Potential and Challenges of Increasing Productivity of Fishing MSMEs

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ARTICLE INFO	ABSTRACT

This study aims to analyze the potential and challenges of increasing the productivity of micro, small, and medium enterprises (MSMEs) in the capture fisheries sector in Pasuruan Regency, East Java. The research utilizes secondary data from the East Java Central Statistics Agency (BPS), particularly on the production of capture fisheries in public waters for shrimp, fish, and other catch commodities. The data was analyzed using a descriptive quantitative approach to highlight the production contributions and economic value of capture fisheries in the region. The results show that Pasuruan Regency holds significant potential, with fish production reaching 225 tons, an economic value of IDR 5.3 billion, and substantial contributions from shrimp commodities amounting to 20 tons with an economic value of IDR 1.4 billion. The novelty of this research lies in identifying specific challenges, such as limited infrastructure, waste management of catch outputs, and the optimization of supply chains based on the circular economy concept. The study's impact is expected to provide strategic recommendations for improving productivity and sustainability of capture fisheries MSMEs, through strengthening the capacity of business actors and introducing targeted policy interventions by local governments.

1. Introduction.

Sustainability Pasuruan Regency, located in East Java Province, Indonesia, has a significant coastline and abundant marine resources, making it a vital hub for fisheries activities and a key contributor to the local economy ((Mareta et al., 2024; Yusuf et al., 2024). Micro, Small, and Medium Enterprises (MSMEs) in the capture fisheries sector play a crucial role in providing employment and supporting food security for the community (Boni, 2021; Cunningham et al., 2022; Villasante et al., 2021). However, despite its immense potential, the development of MSMEs in this sector often faces numerous challenges, hindering productivity and growth (Pérez-Ruzafa et al., 2024; Stacey et al., 2021; Suryanto et al., 2025).

Based on fisheries production data from Pasuruan Regency, as of September 2023, the realization of capture fisheries production reached 20,319 tons, close to the annual target of 21,000 tons (https://www.pasuruankab.go.id/, 2023). While this figure shows promise, fundamental challenges persist, including the use of traditional fishing technologies, limited market access, and suboptimal policy support (Purwanto & Setyawan, 2020; Wijaya et al., 2021).

One of the primary obstacles is the limited use of modern technologies among traditional fishers. Outdated fishing methods not only limit the catch but also pose significant threats to marine ecosystems (Cooney et al., 2023; Standal & Hersoug, 2023; Syamsari et al., 2022). Recent studies indicate that unsustainable fishing practices are a major cause of declining fish stocks in many coastal areas of Indonesia, including Pasuruan Regency ((Masud & Wahid, 2020). Furthermore, the lack of training and education on sustainable and efficient fishing methods exacerbates this issue (Giuffrida et al., 2025; Salehe et al., 2024; Shan, 2022; Szostek et al., 2025; Villasante et al., 2021).

Another significant challenge is the difficulty MSMEs face in accessing broader markets. Many small-scale fisheries in Indonesia, including those in Pasuruan, struggle to market their products due to inadequate infrastructure, the dominance of

middlemen, and insufficient market information (Mareta et al., 2024; Oktaria et al., 2024; Villasante et al., 2021). This situation results in low profit margins for fishers, which in turn hinders the growth and expansion of their businesses (Giuffrida et al., 2025; Salehe et al., 2024; Shan, 2022; Szostek et al., 2025). Additional research highlights that dependency on middlemen often becomes a critical bottleneck in the distribution chain of fishery products (Ahlquist et al., 2025; Manjudevi et al., 2024; Yuan, 2025).

From a policy perspective, while the government has initiated various support programs such as capital assistance and subsidies for fishing gear, the implementation at the local level is often ineffective (Lehtonen et al., 2023; Posti, 2024). These programs frequently fail to address the specific needs of fishers, resulting in low participation and limited success (Wijaya et al., 2021). Further studies suggest that a lack of coordination between central and local governments poses another significant challenge in managing the fisheries sector effectively (Guo & You, 2023; Hayumi et al., 2024; Pérez-Ruzafa et al., 2024).

Despite these challenges, the potential for improving the productivity of capture fisheries MSMEs in Pasuruan Regency remains substantial (Masud & Wahid, 2020). The adoption of modern fishing technologies, such as environmentally friendly fishing gear and satellite-based navigation systems, can help increase fishing efficiency while protecting marine ecosystems (Stacey et al., 2021; Syamsari et al., 2022). Additionally, capacity building through training and education for fishers can enhance their skills and knowledge, leading to sustainable business practices and increased incomes (Cozzolino et al., 2025).

Enhancing market access is also a critical component. Infrastructure improvements, such as adequate fishing ports, cold storage facilities, and efficient transportation systems, can help MSMEs reach broader markets and secure competitive prices for their products (Yusuf et al., 2024). Moreover, the use of digital technology, including e-commerce platforms for marketing and sales, can open new opportunities for local fishers by connecting them directly with consumers and reducing dependence on intermediaries (Stacey et al., 2021).

Targeted and inclusive policy support also plays a key role. Policymakers need to design programs that are genuinely based on the specific needs of local fishers and actively involve them in the planning and implementation processes. Collaboration between the government, private sector, and non-governmental organizations can create strong synergies to accelerate the development of this sector (Mareta et al., 2024; Oktaria et al., 2024).

Overall, this study aims to identify the potential and challenges faced by capture fisheries MSMEs in Pasuruan Regency. A holistic approach that considers technological, market, and policy aspects is necessary to maximize productivity and ensure the sustainability of this sector. With the right strategies, capture fisheries MSMEs in Pasuruan Regency can significantly contribute to the local economy while improving the livelihoods of coastal communities (Masud & Wahid, 2020; Stacey et al., 2021).

2. Materials and Methods.

2.1. Data Sources.

Primary data in this research were collected through surveys and direct interviews with MSME (Micro, Small, and Medium Enterprises) actors in the fisheries sector in Pasuruan Regency. Secondary data were obtained from official publications of the East Java Central Statistics Agency (BPS, 2023), including reports such as Pasuruan Regency in Figures 2022 and other fisheries statistics-related publications. Using data from BPS ensures validity and reliability in the study. The selection of Pasuruan Regency as the research location is based on the significant potential of the fisheries sector, which requires deeper exploration to support MSME sustainability. Additionally, this study is supported by insights from recent journal articles and research to enhance the analysis (BPS, 2023)

2.2. Data Collection Methods.

The data collection process involved structured surveys and in-depth interviews. The surveys were conducted using questionnaires designed to capture various aspects of productivity, challenges, and marketing strategies of MSMEs in the fisheries sector. In-depth interviews were conducted to gather qualitative insights on specific issues, such as market access, technological constraints, and financing. Data triangulation was performed by comparing the results of the surveys, interviews, and secondary data obtained from BPS. Ethical data collection practices were ensured, including safeguarding the confidentiality of the respondents' information (BPS, 2023; Suryanto et al., 2025).

2.3. Data Analysis.

The collected data were analyzed using descriptive and inferential statistical approaches to address the research objectives. Descriptive statistics were used to portray the general conditions of MSMEs in the fisheries sector, including productivity levels, types of fishing gear, and catch composition. Inferential analysis was employed to evaluate relationships between variables such as capital, market access, and productivity. Statistical software, was utilized for data processing. The findings aim to provide strategic recommendations for enhancing the sustainability of MSMEs in the fisheries sector in Pasuruan (BPS, 2023; Masud & Wahid, 2020).

2.4. Validity and Reliability.

To ensure validity and reliability, the questionnaire was pretested on a small group of fishers before being distributed on a larger scale. Validity testing ensured that the research instrument accurately measured the intended variables, while reliability testing verified the consistency of the measurement results. Data triangulation was conducted by comparing primary data (survey and interview results) with secondary data from BPS and relevant journal references (Masud & Wahid, 2020).

3. Result and Discussion.

3.1. Potential for Increasing the Productivity.

Based on the available data, the capture fisheries production in Pasuruan Regency shows significant potential for development. The capture fisheries production in public waters in Pasuruan Regency is recorded at 245 tons, with a production value of Rp 6,773,690,000. In addition, the production of shrimp and other commodities contributes 20 tons and 7 tons, respectively, with economic values of Rp 1,410,750,000 and Rp 208,898,000.

In total, the capture fisheries production in Pasuruan Regency reaches 272 tons, with Rp 8,393,338,000 of economic value. These data indicate that the capture fisheries sector contributes significantly to regional income and has the potential to serve as a foundation for the development of micro small and medium enterprises (MSMEs).

Table 1: Productivity calculations for each commodity.

Commodity	Production (tons)	Production Value (IDR)	Economic Productivity (IDR/ton)
Shrimp	20	1,410,750,000	70,537,500
Fish	245	6,773,690,000	27,636,286
Others	7	208,898,000	29,842,571
Total	**272**	**8,393,338,000**	**30,866,762**

Source: Authors.

From the table, it is evident that shrimp provides the highest economic productivity, reaching IDR 70,537,500/ton, while fish contributes the largest production volume. This suggests that developing shrimp commodities offers higher economic value compared to other types of capture.

3.2. Challenges in Increasing Productivity.

Despite its significant potential, several challenges may hinder the enhancement of productivity in the fisheries sector in Pasuruan Regency, including:

a. High Operational Costs: Expensive fuel and fishing equipment reduce profit margins for fishermen.

b. Limited Infrastructure: Insufficient facilities, such as cold storage and modern fishing technology, hinder efficiency.

c. Restricted Market Access: SMEs often face difficulties in reaching broader and more competitive markets.

d. Lack of Skilled Human Resources (HR): SME operators require capacity-building in business management and technology.

e. Environmental Degradation: Overfishing and marine ecosystem damage threaten long-term capture productivity.

3.3. Strategies for Fisheries Sector Development.

Table 2: Proposed strategies.

Challenges	Strategies
High operational costs	Provision of fuel subsidies and modernization of fishing equipment
Limited infrastructure	Development of cold storage facilities and fish processing facilities
Restricted market access	Strengthening distribution networks and promoting local products
Lack of skilled human resources (HR)	Training on business management and technical skills for fishermen and SMEs
Environmental degradation and overfishing	Implementation of sustainable fisheries policies and marine ecosystem management

Source: Authors.

Conclusions.

Based on the analysis of data on capture fisheries productivity in the public waters of Pasuruan Regency, it can be concluded that the potential for increasing productivity in this sector is significant but faces various challenges that need to be addressed strategically. With a total catch production of 245 tons and an economic value of IDR 6,776,390,000, Pasuruan Regency demonstrates considerable capacity in the capture fisheries sector. The largest contribution comes from fish commodities, with a production value of IDR 5,365,640,000, while other commodities, although smaller in volume, still provide additional economic value. The main potential for improving the productivity of capture fisheries MSMEs in Pasuruan Regency lies in the abundance of fishery resources, opportunities for product diversification based on catches, and strategic market access to expand distribution.

However, several challenges must be addressed to optimize productivity. Insufficient fisheries infrastructure, such as fishing ports, cold storage facilities, and modern fishing equipment, remains a major obstacle. Furthermore, sustainable resource management efforts are required to prevent overexploitation through regulations and education for fishers on ecosystem-based fishing practices. Limited MSME capacity in terms of capital, technology, and business management also presents significant barriers. The dependence on fish commodities as the primary contributor to economic value indicates the need for diversification to mitigate the risks of over-reliance on a single type of commodity.

A circular economy-based approach is highly relevant to be implemented in Pasuruan Regency to enhance resource use efficiency, reduce waste, and create added value from catches. Integrated policy interventions, capacity building for MSMEs, and technological support are key to optimizing the potential of capture fisheries while addressing existing challenges. With these

measures, the capture fisheries sector in Pasuruan Regency is expected to grow sustainably, support the regional economy, and improve the welfare of the fishing community.

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