Accounting Perspective on Financial Capital and Fishermen Livelihood Sustainability

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Abstract

Purpose: *This study aims to assess the livelihood sustainability of traditional fishermen in Kedung Cowek, Surabaya, by applying the Sustainable Livelihoods Approach (SLA) and strengthening the financial capital dimension through accounting-based analysis.*

Methodology/approach*: A quantitative descriptive approach was employed using survey data from 98 fishermen who were members of Koperasi Bahari 64. Livelihood sustainability was assessed through financial, natural, social, and human capital, while accounting-based analysis considered productive assets, depreciation, costs, income, and the R/C ratio.*

Findings: *The overall livelihood sustainability index was 62.26, categorized as good. Financial capital had the largest contribution (40%) but achieved only 58%, indicating that financial vulnerability remains a key challenge. Accounting-based analysis highlights the importance of cost, productive asset, depreciation, and income management in strengthening financial capital.*

Practical implications: *Fishermen need simple financial recording and cost-management practices to distinguish revenue, costs, depreciation, and profit. Cooperatives and policymakers can support these practices through financial management assistance and productive asset management programs.*

Originality/value: *This study integrates accounting-based analysis into the financial capital dimension of the Sustainable Livelihoods Approach, positioning accounting as an information mechanism for measuring and managing fishermen's financial resources and supporting livelihood sustainability.*

Keywords:
Sustainable Livelihoods Approach; accounting-based analysis; financial capital; small-scale fishermen; livelihood sustainability.

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INTRODUCTION

Fishing communities develop within coastal areas that connect land and sea. They comprise diverse social groups whose activities and institutions shape local livelihoods (Sawiji et al., 2022), Indonesia's fisheries legislation provides the legal context for the term "fisherman"; the precise statutory wording and citation should be checked against the official text before submission. Kelurahan Kedung Cowek, in Bulak District, Surabaya, borders the Madura Strait. Residents engage in fishing and related activities, including fish trading and processing. The Nambangan fishing area covers coastal waters surrounding the Madura Strait (Diaz Baga et al., 2017).

Small-scale fisheries play an important role in supporting the livelihoods, food security, and economic activities of coastal communities. In Indonesia, fishing households remain highly dependent on marine resources, while their livelihoods are exposed to fluctuations in fish stocks, weather conditions, environmental degradation, and market conditions. Small-scale fishing households are particularly vulnerable because their livelihood strategies are strongly dependent on natural resources and are often constrained by limited access to financial, physical, and institutional resources (Allison & Ellis, 2001; Stacey et al., 2021). The Sustainable Livelihoods Approach (SLA) provides a useful framework for understanding these conditions by considering livelihood assets, activities, institutions, and vulnerability as interconnected components of household livelihood strategies. Within this framework, livelihood assets consist of natural, physical, human, social, and financial capital (Allison & Ellis, 2001).

Financial capital represents an important component of livelihood sustainability because it enables households to obtain goods and services, finance productive activities, respond to economic shocks, and develop alternative livelihood strategies. For small-scale fishermen, financial capital is closely associated with income, savings, credit, productive assets, and the ability to finance fishing operations. However, the financial condition of fishing households cannot be understood solely from the amount of income generated. The sustainability of fishing activities also depends on how fishermen manage operating costs, productive assets, cash flows, and financial resources. Recent evidence from Indonesia indicates that financial capital is an important determinant of the sustainability of small-scale fishermen, while financial vulnerability remains a significant challenge for fishing households (Nasution et al., 2026).

The financial characteristics of small-scale fisheries are particularly challenging because fishing income tends to fluctuate according to season, weather, catch volume, and market prices. Consequently, fishermen need to manage not only the income generated from fishing activities but also the costs required to maintain their productive capacity. Fuel, ice, food supplies, fishing equipment, vessel maintenance, and engine repairs represent expenditures that directly influence the financial performance of fishing activities. In this context, financial management becomes

important because inadequate control over costs and cash flows may reduce the capacity of fishermen to maintain their productive assets and sustain their livelihoods. The International Labour Organization (ILO) also recognizes the importance of strengthening financial management skills among micro, small, and informal businesses in the Indonesian fisheries sector, particularly in relation to budgeting, expenditure, savings, credit, and the effective use of financial services (ILO, 2024).

One aspect that has received relatively limited attention in the sustainable livelihood discussion is the role of accounting information in strengthening financial capital. Accounting is not merely a mechanism for recording financial transactions but also provides information for identifying revenues, classifying costs, measuring the use of productive assets, evaluating financial performance, managing cash flows, and supporting economic decision-making. For small-scale fishing businesses, simple accounting records can help fishermen distinguish between business and household transactions, identify the actual cost of fishing activities, evaluate profitability, and plan future expenditures and investments. Evidence from Indonesian fisheries businesses shows that the use of accounting information and the application of appropriate financial accounting standards remain important challenges, particularly for fisheries-based micro and small enterprises (Cahyaningtias & Lamaya, 2022).

The absence of adequate financial records can create difficulties in determining the actual economic performance of fishing activities. A study of small-scale fishing businesses in Ambon, for example, found that most fishermen did not routinely record their daily business income and expenditure, despite the importance of financial records in identifying the financial position of their businesses (Apituley et al., 2023). Similarly, research concerning small fishermen in Tual highlights the importance of simple accounting, financial reporting, and the separation of business and personal finances because financial transactions are often not formally recorded (Rahakbauw et al., 2024). These findings indicate that accounting practices can become an important mechanism for transforming financial activities into information that can be used to strengthen financial management and livelihood resilience.

The relevance of accounting becomes even greater when productive assets are considered. Fishing vessels, engines, fishing gear, and other equipment represent economic resources that generate benefits over more than one accounting period. Therefore, these assets should not be viewed only as initial expenditures but also as productive resources whose economic value needs to be managed and periodically evaluated. Depreciation, maintenance expenditure, fixed costs, and variable costs are important accounting components for determining the actual economic cost of fishing activities. A cost-based approach can help fishermen understand whether fishing activities generate sufficient returns to cover operational costs, maintain productive assets, and

support household needs. Thus, accounting information can complement the Sustainable Livelihoods Approach by providing a more structured measurement of the financial capital available to fishing households.

This issue is relevant to the fishing community of Kedung Cowek, Surabaya. Kedung Cowek is a coastal area in eastern Surabaya bordering the Madura Strait, where a large proportion of residents depend on marine resources and fishing-related activities. The original study found that fishermen in the Nambangan-Cumpat area were predominantly small-scale fishermen operating vessels below 5 GT and facing technological, marketing, environmental, and institutional constraints (Sawiji et al., 2022). The study also identified the Bahari 64 Cooperative as an important economic institution established to support fishermen's welfare, including through the provision of fishing-related goods and savings and loan activities.

The existing evidence from Kedung Cowek also demonstrates the importance of financial capital within the fishermen's livelihood structure. The previous study identified total productive investment of approximately Rp51.75 million, consisting primarily of fishing vessels and engines, and estimated annual reduction in the value of these investments at approximately Rp18.57 million. It also identified fixed costs and variable costs associated with fishing operations, while the average monthly income of fishermen was reported at Rp2.298 million and the R/C ratio at 0.70. Financial capital contributed the largest proportion to the overall livelihood index, with a weight of 40% and an index value of 23.10. These findings suggest that financial capital represents a critical dimension of fishermen's livelihood sustainability. However, the existing analysis primarily treats these financial components as indicators of livelihood capital rather than as accounting information that can be used to evaluate business performance and support financial decision-making (Sawiji et al., 2022).

This creates an important research gap. Previous sustainable livelihood studies have generally emphasized the identification and measurement of livelihood assets, including financial capital, but the role of accounting information in translating financial resources into decision-useful information remains relatively underexplored in the context of small-scale fisheries. Meanwhile, studies on accounting in fisheries have tended to focus on bookkeeping, accounting standards, financial management, or cost calculation at the level of individual businesses. Therefore, there is an opportunity to integrate these two perspectives by positioning accounting information as a mechanism that strengthens the measurement and management of financial capital within the Sustainable Livelihoods Approach. Such integration is particularly relevant for small-scale fishermen whose financial conditions are characterized by uncertain income, fluctuating operating costs, and limited formal financial management practices.

The research gap is located at the intersection of two strands of literature. SLA studies, including (Allison & Ellis, 2001) and the Kedung Cowek study by (Sawiji et al., 2022), organize livelihood conditions around household assets and assess the relative contribution of different forms of capital. Fisheries-accounting studies, including (Apituley et al., 2023; Cahyaningtias & Lamaya, 2022; Rahakbauw et al., 2024), focus on bookkeeping, accounting information, and financial-recording practices in fisheries businesses. What remains insufficiently developed in the studies cited here is an explicit accounting interpretation of SLA financial indicators that distinguishes household income from fishing-business revenue, treats vessels and engines as productive assets rather than current-period expenses, and evaluates revenue against a clearly defined set of costs. This paper addresses that interpretive gap; it does not claim to introduce a validated new index or to measure a causal effect of accounting practices

Accordingly, this paper descriptively examines how accounting concepts can be used to interpret the financial-capital dimension in the Kedung Cowek case. The analysis discusses productive asset investment, depreciation, fixed and variable costs, business revenue, household income and expenditure, and the R/C ratio, while clearly identifying figures taken from (Sawiji et al., 2022). Its contribution is an accounting-based interpretation of previously reported indicators, not an independent recalculation of the livelihood index unless respondent-level data and calculation records are supplied.

LITERATURE REVIEW

Sustainable Livelihoods Approach (SLA)

The Sustainable Livelihoods Approach (SLA) provides the primary theoretical framework for understanding the livelihood conditions and sustainability of small-scale fishing communities. The approach emphasizes that livelihood is not determined solely by income, but by the combination of capabilities, assets, and activities available to individuals and households to pursue their livelihood objectives. In the context of small-scale fisheries, the livelihoods approach is particularly relevant because fishing households depend strongly on natural resources while facing various environmental, economic, social, and institutional uncertainties (Allison & Ellis, 2001). For small-scale fishermen, weather, catch variability, market prices, and access to finance can constrain these choices.

The SLA conceptualizes livelihood resources through several forms of capital, commonly consisting of natural, physical, human, social, and financial capital. These capitals are interconnected and collectively influence the livelihood strategies available to households. Natural capital refers to natural resources that support livelihood activities, while physical capital includes infrastructure and productive equipment. Human capital encompasses education, skills, health, and labor capacity. Social capital represents networks, relationships, institutions, and social

support, whereas financial capital refers to the financial resources available to support livelihood activities and respond to economic needs (Allison & Ellis, 2001).

In this manuscript, four dimensions—natural, financial, social, and human capital—are discussed because these are the dimensions reported in the underlying Kedung Cowek analysis. Physical capital is not treated as a separate index dimension in the available manuscript, although vessels, engines, and equipment are discussed as productive assets in the accounting interpretation. Conceptually, those items are physical assets; their acquisition cost, depreciation, and replacement needs have financial consequences. They should not be counted simultaneously as a separate physical-capital score and as financial capital without an explicit scoring rule. The paper therefore treats asset information as an accounting lens on financial requirements, not as proof that physical capital is itself financial capital. The accounting perspective is grounded in management-accounting and decision-usefulness principles: relevant cost, revenue, and asset information can support decisions, but this study does not directly test whether fishermen use such information or whether it improves outcomes.

METHOD

Research Design

This study employed a quantitative descriptive approach to assess the livelihood sustainability of small-scale fishermen in Kedung Cowek, Surabaya. The analytical framework was based on the Sustainable Livelihoods Approach, which views livelihood sustainability through the interaction of various livelihood assets. In this study, livelihood sustainability was assessed through four dimensions: natural capital, financial capital, social capital, and human capital.

To strengthen the financial capital dimension, this study incorporated an accounting perspective by identifying the financial resources and economic activities associated with fishing operations. The accounting perspective was used to provide a more structured assessment of the financial condition of fishermen through productive asset investment, depreciation, fixed costs, variable costs, household income, and the Revenue-Cost (R/C) ratio. The accounting analysis was descriptive in nature and was not intended to examine causal relationships between accounting practices and fishermen's welfare.

The integration of accounting indicators into the financial capital dimension allows financial capital to be understood not only as the income available to households but also as the economic resources and costs associated with maintaining fishing activities. This approach is particularly relevant to small-scale fishermen whose income and operating costs are influenced by fishing seasons, weather conditions, catch volume, and the condition of productive assets.

For the accounting indicators to be independently calculated, data must refer to the same respondents, fishing activity, and accounting period. Where these details are unavailable in the manuscript, no new estimate is inferred. This boundary is important: accounting concepts can clarify the interpretation of reported financial indicators, but the present evidence does not demonstrate that accounting practices themselves strengthen livelihood resilience.

Research Location and Population

The research was conducted in Kelurahan Kedung Cowek, Bulak District, Surabaya, particularly in the Nambangan and Cumpat areas. The area is a coastal community bordering the Madura Strait and is predominantly inhabited by communities engaged in fishing and other fisheries-related activities. The research focused on fishermen who were members of Koperasi Bahari 64. The cooperative had 130 members who worked as fishermen. The research population consisted of fishermen operating fishing fleets with a capacity of less than 5 GT, representing the small-scale fishing community examined in the study.

A sample of 98 fishermen was selected from the population of 130 fishermen using the Slovin sampling method with simple random sampling. The selection of respondents was intended to represent the characteristics of the small-scale fishing community participating in the cooperative.

Research Variables and Indicators

The study assessed livelihood sustainability through four livelihood capital dimensions: natural capital, financial capital, social capital, and human capital. The indicators were adapted from the livelihood framework used in the original study, However, the financial capital dimension was strengthened by incorporating accounting-based indicators.

Dimension	Indicators	Measurement Focus
Natural Capital	Fishery productivity	Quantity/productivity of fish catch
	Economic importance of fish	Importance of fish resources to livelihood
Financial Capital	Household income per capita	Income available to household members
	Productive asset investment	Value of fishing vessels, engines, and equipment
	Depreciation	Annual reduction in productive asset value
	Fixed costs	Costs relatively independent of production volume
	Variable costs	Costs that fluctuate with fishing activity
	R/C ratio	Relationship between revenue and total cost
Social Capital	Access and benefit of economic institutions	Access to economic organizations
	Access and benefit of social	Access to social organizations

	institutions	
	Informal economic networks	Economic relationships and networks
Human Capital	Education	Educational attainment
	Health	Health condition
	Family members	Number of household members
	Age	Productive age characteristics

Source: owner's work

Accounting-Based Financial Analysis

1. Productive Asset Measurement

Fishing vessels, engines, and fishing equipment were identified as productive assets because they are utilized to support fishing activities and provide economic benefits over more than one period. The investment value was measured based on the acquisition value of the productive assets reported by the respondents. The original study identified total fishing-business investment of Rp51,750,000, primarily consisting of fishing vessels and engines (Sawiji et al., 2022).

2. Depreciation

The decline in the economic value of productive assets was considered as depreciation. The basic depreciation formulation is:

$$D = \frac{AC - RV}{UL}$$

Where:

D = annual depreciation
AC = acquisition cost
RV = residual value
UL = useful life of the asset

Where residual value information was unavailable, the analysis followed the depreciation calculation used in the original study rather than introducing assumptions that were not supported by the collected data. The original study estimated the annual reduction in the value of fishing investments at Rp18,570,000.

3. Cost Classification

Fixed costs refer to expenditures that are relatively unaffected by changes in production volume during a particular period, including costs associated with maintenance and other periodic expenditures. Variable costs are expenditures that fluctuate according to fishing activity and production, including fuel, food, and ice.

$$TC = FC + VC$$

Where:

TC = total cost
FC = fixed cost
VC = variable cost

This classification provides a basis for evaluating the economic cost of fishing operations and identifying the financial resources required to maintain fishing activities.

4. Revenue and Financial Performance

Fishing-business revenue was measured from the economic value obtained from fish catches and other fishing-related sales, where the relevant data were available.

The basic formulation is: $TR = P\ X\ Q$

Where:

TR = total revenue
P = selling price
Q = quantity of fish sold

5. Revenue-Cost Ratio

The Revenue-Cost (R/C) ratio was retained as an indicator of the economic efficiency of fishing activities.

$$R/C \frac{TR}{TC}$$

The interpretation is:

R/C > 1 → revenue exceeds total cost;
R/C = 1 → revenue is equal to total cost;
R/C < 1 → revenue is lower than total cost.

The original study reported an R/C ratio of 0.70 among the fishermen examined. The R/C ratio was not interpreted independently from household financial conditions. Instead, it was considered together with income, expenditure, productive assets, and operating costs to provide a broader representation of financial capital.

RESULTS AND DISCUSSION

This section interprets the accounting meaning of financial indicators reported for the Kedung Cowek case; it does not present a new statistical recalculation. The prior study reported productive investment of Rp51,750,000 and an annual value reduction of Rp18,570,000 (Sawiji et al., 2022). Because the current manuscript does not provide an asset-by-asset schedule or explain whether these values are totals or averages, the figures should be read as secondary estimates whose calculation basis requires verification.

The earlier study also reported average monthly fishermen's income of approximately Rp2,298,214 and an R/C ratio of 0.70. These indicators describe different concepts: household or fishermen's income is not automatically equivalent to gross revenue from the fishing enterprise, and an R/C ratio is a business-level measure requiring revenue and cost data for the same activity

and period. The available manuscript does not reconcile these amounts or establish that they cover the same respondents and reference period.

The manuscript describes fuel, food, and ice as variable operating costs and maintenance-related expenditure as fixed or periodic costs. This is a useful starting classification, but maintenance is not inherently fixed: its classification depends on whether it is routine, trip-related, periodic, or a capital improvement. A respondent-level cost schedule would be needed to quantify these categories reliably.

These indicators can be interpreted through accounting concepts, but the available evidence does not establish that accounting information was collected as a distinct respondent-level capability or that its use improved business performance. The defensible contribution is therefore an accounting-based interpretation of the financial-capital indicators, rather than an empirical claim that accounting practices caused greater sustainability.

The distinction between fixed and variable costs also provides an important accounting basis for evaluating the profitability of fishing activities. Fuel, food, and ice are directly associated with fishing operations and fluctuate according to the frequency and duration of fishing activities. Therefore, these expenditures can be classified as variable operating costs. In contrast, expenditures related to the maintenance and use of productive assets may contain fixed and semi-variable components that should be identified separately when estimating the actual cost of fishing activities.

From a management accounting perspective, such cost classification is important because fishermen operate in an environment characterized by uncertain production, fluctuating weather conditions, and changing market prices. The ability to distinguish fixed costs, variable costs, and asset-related costs allows fishermen to determine the minimum level of revenue required to maintain their fishing operations. It also provides information for decisions concerning fishing frequency, fuel consumption, maintenance of vessels and engines, and the replacement of productive assets.

The R/C ratio used in the study can also be strengthened through an accounting interpretation. The R/C ratio provides a measure of the relationship between revenue and the costs incurred in generating that revenue. However, the interpretation of this ratio requires a clear distinction between household income and business revenue. The study reports an average monthly income of Rp. 2,298,214 and household expenditure of Rp. 3,646,939, while the reported average R/C ratio is 0.7. From an accounting perspective, household income should not automatically be interpreted as fishing-business revenue because household income may consist of different sources, while business revenue should be measured based on the value of fish and seafood sold

by the fishing enterprise.Therefore, future measurement of financial capital should distinguish at least three accounting dimensions: (1) fishing-business revenue, (2) fishing-business costs, and (3) household income and expenditure. This distinction is important because the financial condition of a fishing household is not necessarily identical to the financial performance of its fishing business. A household may have relatively low fishing-business profitability but maintain its livelihood through other income-generating activities. Conversely, relatively high fishing revenue does not necessarily indicate high household welfare if operating costs, debt obligations, and household expenditures are also high.

Accounting information is also relevant to the role of the Bahari 64 Cooperative. The cooperative was established to support fishermen's welfare and provides access to seafood products, savings and loans, and economic networks. Therefore, the availability of reliable accounting information at both the household and cooperative levels can strengthen financial accountability and improve decision-making. Financial records can provide information regarding cash inflows and outflows, members' savings and loans, cooperative assets, operating expenses, and the financial performance of cooperative activities.

This perspective is particularly relevant because previous research on fishermen and fisheries-based MSMEs indicates that limited financial recording remains a major challenge. Research on small-scale fishing businesses in Ambon found that most fishermen had not previously received adequate knowledge regarding business financial recording, despite recognizing its importance for business sustainability. Similarly, research on fisheries MSMEs in East Nusa Tenggara emphasizes the importance of accounting information and the application of financial accounting standards for improving business management.

Consequently, accounting should be viewed not merely as a mechanism for recording transactions but as an information system that supports livelihood sustainability. Simple accounting records can enable fishermen to identify their actual operating costs, determine business profitability, evaluate asset utilization, manage cash flows, and plan future investment. In this sense, accounting information becomes an important component of financial capital because it transforms economic transactions and livelihood activities into information that can be used for decision-making.

The integration of accounting into the sustainable livelihood framework therefore provides a broader understanding of fishermen's financial capital. Financial capital should not only be measured by the amount of income or the R/C ratio but also by the capacity of fishermen and their cooperative institutions to generate, record, interpret, and utilize financial information. Such integration can strengthen the relationship between financial capital and livelihood resilience,

particularly in small-scale fisheries where income is highly dependent on seasonal and environmental conditions.

CONCLUSION, IMPLICATION AND LIMITATION

This study finds that the livelihood sustainability of traditional fishermen in Kedung Cowek is categorized as good, with an overall index of 62.26. Financial capital has the largest contribution (40%), but its achievement is relatively low (58%), indicating that financial vulnerability remains a major challenge. The accounting-based analysis shows that fishermen face substantial productive asset investments, operating costs, depreciation, and limited income.

The integration of Sustainable Livelihoods Approach (SLA) and accounting-based analysis demonstrates that livelihood sustainability depends not only on the availability of livelihood assets but also on how financial resources are measured and managed. Accounting therefore serves as an information mechanism for strengthening financial capital, particularly through cost, asset, income, and financial performance management.

Practically, fishermen need simple financial records to distinguish revenue, costs, depreciation, and profit. Koperasi Bahari 64 can support this through financial-recording and management assistance. Policymakers should complement productivity-oriented programs with financial management, cost control, and productive asset management.

Future research can develop a more specific accounting-based financial capital index incorporating profitability, liquidity, asset replacement capacity, and financial resilience.

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