

ANALYSIS OF FISHERMEN PRODUCTIVITY BASED ON FISHING GEAR TYPES IN COASTAL AREAS

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Abstract

Fishermen productivity is an important aspect of coastal fisheries because it is closely related to catch efficiency, operational costs, income, and the sustainability of fishery resources. This study aims to analyze fishermen's productivity based on the types of fishing gear used in coastal areas and to identify factors influencing fishing performance. This research employed a qualitative descriptive approach. Data were collected through direct observation, in-depth interviews with fishermen, and documentation of fishing activities. The data were analyzed through data reduction, data presentation, and conclusion drawing, with source and technique triangulation used to ensure data validity. The results indicate that fishermen's productivity varies according to the type of fishing gear, fishing experience, operational practices, environmental conditions, and fish resource availability. Fishing gear with greater operational capacity provides wider access to fishing grounds and greater opportunities to obtain catches, but generally requires higher operational inputs. Meanwhile, simpler fishing gear is more accessible to small-scale fishermen because of its relatively low operational requirements, although its productivity is more dependent on nearshore fish availability and environmental conditions. The study also shows that fishermen's knowledge and experience play an important role in determining the effectiveness of fishing gear and fishing strategies. Therefore, improving fishermen's productivity requires the appropriate selection of fishing gear, enhancement of technical skills, access to fisheries and weather information, efficient management of operational costs, and implementation of sustainable fishing practices.

Keywords: Fishermen Productivity; Fishing Gear; Coastal Fisheries; Fishing Activities; Sustainable Fisheries

INTRODUCTION

Coastal areas are strategic regions that play an important role in supporting the livelihoods of communities, particularly through fisheries activities. Fisheries not only provide a source of animal protein for the population but also contribute significantly to household income, employment opportunities, and the local economy. For coastal communities, fishing activities are highly dependent on the availability of fish resources, environmental conditions, fishing technology, and the types of fishing gear used. Therefore, the productivity of fishermen is an important indicator for evaluating the performance and efficiency of capture fisheries activities.

Fishermen productivity can generally be measured by comparing the amount of fish catch obtained with the inputs used during fishing operations, such as fishing time, number of fishing trips, fuel consumption, labor, and fishing gear. Differences in fishing gear can result in different levels of fishing productivity because each type of gear has different characteristics, operational methods, target species, fishing areas, and levels of effectiveness. For example, fishing gear with a wider operational range may potentially produce a larger catch, while simpler fishing gear may require lower operational costs but generate a smaller catch. These differences make the analysis of productivity based on fishing gear important for understanding the efficiency of fishing activities in coastal communities.

The productivity of fishermen is also influenced by various internal and external factors. Internal factors include fishing experience, education, physical capability, technical skills, capital availability, and the ability to operate fishing equipment. Meanwhile, external factors include weather conditions, sea currents, fish availability, fishing grounds, market conditions, and technological development. Consequently, fishermen who use different types of fishing gear may demonstrate different levels of productivity even when operating within the same coastal area.

The selection of fishing gear is an important consideration in improving fishermen's economic welfare and maintaining the sustainability of fishery resources. The use of appropriate fishing gear can increase catch efficiency, reduce unnecessary operational costs, and improve fishermen's income. However, the increasing intensity of fishing activities may also create pressure on fish resources when fishing gear is operated without considering ecological conditions and sustainable fishing principles. Therefore, productivity analysis should not only focus on the quantity of fish caught but should also consider the efficiency of fishing operations and the sustainability of fisheries resources.

In many coastal communities, information regarding differences in productivity among fishermen using various types of fishing gear is still limited. This condition can make it difficult for fishermen, local governments, and fisheries stakeholders to determine appropriate strategies for improving fishing efficiency and fishermen's welfare. A comparative analysis of fishermen productivity based on fishing gear types can provide useful information regarding which fishing gear tends to generate higher catches and better operational efficiency under specific coastal conditions. . We cannot say that differences in fishermen productivity come only from how much gear can hold or how many fish are caught. The way fishing gear works well also depends on how experience the fishermen have. It also depends on fishing practices, the environment and what is needed to run the boat. Because of this this study gives a look, at how these things affect fishermen productivity in this specific coastal fishing community. I want to pay attention to how these factors change between different fishing gear types.

Based on these considerations, this study analyzes fishermen productivity based on the types of fishing gear used in coastal areas. The analysis is expected to identify differences in productivity among fishing gear types and provide an overview of the factors associated with fishermen's fishing performance. The results of this study are expected to contribute to the development of more efficient fishing practices, improvement of fishermen's income, and formulation of fisheries management strategies that are economically beneficial and environmentally sustainable.

RESEARCH METHODS

3.1 Research Design

This study employed a qualitative descriptive research approach to analyze fishermen's productivity based on the types of fishing gear used in coastal areas. A qualitative approach was selected because the study aimed to obtain an in-depth understanding of fishing activities, fishermen's experiences, fishing gear utilization, operational practices, catch characteristics, and factors influencing fishermen's productivity. The study focused on describing the actual conditions experienced by fishermen rather than testing hypotheses through statistical analysis.

3.2 Research Location and Participants

The research was conducted in a selected coastal fishing community where various types of fishing gear were commonly used by local fishermen. The research location was determined purposively based on the presence of active fishing activities and variations in the types of fishing gear operated by fishermen. The participants consisted of fishermen who actively conducted fishing activities using different types of fishing gear. Key informants, such as fishermen group leaders, fish traders, and local fisheries officers, were also involved when their information was considered relevant to understanding fishing productivity and local fisheries conditions.

3.3 Data Sources

The study used both primary and secondary data. Primary data were obtained directly from fishermen through interviews, observations, and field documentation. The interviews focused on fishing activities, types of fishing gear, fishing frequency, duration of fishing trips, estimated catches, operational costs, fishing locations, and factors affecting fishing productivity. Secondary data were obtained from relevant documents, reports, publications, fisheries statistics, and other sources related to coastal fisheries and fishing activities.

3.4 Data Collection Techniques

Data collection was conducted through observation, in-depth interviews, and documentation. Observation was carried out by directly examining fishing activities and the use of different types of fishing gear. The researcher observed how fishermen prepared their equipment, conducted fishing operations, handled the catch, and managed their fishing activities.

In-depth interviews were conducted with selected fishermen to obtain detailed information about their experiences and perceptions regarding fishing productivity. The interviews were semi-structured, allowing the researcher to use prepared questions while providing opportunities for participants to explain their experiences more broadly. Questions covered the characteristics of fishing gear, fishing practices, catch obtained, operational constraints, and factors influencing productivity.

Documentation was used to complement information obtained through observation and interviews. Documentation included photographs of fishing activities and equipment, field notes, fishermen's records when available, and relevant fisheries documents. These data were used to strengthen the credibility of the research findings.

3.5 Data Analysis

The data were analyzed using a qualitative descriptive analysis process consisting of data reduction, data presentation, and conclusion drawing. Data reduction involved selecting, organizing, and simplifying information obtained from interviews, observations, and documentation. Relevant information concerning fishing gear, fishing practices, catch characteristics, and factors affecting productivity was grouped according to emerging themes.

The reduced data were then presented descriptively to identify similarities and differences in fishing productivity among fishermen using different types of fishing gear. The analysis considered several qualitative indicators, including fishing frequency, duration of fishing operations, catch obtained, operational efficiency, fishing effort, and fishermen's perceptions of the effectiveness of their fishing gear.

Finally, conclusions were drawn by interpreting the patterns and relationships identified from the collected data. The findings were compared across different fishing gear types to provide a comprehensive description of fishermen's productivity and the factors influencing it.

3.6 Data Validity

The validity of the research data was maintained through source triangulation and technique triangulation. Source triangulation was conducted by comparing information obtained from different fishermen and other relevant informants. Technique triangulation was conducted by comparing the results of interviews, observations, and documentation. The researcher also conducted repeated observations and clarified important information with participants when inconsistencies were identified. This process was intended to improve the credibility and reliability of the research findings.

3.7 Research Procedure

The research was conducted through several stages, beginning with the identification of the research location and potential participants. The researcher then conducted preliminary observations to understand the general characteristics of fishing activities and the types of fishing gear used in the study area. The next stage involved collecting primary and

secondary data through interviews, observations, and documentation. After data collection was completed, the information was organized and analyzed thematically. The final stage involved interpreting the findings and formulating conclusions regarding fishermen's productivity based on the types of fishing gear used in the coastal area.

RESULTS AND DISCUSSION

4.1 Result

The results of the study indicate that fishermen's productivity varies according to the type of fishing gear used. Differences were observed in the amount of catch obtained, fishing duration, frequency of fishing trips, operational practices, and fishermen's perceptions of the effectiveness of their fishing gear. Fishermen generally stated that the productivity of their fishing activities was strongly influenced by the suitability of fishing gear to the target fish species, fishing location, weather conditions, and availability of fish resources.

Fishermen using relatively simple fishing gear tended to operate within fishing areas that were closer to the coast. Their fishing activities generally required relatively simple preparation and lower operational costs. However, the amount of catch obtained was highly dependent on local fish availability and environmental conditions. When fish abundance was relatively high, simple fishing gear could provide adequate catches, but productivity tended to decrease when fish were located farther from the fishing area.

In contrast, fishermen using fishing gear with greater operational capacity tended to have broader access to fishing grounds. These fishermen were able to adjust their fishing locations according to information about fish distribution and sea conditions. Although the use of such equipment generally required greater operational preparation and costs, fishermen perceived that it could provide better opportunities to obtain larger catches under favorable conditions.

The results also show that fishing experience plays an important role in determining productivity. Experienced fishermen were generally more capable of identifying potential fishing grounds, determining appropriate fishing times, adjusting fishing gear, and responding to changes in weather and sea conditions. Their ability to make decisions based on previous experience helped them utilize fishing gear more effectively.

Another important finding concerns the influence of environmental conditions. Weather, waves, currents, water clarity, and fish availability were frequently mentioned by fishermen as factors affecting the success of fishing operations. Even when the same type of fishing gear was used, fishing results could differ considerably because environmental conditions changed from one fishing trip to another.

The study further found that productivity was not determined solely by the amount of fish caught. Fishermen also considered fishing time, fuel consumption, labor requirements, equipment preparation, and operational costs when evaluating the effectiveness of their fishing activities. Therefore, fishermen's understanding of productivity included both the ability to obtain fish and the ability to conduct fishing activities efficiently.

4.2 Discussion

The findings demonstrate that the type of fishing gear is an important factor influencing fishermen's productivity. Each type of gear has different operational characteristics, target species, fishing areas, and levels of effectiveness. Consequently, fishing gear that is productive in one coastal area may not necessarily provide the same results in another area. The effectiveness of fishing gear should therefore be understood in relation to local ecological and socioeconomic conditions.

The findings regarding simple fishing gear indicate that low-cost equipment can remain important for small-scale fishermen. Its relatively simple operation allows fishermen to conduct fishing activities with limited capital and technical requirements. However, dependence on nearshore fishing grounds can become a limitation when fish resources in coastal waters decline. In this situation, fishermen may experience lower catches and reduced income.

Meanwhile, fishing gear with greater operational capacity provides fishermen with greater flexibility in determining fishing grounds and targeting fish resources. However, higher operational capacity may also be accompanied by increased fuel consumption, maintenance requirements, and investment costs. Therefore, higher catches do not automatically indicate higher economic productivity. Fishermen must consider the balance between the catch obtained and the resources required to conduct fishing operations.

The study also highlights the importance of fishermen's knowledge and experience. Fishing productivity is not determined exclusively by technological factors but is also influenced by the ability of fishermen to utilize available technology. Experienced fishermen can combine knowledge of fishing gear with information about weather, currents, fish

behavior, and fishing locations. This knowledge becomes an important form of local knowledge that supports decision-making during fishing operations.

Environmental conditions were also found to have a substantial influence on fishing productivity. Changes in weather and oceanographic conditions can affect the accessibility of fishing grounds, fishing duration, fishing safety, and fish distribution. Therefore, fluctuations in catch should not always be interpreted as an indication of ineffective fishing gear. In some cases, reduced productivity may be caused by unfavorable environmental conditions or changes in the availability and distribution of fish resources.

From an economic perspective, fishermen's productivity should be evaluated by considering both output and input. A fishing gear that produces a relatively large catch but requires substantial operational costs may not necessarily be more efficient than a simpler fishing gear that produces a smaller catch with significantly lower costs. Therefore, an assessment of fishing productivity should consider catch volume, fishing effort, operational time, fuel consumption, labor, and other relevant costs.

The findings also have implications for sustainable fisheries management. The selection and use of fishing gear should consider not only fishermen's economic interests but also the sustainability of fish resources and the condition of coastal ecosystems. Fishing practices that are efficient, selective, and appropriate to local ecological conditions can support fishermen's livelihoods while reducing excessive pressure on fish resources. In practical terms, efforts to improve fishermen productivity should therefore be accompanied by consideration of resource sustainability. Improvements in fishing efficiency should not be pursued only by increasing fishing effort, but also by improving the suitability of fishing gear, reducing unnecessary operational inputs, and using information about weather and fish distribution to support better fishing decisions.

Overall, the results indicate that there is no single type of fishing gear that can be considered universally superior. The productivity of each fishing gear depends on the interaction between fishing technology, fishermen's skills and experience, operational costs, environmental conditions, and fish resource availability. Therefore, efforts to improve fishermen's productivity should be implemented through a combination of appropriate fishing technology, skills development, access to fisheries information, efficient management of operational costs, and sustainable utilization of fish resources.

CONCLUSION

This study shows that how fish a person catches in this coastal area depends on many things. It depends on the fishing gear they use how experience the fishermen have how they work, the weather and how many fish are actually in the water. Using fishing gear that can do work might help fishermen reach more spots and catch more fish but that fishing gear also costs more to run. Simple fishing gear is still very useful for fishermen because simple fishing gear does not cost as much to use every day.

The important thing this study found is that we should not just look at the amount of fish caught to measure productivity. We also need to look at the fishing effort the time spent fishing, the costs, the skills of the fishermen and the local environment. Because of this if we want to help productivity we should focus on picking fishing gear that fits the area helping fishermen learn better skills giving fishermen better access to weather news and helping fishermen manage their costs.

For the fishermen and the people working in fisheries these results mean that making things more productive must go hand in hand with fishing in a way that's smart and lasts a long time. I think more research is needed with people and in different coastal areas to compare different fishing gear types. Doing research will help us truly understand fishing productivity, in different situations.

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