–50	17	28,3%
Total	—	60	100,0%

The behavior score ranged from 16-49 with an average of 35.80 and a standard deviation of 7.84, so that it was generally classified as the good category. As many as 35.0% of respondents were in the good category and 28.3% in the very good category, while some respondents were still in the fair category (28.3%). This picture shows that the majority of farmers have implemented artificial feed management measures well, although there is still room for improvement in some respondents.

Instrument Validity and Reliability Tests

Table 6. Results of the Item Validity Test (R Table = 0.254; N = 60)

Item	r count (Perception)	Ket.	Item	r count (Behavior)	Ket.
P1	0,668	Valid	B1	0,458	Valid
P2	0,583	Valid	B2	0,738	Valid
P3	0,763	Valid	B3	0,668	Valid
P4	0,715	Valid	B4	0,588	Valid
P5	0,645	Valid	B5	0,623	Valid
P6	0,719	Valid	B6	0,519	Valid
P7	0,679	Valid	B7	0,567	Valid
P8	0,683	Valid	B8	0,577	Valid
P9	0,741	Valid	B9	0,618	Valid
P10	0,753	Valid	B10	0,527	Valid

Table 7. Instrument Reliability Test Results

Variabel	Number of Points	Cronbach's Alpha	Interpretasi
Perception	10	0,918	Highly reliable
Behavior	10	0,871	Highly reliable

The results of the validity test in Table 6 show that all items in both variables have a calculated r greater than the r of the table (0.254), so it is declared valid

and suitable for use as a measuring tool. The reliability test resulted in a Cronbach's Alpha coefficient of 0.918 for the perception variable and 0.871 for the behavioral variable; both are above the threshold of 0.70 and are classified as very reliable. Thus, the research instrument has high internal consistency and can be trusted to measure farmers' perception and behavior.

Normality Test and Relationship Test

Table 8. Normality Test Results (Shapiro–Wilk)

Variabel	W	Say.	Verdict
Perception	0,970	0,142	Normal (p > 0,05)
Behavior	0,968	0,120	Normal (p > 0,05)

Table 9. Results of the Perceptual and Behavioral Relationship Test

Analysis	Coeficin	Sig. (2-tailed)	N	Verdict
Pearson	0,612	0,000	60	Signifikan
Spearman (comparator)	0,568	0,000	60	Signifikan

The Shapiro–Wilk test showed that the perception score ($W = 0.970$; $p = 0.142$) and the behavior score ($W = 0.968$; $p = 0.120$) were both normally distributed ($p > 0.05$). Since the assumption of normality was met, the relationship test used the Pearson Product Moment correlation. The result was a correlation coefficient of 0.612 with a significance of 0.000 ($p < 0.05$), so that H0 was rejected and H1 was accepted: there was a significant positive relationship between farmers' perception and behavior. The value of the coefficient was classified as a medium to strong correlation. The Spearman Rank correlation as a comparison provided consistent conclusions ($\rho = 0.568$; $p = 0.000$). The direction of the positive relationship shows that the better the perception of farmers towards artificial feed, the better their behavior in its application.

Discussion

The results of the study show that farmers' perception of artificial feed-based milkfish cultivation is in the good category. This positive assessment is in line with empirical evidence that artificial feed management can support milkfish growth if the dosage and formulation are right. Linayati et al. (2022) showed that the addition of Kaempferia galanga to certain feed doses affects milkfish growth, while Putriani et al. (2024) reported that olive oil supplementation in commercial feed can optimize seed growth and survival. Barbosa et al. (2024) affirm that feed is the main determinant of nutrient flow and production efficiency in aquaculture systems. Evidence of this kind of benefit, if felt directly by farmers, will form a positive perception of feed technology.

The main finding of this study is that there is a significant positive relationship between farmers' perceptions and behaviors ($r = 0.612$; $p < 0.05$). These results reinforce the theoretical framework that states that perception is a cognitive process that shapes the way an individual perceives an object, and that understanding subsequently influences his or her actions or behaviors (Robbins & Judge, 2020; Gibson et al., 2021). In the context of cultivation, farmers who have a positive perception of the benefits, effectiveness, and convenience of artificial

feed tend to implement better feeding practices, such as scheduling accuracy, dose adjustment to the number and size of fish, and observation of fish responses. These findings are consistent with Putri et al. (2022) and Nawari et al. (2022) who conclude that farmers' perceptions play an important role in decision-making on the implementation of aquaculture innovations.

The correlation coefficient, which is classified as moderate-strong, shows that perception is an important factor, but not the only determinant of behavior. Other factors such as cultivation experience, feed cost and availability, extension access, and pond conditions also play a role (Riany et al., 2023; Asruddin et al., 2026). Irdiana et al. (2023) place extension as a means of improving the knowledge, skills, attitudes, and behaviors of business actors in an integrated manner. Thus, the formation of positive perceptions needs to be accompanied by strengthening technical skills so that they can be translated into consistent cultivation behavior.

Practically, the results of this study imply that the extension and mentoring program should integrate two aspects at once: build positive perceptions through the delivery of information on the benefits of artificial feed, and strengthen concrete practices such as determining feed dosage, accuracy of feeding schedules, observation of fish responses, water quality management, feed storage, and post-harvest recording and evaluation. This integrated approach is expected to be able to encourage more efficient and sustainable changes in cultivation behavior.

CONCLUSION

Farmers' perception of artificial feed-based milkfish cultivation in Kabuloang Village was in the good category (average score of 35.10), and farmers' behavior was also in the good category (average score of 35.80). The research instrument proved to be valid and very reliable (Cronbach's Alpha 0.918 and 0.871). The results of the Pearson correlation test ($r = 0.612$; $p = 0.000 < 0.05$) showed that there was a significant and moderate-strong positive relationship between farmers' perception and behavior. Thus, the better the farmers' perception of artificial feed, the better their behavior in its application. It is recommended that the extension program integrate the formation of positive perceptions with assistance in feeding practices, and that follow-up research involve other variables such as experience, economic factors, and institutions to explain farmers' behavior more comprehensively.

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REFERENCES

Amelia, R. S. (2024). Perancangan dan implementasi sistem pakan ikan otomatis budidaya ikan bandeng berbasis IoT. Jurnal Profesi Insinyur Universitas Lampung.

Asruddin, Nadja, R. A., Salam, M., & Arief, A. A. (2026). Determinants and allocative efficiency of milkfish (Chanos chanos) production in polyculture

systems in Pangkep District, Indonesia. Asian Journal of Agriculture, 10(1), g100159. https://doi.org/10.13057/asianjagric/g100159

Barbosa, A. P. D., Kosten, S., Muniz, C. C., & Oliveira-Junior, E. S. (2024). From feed to fish—nutrients' fate in aquaculture systems. Applied Sciences, 14(14), 6056. https://doi.org/10.3390/app14146056

Boyd, C. E., & Tucker, C. S. (2020). Pond aquaculture water quality management. Springer.

Da Costa, R., Rebhung, F., & Sunadji, S. (2023). Pengaruh penambahan fermentasi ampas kelapa dan dedak halus (padi) dalam pakan terhadap pertumbuhan ikan bandeng (Chanos chanos). Jurnal Aquatik, 6(2), 52–57. https://doi.org/10.35508/aquatik.v6i2.12839

Deran, M. Y., et al. (2022). Efektivitas substitusi tepung ikan dengan tepung ampas kelapa terhadap pertumbuhan ikan bandeng. Jurnal Vokasi Ilmu-Ilmu Perikanan.

Dewi, L. G. T., & Sanjaya, N. A. (2023). Sistem pemberian pakan ikan otomatis berbasis Internet of Things. JELIKU.

FAO. (2020). Milkfish aquaculture in Southeast Asia. Food and Agriculture Organization of the United Nations.

Gibson, J. L., Ivancevich, J. M., Donnelly, J. H., & Konopaske, R. (2021). Organizations: Behavior, structure, processes. McGraw-Hill.

Hidayat, T., et al. (2023). Perilaku petambak dalam penerapan budidaya ramah lingkungan. Jurnal Sosial Perikanan.

Irdiana, E., Nurliza, N., & Kurniati, D. (2023). Keberhasilan penyuluhan melalui karakteristik penyuluh dan petani. Jurnal Agribisnis Indonesia, 11(2), 247–261. https://doi.org/10.29244/jai.2023.11.2.247-261

Kementerian Kelautan dan Perikanan (KKP). (2021). Komoditas budidaya prioritas nasional. Jakarta: KKP.

Kotler, P., & Keller, K. L. (2021). Marketing management (16th ed.). Pearson.

Linayati, L., Mardiana, T. Y., Yahya, M. Z., & Furoidah, A. F. (2022). The effect of adding Kaempferia galanga on different dosages of artificial feed on the growth of milkfish (Chanos chanos). Sains Akuakultur Tropis, 6(1), 75–80. https://doi.org/10.14710/sat.v6i1.12983

Nawari, et al. (2022). Persepsi petambak terhadap inovasi budidaya perikanan. Jurnal Penyuluhan dan Sosial Perikanan.

Putri, R. E., et al. (2022). Persepsi petambak terhadap manfaat dan risiko inovasi budidaya. Jurnal Sosial Ekonomi Perikanan.

Putriani, H., Lumbessy, S. Y., & Mukhlis, A. (2024). Optimizing growth and survival of milkfish (Chanos chanos) fry by olive oil supplementation in commercial feed. Journal of Fish Nutrition, 4(2), 83–99. https://doi.org/10.29303/jfn.v4i2.5103

Ramadana, D., et al. (2022). Uji kecernaan corn gluten meal sebagai bahan baku pakan ikan bandeng. Leuit Journal of Local Food Security.

Riany, C. F., Partelow, S., & Nagel, B. (2023). Governance challenges for Indonesian pond aquaculture: A case study of milkfish production in Gresik. Frontiers in Aquaculture, 2, 1254593. https://doi.org/10.3389/faquc.2023.1254593

Robbins, S. P., & Judge, T. A. (2020). Organizational behavior (18th ed.). Pearson.