

## OPTIMALIZING THE ROLE OF FISHERIES EXTENTION WORKERS IN FRESHWATER AQUACULTURE IN EAST BALIKPAPAN SUB- DISTRICT AT BALIKPAPAN CITY

### Optimalisasi Peran Penyuluh Perikanan Dalam Usaha Budidaya Perikanan Air Tawar Di Kecamatan Balikpapan Timur Kota Balikpapan

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#### ABSTRACT

The aim of this research is to assess the role of fisheries extension in the development of catfish farmer groups in East Balikpapan Subdistrict. The study was carried out from July to August in East Balikpapan Subdistrict, Balikpapan City, using a census sampling method. Data were analyzed using a quantitative descriptive approach with a Likert scale model. The findings indicate that the role of fisheries extension agents in the business development of catfish farming can be evaluated both partially and cumulatively. Partially, the role of extension agents is categorized as "Medium," with the following interval scores for each indicator: motivator at 9.47, educator at 9.79, catalyst at 9.32, organizer at 9.21, communicator at 8.42, and advisor at 9.79. Cumulatively, the role of extension agents in group development is also at a "Medium" level, with a score of 56. According to the catfish farmer groups, the role of extension agents in improving business productivity is deemed sufficiently effective in helping farmers enhance their cultivation skills toward better and more productive outcomes.

Keywords: Role of fisheries extension workers, Linkage to business improvement

#### ABSTRAK

Tujuan dari penelitian ini adalah untuk mengevaluasi penyuluhan perikanan berperan dalam pengembangan usaha kelompok pembudidaya di Kecamatan Balikpapan Timur. Penelitian ini dilaksanakan dari Bulan Juli hingga Agustus 2024 di Kecamatan Balikpapan Timur, Kota Balikpapan. Metode pengambilan sampel yang digunakan adalah metode sensus, dan data dianalisis dengan metode deskriptif kuantitatif menggunakan model skala Likert. Hasil penelitian menunjukkan bahwa penyuluh perikanan berperan dalam pengembangan usaha kelompok budidaya ikan lele dapat dilihat dari dua aspek: parsial dan akumulatif. Secara parsial, penyuluh perikanan berperan berada pada kategori "Sedang," dengan rincian nilai interval skor masing-masing indikator sebagai berikut: motivator sebesar 9,47, edukator sebesar

9,79, katalisator sebesar 9,32, organisator sebesar 9,21, komunikator sebesar 8,42, dan penasihat sebesar 9,79. Secara akumulatif, penyuluh perikanan berperan dalam pengembangan kelompok juga berada pada tingkat "Sedang," dengan nilai skor 56. Menurut kelompok pembudidaya ikan, peran penyuluh perikanan cukup baik dalam membantu mereka meningkatkan kemampuan budidaya menuju hasil yang lebih baik dan produktif.

Kata kunci: Peran penyuluh perikanan, keterkaitan dengan peningkatan usaha

## INTRODUCTION

Balikpapan City is one of the cities in East Kalimantan Province with an area of about 503.3 km<sup>2</sup>, which covers 160.10 km<sup>2</sup> of sea waters. Administratively, the city is bordered by Kutai Kartanegara Regency to the north, North Penajam Paser Regency to the west, and the Makassar Strait to the south and east (BPS Balikpapan City, 2022). Balikpapan is divided into 6 sub-districts, including East Balikpapan District. This sub-district is not only known as an international and domestic tourist destination, but also as one of the main producers of inland fishery products in this city. Over the past three years, inland fisheries production, especially pond cultivation, has increased rapidly (BPS Balikpapan City, 2022).

The freshwater fish farming system in East Balikpapan has developed rapidly, including the use of containers, management, and selection of cultivated biota. Catfish, or catfish, is one of the most commonly cultivated freshwater consumption fish. Catfish (*Clarias* sp.) are known to be adaptable to various freshwater conditions, including polluted waters such as waterways and organic waste (Kordi, 2013). Many cultivators in East Balikpapan District choose to cultivate catfish because of the convenience and potential profits of this business.

To improve skills and knowledge in catfish farming, the cultivators formed a cultivation group known as POKDAKAN. This group usually receives guidance from fisheries extension workers. Counseling must be carried out with a participatory approach and adjusted to the needs and conditions of business actors (Indraningsih *et al.*, 2010). The success of the aquaculture business is highly dependent on the role of fisheries extension workers, including in East Balikpapan District, where there are 18 extension workers, three of whom are specialized in fisheries. One of these extension workers focuses on catfish cultivation guidance, with the task of helping to develop the business through extension activities in the fisheries sector.

Law number 16 of 2006 concerning the Agriculture, Fisheries, and Forestry Extension System defines extension as a learning process that helps main actors and businesses to be able to organize themselves, access market information, technology, capital, and other resources to increase productivity, efficiency, income, and welfare as well as environmental conservation. Although the main fisheries actors have developed institutions, most of them are still traditionally managed small fisheries enterprises with poor management and limited access to information and technology. The current training has not fully affected business sustainability (Indra, 2022). The fisheries business needs support from the central and regional governments to facilitate and empower the institutions of the main fisheries actors to become strong and independent organizations.

## METHODS

This research was carried out in East Balikpapan District with stages ranging from pre-survey to research. This research lasted for 2 months, from July to August 2024.

### A. Data Collection Methods

This study uses a survey method (direct observation) and interviews with respondents through questionnaires. The data collected includes primary and secondary data. Primary data was obtained through direct observation at the research site and interviews with catfish farming groups. Secondary data is collected from various written sources, such as literature studies taken

from libraries, as well as references from related agencies such as the Central Statistics Agency, the Barnacle Agricultural Extension Center (BPP), the Balikpapan City Food, Agriculture, and Fisheries Service (DP3), as well as the monograph of East Balikpapan District, and other relevant sources.

### B. Sampling Method

The sample of this study was taken using the census method, which is a technique in which all members of the population are sampled (Sugiyono, 2004). In this study, the sample was 19 people.

### C. Data Analysis

Data analysis was carried out using quantitative descriptive analysis with the Likert scale model. The Likert scale model is a form of questionnaire used to express respondents' attitudes in the form of answers, each of which has its own score, based on positive or negative question items. Each answer was given a score of 3-1, with an interval of 3 High, 2 Medium, and 1 Low (Subana & Sudrajat, 2001). The determination of the assessment score can be seen in the following Table 1.

Table 1. Fisheries extension role score

No.	Indikator	Score Minimum	Score maximum
1.	Fisheries Extension Workers as Motivators	4	12
2.	Fisheries Extension Worker as an Educator	4	12
3.	Fisheries Extension Officers as Catalysts	4	12
4.	Fisheries Extension Officers as Organizers	4	12
5.	Fisheries Extension Worker as a Communicator	4	12
6.	Fisheries Extension Officer as Advisor	4	12
<b>Sum</b>		<b>24</b>	<b>72</b>

To find out the number of interval classes needed, the role of fisheries extension workers in groups can be differentiated into 3 categories: high, medium, and low categories respectively for the role of fisheries extension workers, therefore to determine the class interval in each category can be determined using the formula according to Suparman, (1990) as follows:

$$C = \frac{X_n - X_i}{K} = \frac{12 - 4}{3} = 3$$

Information:

- C : Class intervals
- K : Number of classes
- X<sub>n</sub> : Maximum score
- X<sub>i</sub> : Minimum score

The results of the calculation above can be used to make criteria for the class level of the role of fisheries extension workers. To see the partial extension role level category, see Table 2.

Table 2. Partial category of fisheries extension role class interval

No.	Indicators	Class intervals	Level
1.	Fisheries Extension Agents Serve as Motivators	4 – 6	Low
		7 – 9	Medium
		10 - 12	High
2.	Fisheries extension workers play the role of educators	4 – 6	Low
		7 – 9	Medium
		10 - 12	High
3.	Fisheries extension workers play the role of catalysts	4 – 6	Low
		7 – 9	Medium
		10 - 12	High
4.	Fisheries Extension Officers Serve as Organizers	4 – 6	Low
		7 – 9	Medium
		10 - 12	High
5.	Fisheries extension workers play the role of communicators	4 – 6	Low
		7 – 9	Medium
		10 - 12	High
6.	Fisheries Extension Officer Acts as an Advisor	4 – 6	Low
		7 – 9	Medium
		10 - 12	High

Meanwhile, to find out the number of interval classes cumulatively needed, it can be divided into 3 categories, namely high, medium, and low categories. The interval is determined using the following formula:

$$C = \frac{X_n - X_i}{K} = \frac{72 - 24}{3} = 16$$

Information:

- C : Class intervals
- K : Number of classes
- X<sub>n</sub> : Maximum score
- X<sub>i</sub> : Minimum score

The results of the calculation above can be used to make the criteria for the class of fisheries extension officers to play a role in fishermen groups in East Balikpapan District. To see the category of fisheries extension officers playing a role cumulatively, you can see Table 3.

Table 3. The category of fisheries extension class interval plays a cumulatively role

No.	Class intervals	Class Criteria
1.	24 – 40	Low
2.	41 – 56	Medium
3.	57 – 72	High

To see the relationship between fisheries extension workers and business productivity, the method used is descriptive.

## RESULT

### A. The role of fisheries extension workers

Table 4. Table of indicators of the role of Fisheries extension workers cumulatively

No.	Indicators	Class intervals	Interval values	Category
1	Motivator	4 – 6	9,47	Medium
		7 – 9		
		10 – 12		
2	Educator	4 – 6	9,79	Medium
		7 – 9		
		10 – 12		
3	Catalyst	4 – 6	9,32	Medium
		7 – 9		
		10 – 12		
4	Organizers	4 – 6	9,21	Medium
		7 – 9		
		10 – 12		
5	Communicators	4 – 6	8,42	Medium
		7 – 9		
		10 – 12		
6	Advisor	4 – 6	9,79	Medium
		7 – 9		
		10 – 12		
<b>Sun</b>		<b>24 – 40</b>	<b>56</b>	<b>Medium</b>
		<b>41 – 56</b>		
		<b>57 – 72</b>		

The measurement of fisheries extension workers playing a role in the business development of catfish farming groups in East Balikpapan District shows that the role is in the medium category, with an average score of 56, according to the class interval of 41-56. This means that fisheries extension workers play a significant role in supporting the development of catfish farming businesses, in accordance with the medium-level classification. This is because cultivators have felt the benefits of fisheries extension workers who play a role ranging from motivators, educators, catalysts, organizers, communicators, to advisors.

From the assessment of respondents related to fisheries extension workers in the business development of catfish farming groups, it can be seen that fisheries extension workers who play a role as a motivator have an average score of 9.47 which is included in the medium category. Fisheries extension workers who act as educators have an average score of 9.79 which is also in the medium category, while Fisheries extension workers who act as catalysts reach an average score of 9.32 which is also classified as moderate. In addition, fisheries extension workers acted as organizers at an average score of 9.21, fisheries extension workers acted as communicators at an average score of 8.42, and fisheries extension workers acted as advisors at an average score of 9.79, all of which were included in the medium category. Overall, fisheries extension workers play a role in the business development of catfish farming groups in East Balikpapan District, Balikpapan city is considered moderate, which means that their role is quite significant.

## DISCUSSION

### 1. Fisheries Extension Officers Serve as Motivators

Table 5. Assessment of fisheries extension indicators plays a role as a motivator

Class intervals	Interval values	Category
4 – 6		
7 – 9	9,47	Medium
10 – 12		

In Table 5, it can be seen that fisheries extension workers acting as motivators have an average interval value of 9.47, which places them in the medium category. This shows that although fisheries extension workers have provided motivation to cultivators, these efforts have not been fully optimal. The reason is that extension workers have not intensively attended and interacted with group members individually. As a result, the motivation provided by extension workers is still felt to be less than optimal by cultivators, because it is more often given in the context of group meetings, not personally to each member outside the group meeting.

### 2. Fisheries Extension Agents Serve as Educators

Table 6. Assessment of fisheries extension indicators plays the role of educators

Class intervals	Interval values	Category
4 – 6		
7 – 9	9,79	Medium
10 – 12		

Table 6 shows that fisheries extension workers acting as educators have an average interval value of 9.79, which indicates that fisheries extension workers play the role of educators and information disseminators at a moderate level. This means that fisheries extension workers have played a sufficient role in disseminating knowledge and information, but have not fully maximized their role as educators. Cultivators feel that extension workers have not been fully effective in improving their knowledge and information about cultivation. This is due to the fact that the delivery of information is more often theoretical than practical, so cultivators are sometimes slow or rarely apply the knowledge provided.

### 3. Fisheries Extension Officers Serve as Catalysts

Table 7. The extension indicator table acts as a catalyst

Class intervals	Interval values	Category
4 – 6		
7 – 9	9,32	Medium
10 – 12		

In Table 7, it can be seen that fisheries extension workers acting as catalysts have an average interval value of 9.32, which shows that their role as agents of change and renewal is at a moderate level. This indicates that extension workers are quite effective in bringing new ideas and ideas as well as changes, but they are not fully optimal in building and carrying out this role as a bringer of innovation. As a result, cultivators have not fully felt the benefits of the presence of extension workers appropriately and comprehensively. This ineffectiveness is caused by the role of extension workers as catalysts who tend to only run programs from the

government, not based on real needs in the field. Therefore, the innovations brought by extension workers are often not in accordance with the specific needs of cultivators.

#### 4. Fisheries Extension Officers act as organizers

Table 8. Table of indicators of fisheries extension workers acting as organizers

Class intervals	Interval values	Category
4 – 6		
7 – 9	9,21	Medium
10 – 12		

Table 8. shows that fisheries extension workers play the role of organizers in the catfish farming group has an average interval value of 9.21. This shows that the role of extension workers as directors, guides, and designers in the group is at a moderate level. Although extension workers have been quite good in carrying out their roles, the group still feels that the role is not optimal. Cultivators hope that extension workers can better enliven group meetings and increase the frequency of meetings, so that groups can become more directed, coordinated, and well guided. This finding is in line with the research of Mularahman *et al.*, (2023), which states that extension workers as organizers and dynamists use farmer groups as a communication medium to convey the results of socialization to the community, facilitating the dissemination of important information in the development of the agricultural sector.

#### 5. Fisheries Extension Officers Serve as Communicators

Table 9. Table of indicators of fisheries extension workers acting as communicators

Class intervals	Interval values	Category
4 – 6		
7 – 9	8,42	Medium
10 – 12		

In Table 9, it can be seen that the average value of the interval between fisheries extension workers acting as communicators is 8.42, which places it in the medium category. This shows that although extension workers have played a sufficient role in conveying the message, this role is not optimal. This imperfection is caused by the lack of individual meetings or visits of extension workers to group members, so that cultivators feel that communication with extension workers is limited. Cultivators assessed that communication or discussion with extension workers only occurred in the context of group meetings, not individual meetings, even though they really hoped for individual meetings so that their activities could be more directed. This finding is contrary to the research of Anuar Riduansyah *et al.*, (2022) which shows that extension workers have played a good role as communicators in helping groups conserve mangrove forests, understand and access information more easily.

#### 6. Fisheries Extension Officers act as advisors

Table 10. Table of indicators of the role of extension workers as advisors

Class intervals	Interval values	Category
4 – 6		
7 – 9	9,79	Medium
10 – 12		

In Table 10, it can be seen that fisheries extension workers acting as advisors have an average interval value of 9.79. This shows that the role of extension workers in providing advice, input, and support is in the medium category. Although extension workers are quite active, their role as advisors has not been fully maximized. The limited meeting and time that extension workers have in accompanying the group may be the reason why their suggestions and inputs have not been fully felt by the cultivators.

### **B. Fisheries extension workers play a role in the productivity of catfish farming business (*Clarias sp.*)**

Counseling is often interpreted as information dissemination, explanation process, non-formal education, social behavior change, technical and social innovation, social change, community empowerment, and community strengthening (Mardikanto, 2009). With counseling, the main actors are expected to be able to help themselves (self-help) thanks to the ingrained spirit of mutual cooperation, as well as together and with tolerance to solve the problems faced. These problems arise due to the existence of wants and needs, namely:

1. The desire that every farmer and his family want to increase production in their farming business to get the maximum income, they want to live a prosperous life;
2. They are aware that an increase in production, income and welfare will only be achieved if they change their farming methods, they need methods and technology for their farming.

The function of extension workers is to awaken and stimulate public awareness so that they can independently meet their needs. Therefore, counseling must function to help cultivators obtain these needs (Kartasapoetra, 1994). Agricultural extension workers need to strengthen their role in providing information, knowledge, and guidance to farmers (Aulia *et al.*, 2023). The main goal of fisheries development policy is to increase fisheries production (Ilham, 2010). Extension activities have a long-term goal in the future is to improve the living standards of the farming community and achieve more guaranteed welfare. To assess whether extension workers contribute to improving the lives of cultivators, it can be seen from the productivity of their businesses and the profits obtained. The results of the interview show that the profit that cultivators get from receiving is 30%. Table 11 shows the trend of profits from cultivation businesses. The profits obtained by cultivators are varied, some are high and some are low depending on the results of the cultivation business they are doing. This is due to the marketing process that is often carried out individually through the subscription of each buyer and the difference in selling prices offered by each cultivator, so that the profits are uneven among cultivators.

Table 11. Average profit of a cultivator for one year

No.	Name	Average profit of enlargement per year (Rp)	Average annual hatchery profit (Rp)	Total average profit per year (Rp)
1	Badariansyah	9.180.000	4.410.000	1.132.500
2	Arifudin	4.625.250	-	660.750
3	M. Husin	28.758.500	-	2.614.409
4	Makhmud	-	64.197.000	5.836.090
5	Said Usman	1.904.000	61.089.750	6.299.375
6	Sugiono	-	1.312.500	656.250
7	Abdul Hadi	3.600.000	-	900.000
8	Muhadi	-	10.500.000	1.750.000
9	Suparno	1.350.000	20.962.500	2.478.167
10	Sudar	-	13.782.000	1.722.750



11	Yerrie Hes	255.000	-	255.000
12	M. Sukarno	2.592.000	-	518.400
13	Samaun	540.000	4.485.000	1.256.250
14	Saleh	25.272.000	79.800.000	12.506.000
15	Tuti	3.078.000	-	513.000
16	Jamaludin	-	2.436.000	609.000
17	Edi	22.464.000	4.304.000	2.042.181
18	M. Muslih	26.379.000	92.400.000	10.798.090
19	Samsu	22.788.000	5.250.00	2.548.909

In carrying out extension activities, extension workers have had an impact on the cultivation business of the *Clarias* sp. and Karya Subur. Although extension workers do not directly focus on the aspect of profit, such as how to obtain large profits or analyze feasible profits, they pay attention to other aspects that are also considered important for cultivators, namely capital, management, and marketing. In terms of capital, cultivators feel quite helped because extension workers teach how to make good and correct proposals. This gives you an edge when applying for help, so proposals are more likely to be prioritized. Extension workers also guide the process of making proposals so that they are prepared by the cultivators themselves, ensuring that the proposals are in accordance with their needs and can be used properly.

In terms of management, the extension worker advises cultivators to make a report on production results so that the progress and results of cultivation can be recorded properly. Extension workers also focus their activities on more productive cultivation methods to develop production, so that cultivators can meet market demand with high cultivation yields.

However, in the marketing aspect, cultivators feel that extension workers have not made a significant contribution. Production marketing has not been done in bulk or in groups, and the products are still marketed individually, which leads to inequality because not all buyers can afford to buy in the same amount. Nevertheless, the *Clarias* sp. and Karya Subur feel that extension workers have been quite helpful in improving their cultivation skills and towards better results. This is in accordance with the statement of Kartosapetro, (1994) that extension workers aim to empower cultivators and help them improve their standard of living through cultivation methods and income.

## CONCLUSION

Fisheries extension workers play a role in the business development of catfish farming groups can be seen from two perspectives: partially and cumulatively. Partially, the indicator that fisheries extension workers act as motivators, educators, catalysts, organizers, communicators, and advisors is at a "moderate" level. Meanwhile, cumulatively, extension workers play a role in growing and developing groups are also at a "moderate" level. Fish farmers feel that fisheries extension workers play a quite effective role in helping them improve their cultivation skills towards better and productive results.

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