

Factors Affecting the Performance of Fisheries Extension Workers in Improving the Class of Fish Farming Groups in East Java

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Abstract

This study aims to comprehensively examine the factors influencing the performance of Fisheries Extension Workers in improving the classification of fish cultivator groups in East Java. Conducted at BPPP Banyuwangi, chosen for its comprehensive and accurate data, the study spanned two months from December 2022 to January 2023. The collected data was analyzed using descriptive and inferential statistics. Descriptive statistics were used to describe the profile of 15 respondents and the distribution of questionnaire answers. Inferential analysis utilized multiple linear regression to test the influence of independent variables (mastery of material, quality of material, method of delivering material, and volume of counseling) on the dependent variable (performance of Fisheries Extension Workers). The analysis revealed that media and extension materials significantly impact instructors' performance. Improved media and materials make it easier for fish farmers to understand and apply the knowledge provided. Of the four factors analyzed—number and quality of human resources, availability of extension facilities and infrastructure, work procedures, and media and extension materials—only the latter showed a very significant correlation with instructor performance. The findings highlight that the better the media and extension materials, the more effectively instructors can perform their duties and enhance fish farmers' knowledge. This study provides insights into existing constraints and opportunities, offering recommendations for more effective and sustainable strategies to improve the performance of Fisheries Extension Workers.

Keywords: Fisheries Extension Workers; Performance Improvement; Multiple Linear Regression; East Java

1. Introduction

Fisheries extension is one of the key components in developing the fisheries sector in East Java. Fisheries Extension Workers play an important role in increasing the knowledge, skills and capacity of fish cultivator groups, which in turn can encourage increased production and quality of aquaculture products (Marlina and Sutrisno, 2019). However, the performance of Fisheries Extension Workers in carrying out their duties is influenced by various factors that influence their effectiveness and efficiency. These factors

can come from internal aspects of the instructor himself or from external conditions surrounding his work environment.

In several regions of Indonesia, the ability of fish farmers is limited by factors such as inadequate support for fisheries production facilities, lack of training, and limited extension services (Hariyadi et al., 2014). Rural aquaculture is characterized by small-scale operations using conventional techniques, limited access to capital, technology, information, and markets, and low production capacity, making it difficult to increase productivity (Effendi, 2018).

From an internal perspective, the competence of extension workers, such as technical knowledge, communication skills, and work experience, significantly determines how well they can transfer knowledge and technology to fish farming groups (Wahyudi and Nurlaila, 2020). Additionally, work motivation, professional attitudes, and the ability to adapt to changes are also important factors influencing the performance of extension workers. Technical competence includes in-depth knowledge of fish farming techniques, fish health management, and aquaculture environmental management (Handoko and Widodo, 2018). External factors include government support, availability of facilities and infrastructure, and access to the latest information and technology. Government policies and programs that support fisheries extension can be a driving force for improving the performance of extension workers (Ministry of Marine Affairs and Fisheries, 2021). Extension workers require access to adequate resources, including support facilities such as visual aids, the latest aquaculture technology, and sufficient transportation to reach aquaculture locations scattered across various regions (Setiawan and Pranoto, 2020). Additionally, access to up-to-date information on technological advancements in fisheries and market conditions is essential for extension workers to provide relevant and current advice to fish farming groups (Surya and Kurniawan, 2019).

Social interaction between extension workers and fish farming groups is also an important external factor. The education level and openness of fish farming groups to innovation will influence how well they can accept and apply the advice from extension workers (Prasetyo and Sari, 2021). The financial capability of fish farming groups also affects the adoption of new technologies, as these often require significant initial investment (Yulianto and Wulandari, 2020). Furthermore, fisheries extension workers must be able to collaborate with various stakeholders, including research institutions, universities, and the private sector, to ensure they always receive the latest information and technology and can provide innovative solutions to fish farming groups (Sutanto and Dewi, 2019). Fisheries extension plays a strategic role in developing the fisheries sector in East Java, a province with great potential in aquaculture. Fisheries extension workers are tasked with enhancing the knowledge, skills, and capacities of fish farming groups. Thus, they can adopt better aquaculture practices and increase the productivity and quality of their yields (Marlina and Sutrisno, 2019). However, the performance of fisheries extension workers in carrying out their duties is significantly influenced by various factors, both internal aspects of the extension workers themselves and the external conditions surrounding their work environment. From an internal perspective, the competence of extension workers is crucial. Technical competence includes deep knowledge of fish farming techniques, fish health management, and aquaculture environmental management (Handoko and Widodo, 2018). Extension workers must also have good communication skills so that the information and technology they convey can be well-received and understood by fish farming groups (Wahyudi and Nurlaila, 2020). Moreover, extensive work experience in fisheries will enrich the extension workers' insights and enhance their credibility in the eyes of fish farming groups. Work motivation, professional

attitudes, and the ability to adapt to changes and new challenges are also important aspects that influence the performance of extension workers.

External factors are equally important. Government support in the form of proactive policies and capacity-building programs for fisheries extension workers greatly influences their performance (Ministry of Marine Affairs and Fisheries, 2021). Extension workers need access to adequate resources, including support facilities such as visual aids, the latest aquaculture technology, and sufficient transportation to reach aquaculture locations scattered across various regions (Setiawan and Pranoto, 2020). Additionally, access to up-to-date information on technological advancements in fisheries and market conditions is essential for extension workers to provide relevant and current advice to fish farming groups (Surya and Kurniawan, 2019). Social interaction between extension workers and fish farming groups is also an important external factor. The education level and openness of fish farming groups to innovation will influence how well they can accept and apply the advice from extension workers (Prasetyo and Sari, 2021). The financial capability of fish farming groups also affects the adoption of new technologies, as these often require significant initial investment (Yulianto and Wulandari, 2020).

Additionally, fisheries extension workers must be able to collaborate with various stakeholders, including research institutions, universities, and the private sector, to ensure they always receive the latest information and technology and can provide innovative solutions to fish farming groups (Sutanto and Dewi, 2019). Such collaboration can open access to the latest research, additional resources, and better training opportunities. Support from the private sector can also be a significant resource for the development of the fisheries sector. Investments from the private sector in the form of partnerships can accelerate the adoption of new technologies and increase the production capacity of fish farming groups. With these partnerships, fisheries extension workers can act as bridges between fish farming groups and investors, ensuring that needs and challenges in the field are effectively addressed.

This study aims to comprehensively examine the factors influencing the performance of fisheries extension workers in improving the class of fish farming groups in East Java. Through this approach, it is expected to obtain a clear picture of the existing obstacles and opportunities, as well as recommendations for more effective and sustainable strategies for improving the performance of fisheries extension workers.

2. Research methods

This research was conducted in East Java at the BPPP Banyuwangi site, selected through purposive sampling due to its comprehensive and accurate data essential for the study. The research spanned two months, from December 2022 to January 2023, with the primary objective of analyzing the performance of extension workers in enhancing the skills of fish cultivator groups.

Research Approach

A quantitative approach with survey methods was employed to identify and analyze the factors influencing the performance of Fisheries Extension Workers in improving the classification of fish cultivator groups in East Java. This approach was chosen for its ability to facilitate extensive data collection and enable detailed statistical analysis, which is essential for examining relationships between various variables (Hair et al., 2010).

Data Collection Instrument

The primary data collection instrument was a specifically designed questionnaire, divided into several

sections:

1. **Demographic Data:** This section gathered information on the age, gender, education level, and work experience of the extension workers.
2. **Extension Officer Competencies:** This section assessed technical knowledge, communication skills, and work experience, using a 1-5 Likert scale to gauge these competencies.

The questionnaire was designed following best practices to ensure reliability and validity (Hair et al., 2010). It underwent a pilot test to refine the questions and format.

Data Analysis

The collected data were analyzed using both descriptive and inferential statistics. Descriptive statistics were employed to profile the 15 respondents and summarize the distribution of their questionnaire responses. This involved calculating means, standard deviations, and frequencies to provide a comprehensive overview of the data (Hair et al., 2010).

Inferential analysis utilized multiple linear regression to test the impact of independent variables—mastery of material, quality of material, method of delivering material, and volume of counseling—on the dependent variable, which is the performance of Fisheries Extension Workers. Multiple linear regression is a robust method for analyzing the relationship between one dependent variable and several independent variables (Hair et al., 2010).

The regression model was specified as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon$$

Where:

- Y represents the performance of Fisheries Extension Workers
- X_1 represents mastery of material
- X_2 represents quality of material
- X_3 represents method of delivering material
- X_4 represents volume of counseling
- β_0 is the intercept
- $\beta_1, \beta_2, \beta_3, \beta_4$ are the coefficients for the independent variables
- ϵ is the error term

3. Results and Discussion

In this research, we aimed to identify and analyze the factors influencing the performance of Fisheries Extension Workers. Specifically, we examined the influence of four key variables: mastery of extension materials, availability of extension facilities and infrastructure, media and extension materials, and work procedures. The research findings, based on the SPSS analysis, produced the following regression equation:

$$Y = 49.077 + 13.064X_1 + 11.074X_2 + 7.410X_3 + 8.948X_4 + \epsilon$$

Each coefficient in the regression equation represents the expected change in the dependent variable (Y) for a one-unit change in the respective independent variable (X), assuming all other variables are held constant.

1. **Mastery of Materials (X_1):** The coefficient for mastery of materials is 13.064. This suggests that for every unit increase in the mastery of materials, the performance of Fisheries Extension Workers is

expected to increase by 13.064 units, assuming other factors remain constant. However, the t-value (1.104) indicates that this effect is not statistically significant, meaning mastery of materials does not have a strong independent impact on performance.

2. **Availability of Facilities and Infrastructure (X₂):** The coefficient for the availability of facilities and infrastructure is 11.074. This implies that each unit increase in the availability of facilities and infrastructure would theoretically improve performance by 11.074 units. Similar to X₁X₁, the t-value (0.463) suggests this effect is not statistically significant, indicating that while important, this factor alone does not significantly influence performance.
3. **Media and Extension Materials (X₃):** The coefficient for media and extension materials is 7.410. This coefficient indicates that an increase in the quality of media and extension materials by one unit would increase instructor performance by 7.410 units. The t-value for this variable (1.969) is greater than the critical t-value, indicating a statistically significant impact. This underscores the importance of high-quality media and materials in enhancing the effectiveness of Fisheries Extension Workers.
4. **Work Procedures (X₄):** The coefficient for work procedures is 8.948. This means that improvements in work procedures are expected to boost instructor performance by 8.948 units for each unit increase. However, the t-value (0.129) suggests that this effect is not statistically significant, indicating that changes in work procedures alone may not substantially impact performance.

From this model it can be interpreted that high-quality media and extension materials enable cultivators to more easily understand and apply the knowledge provided by instructors. Effective media facilitates clear and engaging message delivery, while relevant and up-to-date materials ensure that useful information is provided. Moreover, the correlation coefficient (R) of 0.749 indicates a relatively strong positive relationship between the combined independent variables and the dependent variable. This means that the independent variables collectively explain a significant portion of the variance in the performance of Fisheries Extension Workers.

As this research is aimed to identify and analyze the factors influencing the performance of Fisheries Extension Workers, focusing on both internal and external factors related to their roles and responsibilities, the findings reveal that Internal factors significantly contributing to instructor performance included age, number of training sessions attended, and length of service. Age can influence performance in various ways, with younger instructors often having more energy and adaptability to new technologies, while older instructors possess more experience and practical knowledge, which aids in handling diverse field situations. Andriani (2018) found that older instructors tend to adopt a more mature approach in fisheries education.

Participation in training is crucial for enhancing the competencies and skills of instructors. Those who frequently attend training sessions tend to have broader and more up-to-date knowledge about aquaculture techniques and innovations, boosting their confidence in conveying information to fish cultivator groups. Sari et al. (2021) demonstrated a positive correlation between the amount of training attended and the performance of Fisheries Extension Workers in East Java. The length of service also influences performance, with longer-serving instructors generally displaying better performance due to their deeper understanding of the challenges faced by fish farmers. Mustofa et al. (2019) reported that experienced extension workers exhibit superior performance compared to their newer counterparts.

External factors outside the instructor's control also significantly impact their performance, such as the number of beneficiary businesses they manage. The quantity of these businesses can pose challenges, requiring instructors to divide their attention among many beneficiaries. However, this also provides

opportunities for practical competence development. Instructors with more beneficiaries gain extensive field experience and face various situations, enhancing their problem-solving and adaptability skills. Susilo and Nugroho (2020) found that instructors with a larger number of beneficiary businesses tend to have higher competence due to frequent interactions with diverse problems and challenges. Purnomo et al. (2019) also highlighted that the success of fisheries extension programs is linked to the quantity and quality of interactions between instructors and beneficiary businesses.

Furthermore, The SPSS analysis produced a regression equation indicating that media and extension materials significantly impact instructor performance. High-quality media and extension materials enable cultivators to understand and apply the knowledge provided by instructors more easily. This suggests that improved media and materials should be a priority for fisheries extension programs, as they enhance the effectiveness of knowledge transfer, leading to better productivity, sustainability, and economic well-being for fish farmers.

4. Conclusion

The study aimed to find and analyze the factors that affect the performance of Fisheries Extension Workers in East Java. By using detailed regression analysis, the study looked at how four key factors—mastery of materials, availability of facilities and infrastructure, media and extension materials, and work procedures—affected instructor performance. The results showed a strong positive connection between these factors and instructor performance, explaining around 74.9% of the variations in performance.

While mastery of materials and availability of facilities and infrastructure showed positive effects, they did not have a significant impact on performance. On the other hand, media and extension materials, with good quality and usefulness, significantly improved the performance of Fisheries Extension Workers. However, work procedures did not show a significant impact on performance.

Based on these findings, some recommendations were made to enhance the performance of Fisheries Extension Workers. These include prioritizing the development and distribution of high-quality and easily understandable media and extension materials. Regular training should also be provided to instructors on new media tools. Additionally, it was suggested that instructors gain practical experience and engage with diverse businesses to improve their problem-solving skills. Lastly, continued investment in facilities and infrastructure, along with policies supporting the improvement of extension services, can create a better environment for fisheries education.

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6. Reference

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