

The Effect of Operational Fishing Cost Management on Fishermen's Income in Pantai Labu and Percut Sei Tuan Districts

Tiffany Tetrin Rosalin Butarbutar

Akademi Maritim Belawan

tiffanybutarbutar22@gmail.com

Abstract

The fisheries sector plays an essential role in supporting the livelihoods of coastal communities. One of the major factors affecting fishermen's income is the effectiveness of operational fishing cost management. Poor cost management often leads to excessive operational expenditures, reducing net income despite favorable fishing yields. This study aims to examine the effect of operational fishing cost management on fishermen's income in Pantai Labu and Percut Sei Tuan Districts, Deli Serdang Regency, North Sumatra, Indonesia. This research employed a quantitative approach with an associative research design. The population consisted of 63 fishermen, while 51 respondents were selected using purposive sampling. Primary data were collected through structured questionnaires and analyzed using SPSS version 26. The analytical techniques included validity and reliability tests, classical assumption tests, simple linear regression analysis, and hypothesis testing using the t-test. The findings reveal that operational fishing cost management has a positive and statistically significant effect on fishermen's income. The regression equation obtained was $Y = 3.376 + 0.729X$, with a significance value of **0.000 (< 0.05)**. These results indicate that effective planning, recording, controlling, and evaluating operational fishing costs contribute significantly to increasing fishermen's income. Therefore, improving fishermen's financial management capabilities should become an important strategy for enhancing the economic welfare of coastal communities.

Keywords: operational cost management; fishermen's income; financial management; small-scale fisheries; simple linear regression.

Introduction

The fisheries sector is one of the strategic economic sectors contributing significantly to food security, employment, and regional economic development, particularly in coastal areas. For many coastal communities in Indonesia, capture fisheries remain the primary source of income and livelihood. The sustainability of fishing activities depends not only on the availability of marine resources but also on fishermen's ability to manage operational resources efficiently, particularly operational fishing costs. Efficient cost management enables fishermen to maximize profits while maintaining sustainable fishing operations.

Fishing operations require considerable operational expenditures, including fuel, food supplies, vessel maintenance, engine repairs, fishing gear maintenance, ice, and other supporting logistics. These operational costs constitute the largest component of production expenses incurred during fishing activities. Consequently, ineffective cost management may substantially reduce fishermen's net income even when fish catches are relatively abundant. Therefore, effective operational cost management is essential for improving economic performance and ensuring the sustainability of small-scale fisheries.

Despite its importance, many traditional fishermen continue to manage their operational expenses based on experience rather than systematic financial planning. Most fishermen rarely prepare budgets, maintain expenditure records, or evaluate operational costs after completing fishing trips. As a result, they often experience difficulties in identifying unnecessary expenditures and measuring business profitability accurately. This condition reduces operational efficiency and limits opportunities to improve household income and overall economic welfare.

Pantai Labu and Percut Sei Tuan Districts, located in Deli Serdang Regency, North Sumatra Province, are well-known coastal areas where capture fisheries represent one of the main economic activities. Most households in these districts depend on fishing as their primary occupation. Nevertheless, many fishermen continue to face challenges related to rising operational costs, fluctuating fuel prices, unpredictable weather conditions, and limited financial management practices. These challenges highlight the importance of improving operational cost management as a strategy to increase fishermen's income and maintain business sustainability.

From a theoretical perspective, operational cost management constitutes an essential element of managerial accounting and financial management. According to Mulyadi (2018), effective cost control enables organizations to utilize available resources more efficiently and minimize unnecessary expenditures. Hansen and Mowen (2018) further argue that accurate cost information supports managerial decision-making and improves organizational performance through better resource allocation. In the fisheries sector, these principles imply that fishermen who effectively manage operational expenditures are more likely to achieve higher profitability than those with poor financial management practices.

Previous empirical studies have consistently demonstrated the importance of financial management in improving business performance. Aribawa (2016) reported that financial literacy positively influences the sustainability of micro and small enterprises. Likewise, Widayanti et al. (2017) concluded that effective financial management significantly enhances business continuity among small enterprises. However, empirical studies specifically examining the relationship between operational fishing cost management and fishermen's income remain limited, particularly in coastal areas of Deli Serdang Regency. This research therefore seeks to fill this empirical gap by investigating the influence of operational cost management on fishermen's income.

This study aims to analyze the effect of operational fishing cost management on fishermen's income in Pantai Labu and Percut Sei Tuan Districts. The findings are expected to contribute to the literature on fisheries economics and financial management while providing practical recommendations for fishermen, policymakers, and fisheries stakeholders in designing financial management programs that enhance operational efficiency and improve the welfare of coastal communities.

Research Method

This study employed a **quantitative approach** using an **associative research design** to examine the relationship between operational fishing cost management and fishermen's income. A quantitative approach was selected because it enables hypothesis testing through statistical analysis of numerical data, thereby providing empirical evidence regarding the influence of the independent variable on the dependent variable.

The research was conducted in the coastal areas of **Pantai Labu District** and **Percut Sei Tuan District**, Deli Serdang Regency, North Sumatra Province, Indonesia, from **April to June 2026**. These locations were selected because capture fisheries constitute one of the primary economic activities, and the majority of residents depend on fishing as their main source of livelihood.

The study population consisted of **63 active fishermen** operating in the research area. The sample comprised **51 respondents**, selected using a **purposive sampling** technique based on the following criteria: (1) actively engaged in fishing activities within the study area; (2) at least 20 years old or married; (3) operating fishing boats or vessels; (4) having a minimum of one year of fishing experience; and (5) willing to participate in the study.

Both **primary** and **secondary** data were utilized. Primary data were collected through structured questionnaires distributed directly to the respondents, while secondary data were obtained from books, scientific journals, government reports, and other relevant literature concerning operational cost management and fishermen's income.

The research instrument consisted of a questionnaire using a **five-point Likert scale**, ranging from 1 (strongly disagree) to 5 (strongly agree). The independent variable was **Operational Fishing Cost Management (X)**, whereas the dependent variable was **Fishermen's Income (Y)**. Operational fishing cost management was measured using seven indicators: operational cost planning, fuel costs, food supply costs, vessel maintenance costs, fishing gear maintenance costs, operational cost recording, and expenditure control. Fishermen's income was measured using six indicators: catch volume, sales revenue, fishing frequency, net income after deducting operational costs, income stability, and the ability of income to meet household needs. Prior to hypothesis testing, the questionnaire was evaluated through **validity testing** using the Pearson Product-Moment Correlation and **reliability testing** using **Cronbach's Alpha**. An item was considered valid if the calculated correlation coefficient exceeded the critical value or if the significance level was below 0.05. The instrument was considered reliable when Cronbach's Alpha exceeded 0.60.

Data analysis was performed using **IBM SPSS Statistics Version 26**. The analytical procedures included descriptive statistics, normality testing using the **One-Sample Kolmogorov–Smirnov Test**, heteroscedasticity testing using the **Glejser Test**, simple linear regression analysis, and hypothesis testing using the **partial t-test**. The regression model employed in this study is expressed as follows:

$$Y = a + bX + e$$

where:

- **Y** = Fishermen's Income
- **a** = Constant
- **b** = Regression coefficient
- **X** = Operational Fishing Cost Management
- **e** = Error term

The research hypothesis was accepted if the significance value of the t-test was less than **0.05**, indicating a statistically significant effect of operational fishing cost management on fishermen's income.

Results and Discussion

Respondent Characteristics

The study involved **51 fishermen** from Pantai Labu and Percut Sei Tuan Districts. Most respondents (52.9%) were between **36 and 51 years old**, while 23.5% were aged 20–35 years and another 23.5% were over 52 years old. Male respondents accounted for **88.2%**, whereas females represented **11.8%** of the sample. In terms of fishing experience, **92.2%** had more than two years of experience. Furthermore, **74.5%** operated motorized boats, and **92.2%** went fishing more than twice per week. These characteristics indicate that the respondents possessed sufficient experience to provide reliable information regarding operational fishing cost management.

Instrument Testing

The validity test demonstrated that all questionnaire items for both Operational Fishing Cost Management and Fishermen's Income produced correlation coefficients greater than the critical value (**r-table = 0.361**) with significance values below **0.05**. Therefore, all items were considered valid.

The reliability test also confirmed that all variables achieved **Cronbach's Alpha values above 0.60**, indicating satisfactory internal consistency of the research instrument.

Classical Assumption Tests

The normality test using the **One-Sample Kolmogorov-Smirnov Test** yielded an **Asymp. Sig. (2-tailed)** value of **0.200**, indicating that the residuals were normally distributed.

The heteroscedasticity test using the **Glejser method** produced a significance value of **0.219**, which exceeded 0.05. Therefore, the regression model was free from heteroscedasticity problems and met the assumptions required for regression analysis.

Simple Linear Regression Analysis

The regression analysis produced the following equation:

$$Y = 3.376 + 0.729X$$

The constant value of **3.376** indicates the estimated fishermen's income when operational fishing cost management remains unchanged. The regression coefficient of **0.729** indicates a positive relationship between operational fishing cost management and fishermen's income. This means that a one-unit improvement in operational cost management is expected to increase fishermen's income by **0.729 units**.

Hypothesis Testing

The partial **t-test** produced a **t-value of 12.444** with a significance level of **0.000**, which is lower than the significance threshold of **0.05**. Therefore, the research hypothesis was accepted, indicating that operational fishing cost management has a positive and statistically significant effect on fishermen's income in Pantai Labu and Percut Sei Tuan Districts.

Discussion

The findings indicate that operational fishing cost management plays a significant role in improving fishermen's income. Fishermen who effectively plan operational expenditures, control fuel consumption, manage food supply costs, maintain fishing vessels and equipment, and systematically record operational expenses tend to generate higher net income.

Efficient operational cost management minimizes unnecessary expenditures and improves the profitability of fishing activities. Although fish catches may remain relatively stable, effective cost control increases net earnings by reducing operational inefficiencies.

These findings support the theory of **Mulyadi (2018)**, who emphasized that cost control is essential for improving resource efficiency. Likewise, **Hansen and Mowen (2018)** argued that accurate cost information enhances managerial decision-making and organizational performance. The results are also consistent with previous studies by **Aribawa (2016)** and **Widayanti et al. (2017)**, which concluded that sound financial management contributes significantly to business sustainability. Although those studies focused on different business sectors, the present findings confirm that effective financial management is equally important in improving the performance of small-scale fisheries.

Practically, these findings suggest that local governments and fisheries agencies should strengthen financial literacy and cost management training programs for fishermen. Training on budgeting, expenditure recording, and operational cost evaluation can improve business efficiency and contribute to sustainable coastal economic development.

Conclusion

This study concludes that **Operational Fishing Cost Management has a positive and statistically significant effect on Fishermen's Income** in Pantai Labu and Percut Sei Tuan Districts. The estimated regression equation is $Y = 3.376 + 0.729X$, while the hypothesis testing yielded a significance value of **0.000 (< 0.05)**, confirming that the proposed hypothesis is accepted. The findings indicate that effective planning, monitoring, recording, and evaluation of operational fishing costs significantly improve fishermen's income. Therefore, fishermen are encouraged to implement systematic financial management practices through proper budgeting, expenditure recording, and regular cost evaluation.

Furthermore, local governments and fisheries institutions should provide continuous financial management training and technical assistance to strengthen fishermen's managerial capabilities, improve operational efficiency, and ultimately enhance the economic welfare of coastal communities.

References

- Aribawa, D. (2016). Pengaruh literasi keuangan terhadap kinerja dan keberlangsungan UMKM di Jawa Tengah. *Jurnal Siasat Bisnis*, 20(1), 1–13.
- Brigham, E. F., & Houston, J. F. (2019). *Fundamentals of Financial Management*. Cengage Learning
- Halim, A. (2020). *Manajemen Keuangan Bisnis: Konsep dan Aplikasi*. Salemba Empat.
- Hansen, D. R., & Mowen, M. M. (2018). *Cost Management: Accounting and Control*. Cengage Learning.
- Hery. (2017). *Kajian Riset Akuntansi*. Grasindo.
- Kasmir. (2019). *Pengantar Manajemen Keuangan*. Prenadamedia Group.
- Mulyadi. (2018). *Akuntansi Biaya*. UPP STIM YKPN.
- Sari, R. P., & Kurniawan, A. (2021). Pengaruh pengelolaan keuangan terhadap keberlangsungan usaha mikro kecil dan menengah. *Jurnal Ilmu Manajemen*, 9(2), 120–130.
- Soekartawi. (2016). *Analisis Usahatani*. UI Press.
- Sugiyono. (2022). *Metode Penelitian Kuantitatif, Kualitatif, dan R&D*. Alfabeta.
- Sukirno, S. (2016). *Mikroekonomi: Teori Pengantar*. Rajawali Pers.
- Tambunan, T. (2019). *UMKM di Indonesia: Perkembangan, Kendala, dan Tantangan*. LP3ES.
- Widayanti, R., Damayanti, R., & Marwanti, F. (2017). Pengaruh *financial literacy* terhadap keberlangsungan usaha pada UMKM desa wisata. *Jurnal Ilmiah Manajemen dan Bisnis*, 18(2), 153–163.