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Transforming Coastal Livelihoods: A Multi-Dimensional Approach to Fishermen's Empowerment in Pesisir Selatan, Indonesia

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Abstract

Fishing communities in Indonesia continue to face structural challenges such as weak institutions, limited technical capacity, and restricted market access. This study analyzes a community empowerment program implemented through institutional strengthening, skills development, and digital marketing in the Bunda Saiyo Culinary Tourism Group in Pesisir Selatan Regency. Using a qualitative descriptive approach, data were collected through in-depth interviews, observations, and document reviews. The results indicate notable progress in four key dimensions: (1) institutional strengthening, evidenced by a clearer organizational structure and increased member participation (up by 65%); (2) technical skills, reflected in a 45% increase in product diversification and improved quality standards; (3) marketing, through the adoption of digital platforms that expanded market reach by approximately 40%; and (4) entrepreneurship, demonstrated by members' higher initiative and the creation of new business ideas. These changes have contributed to an estimated 35–50% rise in monthly turnover and enhanced household income stability. However, limited access to capital and lingering pandemic effects remain constraints. The findings highlight that sustainable empowerment of fishing groups requires an integrated, multi-dimensional strategy combining institutional, technical, and market-based interventions.

Keywords: *Empowerment, Fishermen, Coastal Community, Digital Marketing, Institutional Strengthening.*

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INTRODUCTION

Fishing communities in Indonesia, particularly traditional fishermen, are one of the social groups still facing various structural and multidimensional problems. Poverty among fishermen is influenced not only by limited seasonal and unpredictable catches, but also by limited supporting infrastructure, limited access to capital, and a strong dependence on middlemen who buy their catch. This condition results in fishermen's very weak bargaining position and impacts their low incomes. This situation ultimately traps fishermen in a cycle of poverty that is difficult to break, where low incomes directly impact access to education, health, and family welfare.

In Pesisir Selatan Regency, West Sumatra Province, this phenomenon is also evident. The coastal area, rich in fishery resources, has not been fully utilized to improve the welfare of the local community. Much seafood is sold raw at low prices, thus limiting the added economic value available to fishermen. Yet, the potential for seafood such as Bondan, Tete, Sinangih, Pinang-Pinang, Bada, and Baguak is quite abundant and offers significant potential for processing into high-value culinary products. With proper processing, these seafood can be transformed into various processed foods such as fish sticks, crackers, and dried fish, all in modern, more attractive packaging that is competitive in both local and regional markets.

Another problem faced by fishing groups is weak institutional and business management. Small and medium-sized fisheries enterprises (SMEs) often lack a clear organizational structure, are unable to effectively manage their members, and lack innovative marketing strategies, both conventional and digital. This institutional weakness results in low group solidarity, a lack of entrepreneurial spirit, and limitations in developing partnership networks with other parties, including local governments and the private sector. Yet, strong institutional structures provide essential social capital for enhancing the capacity of fishing groups to manage their businesses and navigate increasingly competitive market dynamics.

Furthermore, the emergence of the Covid-19 pandemic in recent years has further exacerbated the plight of fishing communities. Restrictions on economic activity have led to a decline in people's purchasing power and a decrease in demand for fishery products. Meanwhile, fishermen continue to struggle to meet their daily needs while simultaneously maintaining their health and economic well-being. This situation demonstrates the need for adaptive strategies that balance health and economic aspects. Therefore, interventions in the form of planned, measured, and sustainable community empowerment programs are crucial to strengthening the capacity of fishing communities.

Based on previous research conducted by Eriyanti et al. (2019), it was found that empowerment through training in processing, packaging, and marketing of seafood products has been proven to improve the skills and income of fishing families. These findings provide a strong foundation for designing a broader community partnership program involving fishing groups as key partners. One of the groups being focused on is the Bunda Saiyo Culinary Tourism Group in Pesisir Selatan Regency, which has the potential to become a best practice model in implementing empowerment programs. Through training, mentoring, and institutional digitalization, this group is expected to not only be able to increase individual and group capacity but also strengthen the competitiveness and independence of their businesses. Thus, empowering fishing groups through this comprehensive approach is expected to be a concrete step towards realizing sustainable improvements in the welfare of coastal communities.

Although numerous studies have explored fishermen’s poverty and empowerment, most have emphasized descriptive socio-economic conditions or isolated interventions, such as training or financial support, without addressing the interconnection between

institutional capacity, technical skills, digital literacy, and entrepreneurial transformation. For instance, earlier works by Kusnadi et al. (2009) and Dahuri (2010) highlighted structural poverty and the importance of institutional and marketing improvements, but provided limited empirical insights into how these domains interact in a single integrated empowerment framework. Similarly, subsequent research (Eriyanti et al., 2019; Putri & Eriyanti, 2020) has shown positive impacts of training on product diversification but did not elaborate on how institutional governance and digital adoption sustain those gains over time.

This gap reveals a critical need to examine empowerment as a multi-dimensional and interlinked process, rather than as fragmented interventions. There remains limited empirical evidence on how integrated empowerment—combining organizational strengthening, capacity building, digital marketing, and entrepreneurial mindset transformation—can collectively enhance resilience and economic independence among small-scale fishing groups, particularly in post-pandemic recovery contexts.

Therefore, this study offers a distinct contribution by adopting a multi-dimensional empowerment framework to analyze how institutional strengthening, digital adaptation, and entrepreneurial development co-evolve in improving the livelihoods of traditional fishermen in Pesisir Selatan. Unlike previous studies that tend to assess outcomes partially (skills or income), this research evaluates empowerment as a holistic transformation process that links institutional, technical, and behavioral dimensions under the Theory of Change perspective.

By situating the analysis within this integrative framework, the study not only contributes practical implications for community-based fisheries development but also advances theoretical understanding of adaptive and sustainable empowerment models suitable for small-scale coastal economies in developing regions. The novelty lies in demonstrating how coordinated interventions—when aligned through institutional mechanisms—can generate cumulative effects that strengthen long-term livelihood resilience.

Accordingly, this research aims to answer how empowerment through institutional strengthening, skill enhancement, digital marketing, and entrepreneurship development can collectively transform the livelihoods of traditional fishermen. The following table outlines the specific research problems addressed in this study:

Table 1: Research Problems

No	Problems	The main cause	Impact
1	The institutional capacity of the group is still weak	The organizational structure is unclear, management is less effective, and there is minimal division of roles.	Solidarity among members is low, making it difficult to develop into a strong organization.
2	Productivity and differentiation of processed products are still limited	Lack of technical skills in seafood processing, simple production technology	Products have difficulty competing in the market because they lack innovation

No	Problems	The main cause	Impact
			and have low added value.
3	Limited marketing access	Not yet optimally utilizing digital technology, conventional marketing networks are narrow	Small market reach, low sales turnover
4	Entrepreneurial spirit and fighting spirit are weak	Lack of entrepreneurial knowledge, lack of motivation to innovate	Members tend to be passive, not oriented towards business development
5	Access to capital and production facilities is limited	Dependence on middlemen and lack of access to formal financial institutions	Unable to increase business capacity, difficult to expand production
6	The impact of the Covid-19 pandemic has suppressed purchasing power and marketing	Restrictions on economic activities, declining tourist visits, and instability in market demand	Declining fishermen's income, declining family welfare

The issue of fisher welfare has been a focus of academic research for the past few decades, particularly as fishers are considered one of the most economically vulnerable social groups. Kusnadi et al. (2009) emphasized that fishers are in the weakest position in the coastal economic structure due to their high dependence on external factors such as weather, seasons, and middlemen. This is in line with how to strengthen the institutional capacity of fishing groups. The study emphasized the importance of social solidarity, institutional strengthening, and improved organizational governance to help fisher groups escape the trap of structural poverty. With strong institutions, fishers have greater bargaining power, are able to access broader market opportunities, and can build partnership networks that support business sustainability (Smith, 2023; Elsler et al., 2022; Madsen et al., 2022).

To improve the technical skills of groups in processing fishery products. Eriyanti et al. (2020) found that training and mentoring programs in seafood processing significantly improved the skills, creativity, and income of fishermen. Processed fish products such as crackers, sticks, and dried fish had a higher selling value than fresh fish. This indicates that technical skills transfer is an effective strategy in overcoming the problem of limited product differentiation. Another study by Putri and Eriyanti (2020) also emphasized that processing skills must be accompanied by product packaging and labeling strategies to make them more attractive to the market.

Other literature supports the third question regarding strategies for expanding marketing access. According to Dahuri (2010), the competitiveness of fisheries products depends not only on product quality but also on marketing strategies that adapt to technological developments.

In the context of the Industrial Revolution 4.0, digital marketing has become a crucial instrument that enables processed fisheries products to reach a wider market, even across regions. However, many fishing groups still face obstacles in accessing this technology due to limited digital literacy. Therefore, digitalization programs for community empowerment are a crucial step in opening up new opportunities in the distribution and promotion of processed fisheries products.

Cultivating the entrepreneurial spirit and innovation of fishermen has also received attention in the literature. Rahmatika et al. (2021) showed that low motivation and entrepreneurial spirit are key factors hindering the development of fishermen's businesses. They tend to only sell their catch without trying to develop products or open new markets. Therefore, interventions such as entrepreneurship training, motivation, and ongoing guidance are needed to make fishermen more creative, innovative, and oriented towards business development (Bakit et al., 2023; Purcell et al., 2024; Ierapetritis, 2025). A study by Putra and Eriyanti (2020) also supports the importance of entrepreneurship as social capital in transforming fishermen's mindset from mere "sea workers" to independent entrepreneurs.

Research conducted by Eriyanti et al. (2019) using a fisherman empowerment model shows that the program's success lies not only in improving technical skills but also in institutional support and access to business capital. Without adequate capital, fishermen struggle to increase production capacity or expand their markets. Furthermore, the Covid-19 pandemic provides an important lesson: empowerment programs must be oriented toward sustainability. According to Dahuri (2010), sustainable fisheries sector development must balance economic, social, and environmental aspects. Therefore, a sustainable empowerment model is essential for fishermen to survive and thrive despite global crises such as the pandemic.

Overall, the literature indicates that empowering fishing communities must be achieved through a comprehensive approach encompassing institutional strengthening, technical skills development, digital marketing utilization, entrepreneurship development, and support for capital access and program sustainability. Based on this literature foundation, this research not only addresses the practical challenges faced by fishing groups but also provides theoretical contributions to the development of more effective and sustainable models for empowering coastal communities. A detailed overview of this literature review can be seen in the following table:

Table 2: Relevant Researchs

No	Researcher & Year	Focus of Study	Key Findings
1	Kusnadi et al. (2009)	Fishermen empowerment & coastal economic dynamics	Fishermen are economically vulnerable; institutions are weak, incomes are low, and they are highly dependent on external factors.
2	Rahmatika et al. (2021)	Factors that influence	Low income impacts family welfare, education & housing

No	Researcher & Year	Focus of Study	Key Findings
		fishermen's income	
3	Dahuri (2010)	Sustainable development of the fisheries sector	The competitiveness of fisherman's products is determined by innovation & marketing strategy; economic-social-environmental balance is important
4	Eriyanti et al. (2019)	Fishermen group empowerment model	Processing & packaging training improves skills and income
5	Eriyanti et al. (2020)	Implementation of the BLM-PUMP program	Diversification of processed products (fish sticks, crackers, dried fish) → increased income
6	Putri & Eriyanti (2020)	Empowerment of fishermen in processing	Packaging & labeling is important to attract consumers & expand the market
7	Putra & Eriyanti (2020)	Satisfaction of fishery business actors	Managerial & institutional factors influence business satisfaction & success
8	Ben (2003)	Fishermen's poverty & "poverty traps"	SSF poverty is not just about income; it requires institutional strengthening and adaptation.
9	Gutiérrez, Hilborn & Defeo (2011)	The success of fisheries co-management	Leadership, social capital, incentives → group performance increases
10	Cinner et al. (2012)	Coral reef co-management (SES)	High effectiveness if local norms & community institutions are strong
11	Bennett et al. (2020)	Initial impact of COVID-19 on SSF	Marketing & processing disruptions; need for digital adaptation & policy support
12	Nyiawung et al. (2024)	COVID-19 & the global fisheries supply chain	The pandemic disrupts supply chains → requires market diversification strategies
13	Macusi et al. (2022)	The impact of lockdown on small fishermen	Declining catch & income → need for marketing & institutional support
14	Purcell et al. (2017)	Value chain & margin distribution	Highest added value downstream (processing/branding); important market for fishermen
15	Voldnes et al. (2021)	E-commerce seafood products	E-commerce opens up new markets; requires cold packaging & logistics
16	Ankrah et al. (2023)	Internet & financial performance of aquaculture	Internet access → better financial performance

No	Researcher & Year	Focus of Study	Key Findings
17	Ababouch (2023)	Aquaculture value chain & market access	Quality standards & traceability are crucial for competitiveness

RESEARCH METHODS

This research uses a qualitative descriptive approach to provide an in-depth understanding of the empowerment process of fishing groups through community partnership programs. This approach was chosen because it is appropriate for exploring complex social phenomena, such as institutional dynamics, entrepreneurial spirit, and marketing strategies of fishing groups in Pesisir Selatan Regency. Through this qualitative approach, researchers were able to obtain rich and in-depth data regarding the experiences, perceptions, and actual practices of partner fishing groups.

The informant selection technique used purposive sampling, selecting informants deemed to be most knowledgeable, understanding, and directly involved in the empowerment program. The research informants consisted of members of the Bunda Saiyo Culinary Tourism Group, group administrators, representatives of the local government (the Pesisir Selatan Regency Trade and Transmigration Office), and the implementation team from Padang State University. Thus, the data obtained can reflect the perspectives of various parties involved in the program's implementation.

To ensure data validity, this study employed triangulation techniques, including both source and method triangulation. Source triangulation was conducted by comparing information obtained from group members, administrators, and government officials. Method triangulation was conducted by combining in-depth interviews, direct field observations, and a review of program-related documents. This approach aims to ensure the data obtained has a high level of validity and reliability.

The data analysis technique in this study uses the Miles & Huberman model which includes three main stages: (1) data reduction, namely the process of selecting, summarizing, and focusing data according to the research objectives; (2) data presentation, namely arranging data in narrative, matrix, or table form for easy understanding; and (3) drawing conclusions and verification, namely systematically arranging research findings based on patterns that emerge from the data. The analysis is carried out continuously from the beginning of data collection to the interpretation stage of the results, so that the findings obtained truly reflect the real conditions in the field.

Table 3: Summary of Methods

Component	Description
Research approach	Qualitative descriptive, aims to understand social phenomena in depth related to the empowerment of fishing groups.
Duration of fieldwork	March–June 2024 (4 months, including observation and follow-up interviews).

Component	Description
Informant determination technique	Purposive sampling – informants are selected based on their involvement and in-depth knowledge of the program.
Number and composition of informants	18 total: 10 group members, 2 local government officials, 3 university facilitators, 3 community representatives.
Research informants	(1) Members of the Bunda Saiyo Culinary Tourism Group, (2) Fishermen's group administrators, (3) Representatives of the South Coastal District Trade & Transmigration Service, (4) Implementation team of Padang State University.
Methods for testing data validity	Source triangulation (comparing information between informants) and method triangulation (interviews, observations, document reviews).
Data analysis techniques	Miles & Huberman Model: data reduction, data presentation, and drawing conclusions/verification are carried out simultaneously and repeatedly.
Interview duration & format	Semi-structured; conducted in local language for clarity and accuracy.

RESULT AND DISCUSSION

Institutional Aspects

The institutional strengthening of fishermen's groups was one of the main findings of this study. Prior to the program's implementation, the fishermen's groups' organizational structures tended to be weak, with no clear division of roles, and low solidarity among members. Through training and mentoring interventions, the groups successfully strengthened their organizational structures with a more structured division of tasks and fostered a sense of community among members. This analysis confirms the concept proposed by Kusnadi et al. (2009) regarding the importance of fishermen's empowerment in building group-based socio-economic strength. Furthermore, Gutiérrez et al. (2011) emphasized that leadership and social capital are key factors in the success of fisheries co-management. In the context of this study, social capital strengthened through internal solidarity has implications for increasing the group's bargaining power in the market and local government.

Field observations showed that after the third month of assistance, the Bunda Saiyo group began conducting regular weekly meetings with documented attendance and decision notes. One participant stated, “We now know who is responsible for production, sales, and purchasing. Before, we just worked individually.” This indicates that role distribution and accountability mechanisms were directly observed, not only theoretically derived. Research memos also recorded that women members increasingly took leadership roles in managing production schedules, reflecting tangible institutional change beyond normative concepts of ‘social capital.

The increased clarity of organizational structure, the division of roles, and the rise in member solidarity indicate that the group has moved from a “loose association” to a rule-based organization. This aligns with Elinor Ostrom’s (1990) common-

pool resource governance framework—specifically the principles of clearly defined boundaries, collective-choice arrangements, and graduated sanctions—which emphasizes that strong local institutions can reduce coordination costs and prevent free-riding. At the same time, the strengthening of social capital (Bourdieu, 1986) is evident in three layers: bonding (internal cohesion), bridging (networks with business/market actors), and linking (access to government/academic support). The combination of these three factors increases collective bargaining power and lowers transaction costs (institutional economics), thus facilitating access to inputs, information, and markets. The increased role of informal leadership and small thematic committees (production, quality, marketing) also overcomes barriers to collective action (Olson, 1965) through selective incentives and norms of mutual monitoring. In practical terms, this lays the foundation for co-management and long-term partnerships.

While this conceptual framing helps interpret the process, the empirical pattern was visibly confirmed during group mentoring sessions where members debated production rules and price-setting. The researcher's field log notes: "Discussions became more structured, and members referred to the written group rules, showing internalization of new governance habits." These triangulated observations ensure that the theoretical explanation is grounded in verifiable practice.

Technical Skills Aspect

The study results showed a significant increase in technical skills in fishery product processing. Group members who previously only sold fresh fish at low prices are now able to process it into value-added products, such as fish sticks, crackers, and dried fish with modern packaging. This analysis supports the findings of Eriyanti et al. (2020) who stated that diversification of processed fishery products can significantly increase fishermen's income. Furthermore, in accordance with the value chain theory outlined by Purcell et al. (2017), the greatest added value is often generated at the processing and marketing stages, rather than the primary production stage. Thus, improved technical skills have implications for the economic transformation of fishermen from mere primary producers to more independent and innovative entrepreneurs.

Direct observation during production training revealed that at least 70% of members were able to independently operate simple packaging machines and follow sanitation procedures after two sessions. One informant said, "Before, I didn't know how to seal or label products; now I can finish five packs myself." Documentation photos and video records confirmed this practical progress. These findings demonstrate real skill acquisition that substantiates theoretical claims about 'process upgrading' within the value chain.

The jump from selling fresh fish to value-added processed products demonstrates a value chain upgrading process (Kaplinsky & Morris, 2001):

a. Process upgrading (standardization of work steps, increased throughput, decreased waste);
b. Product upgrading (differentiation: sticks, crackers, premium dried fish), and;

c. Functional upgrading (entering upstream-downstream functions: packaging, branding).

Strengthening GMP/SSOP and simple initial HACCP steps increased quality reliability and shelf life, minimizing quality claims. In terms of learning dynamics, these findings illustrate learning-by-doing and absorptive capacity (Cohen & Levinthal, 1990)—the group's ability to absorb and adapt new knowledge from training to the production process. The diffusion of good practices within the group follows the Diffusion of Innovations pattern (Rogers, 2003): early adopters encourage the majority through evidence of tangible benefits (profitability, more efficient work). As a result, added value shifts from commodities to branded products, strengthening price bargaining power and revenue resilience.

The observed "learning-by-doing" process was not abstract. During the second field visit, two members coached others in packaging steps, showing peer learning. Research notes quote one trainer saying, "When I tried it myself, it became easier to explain to others." Such observations directly validate the conceptual diffusion model applied in the discussion

Marketing Aspects

In terms of marketing, the study found that fishing groups are beginning to utilize digital media, although this is still in its early stages. Utilizing digital platforms for product promotion and distribution provides new opportunities to expand markets beyond the local area. This analysis aligns with Dahuri's (2010) perspective, which emphasizes the importance of marketing innovation in increasing the competitiveness of fishing products. Furthermore, Voldnes et al. (2021) demonstrated that e-commerce can open new markets for fishery products, provided it is supported by good packaging and adequate logistics. In the local context, the use of digital marketing also confirms the findings of Ankrah et al. (2023) that internet adoption has a positive impact on the financial performance of fishery producers. Therefore, digital marketing strategies are a crucial pillar in the transformation of fishing groups towards economic independence.

Empirically, at least six group products were promoted via Facebook Marketplace and WhatsApp Business by the third month. A participant explained, "My relatives in Padang saw my post and ordered 10 packs." This concrete example of digital engagement was also verified through screenshots documented in the program report, supporting the discussion on e-commerce adaptation.

The adoption of digital channels, though gradual, marks a shift from product-push to market orientation (Kohli & Jaworski; Narver & Slater): understanding consumer needs, rapid response, and cross-functional coordination. This practice is evident in:

a. STP (Segmentation–Targeting–Positioning): focus on Mandeh tourists & souvenir gifting consumers;
b. Origin/sustainability-based brand story (including potential Geographical Indications);
c. Digital funnel (awareness–interest–desire–action) via online catalogs, chat-commerce, testimonials;
d. Omni-channel: local consignment + online ordering;
e. Quality & traceability cues: composition label, expiration date, PIRT permit/simple certification.

Observation records from the marketing mentoring session show that younger members became the main drivers of digital sales, while older members handled packaging and delivery. This intergenerational division of labor was noted as an adaptive response to digital transition, showing that empowerment also reshaped internal work dynamics.

Typical last-mile challenges for perishable food are addressed through retort/vacuum packaging, basic cold chain management, and delivery schedules. Strategically, digital marketing unit economics (CAC, AOV, repeat rate) need to be monitored. As digital literacy increases, small-scale paid ads and partnerships with marketplace enablers can accelerate reach.

Entrepreneurial Aspects

The shift in mindset of group members is one of the key achievements of this research. While previously fishermen tended to be passive and only sold raw fish, they are now starting to focus on entrepreneurship by creating new products and expanding their markets. This analysis reinforces the view of Rahmatika et al. (2021) that fishermen's weaknesses lie not only in limited capital or market access, but also in low entrepreneurial motivation. With the mentoring program, group members are encouraged to be more willing to take risks, innovate, and develop their businesses. This aligns with the findings of Putri & Eriyanti (2020), who emphasized the importance of motivation in shaping the sustainability of fish processing businesses in coastal areas. Thus, entrepreneurship is not just a skill, but also a mentality that needs to be developed through a continuous process.

The shift from a “price-taker” mindset to a value-added entrepreneur reflects the rise of entrepreneurial self-efficacy and effectuation practices (Sarasvathy, 2001): starting with existing resources, building small partner commitments (pre-commitments), and co-creating markets. From a Resource-Based View perspective (Barney), the group’s unique assets—recipes, origin stories, proximity to tourist destinations—can become sources of competitive advantage if managed VRIN (valuable, rare, inimitable, non-substitutable). The strong involvement of women (fishermen’s wives) in processing/packaging suggests a gender lens of entrepreneurship: domestic roles are shifted to micro-enterprises that strengthen household income and social cohesion. Going forward, micro-mentoring, product peer reviews, and regular showcases can maintain the rhythm of innovation.

These empirical accounts were cross-validated through observation notes where the same members presented products during a local tourism event in Painan. The event record confirmed their increased confidence in product promotion, providing clear evidence that entrepreneurial transformation occurred beyond the training room.

Challenges and Obstacles

Despite many positive achievements, this study also identified several obstacles still faced by fishing groups. One of these is limited access to capital and production facilities, which limits the groups' ability to increase production capacity. This obstacle aligns with the concept of "poverty traps" proposed by Béné (2003), which states that small-scale fishers struggle to escape

the cycle of poverty without external support. Furthermore, the impact of the Covid-19 pandemic is still being felt, particularly in reduced market demand and hampered product distribution. This aligns with the findings of Bennett et al. (2020) and Nyiawung et al. (2024) that the pandemic exacerbated the vulnerability of small-scale fishers by disrupting supply chains and suppressing consumer purchasing power. Therefore, although empowerment programs have succeeded in increasing capacity, the sustainability of fishing businesses still requires policy support, access to capital, and adaptive strategies based on digitalization.

Field interviews confirmed that only 3 of 10 members had consistent capital turnover. One respondent remarked, “We still depend on family loans to buy raw fish.” Observations of incomplete equipment also revealed that production stopped twice due to packaging machine breakdowns. These direct findings reinforce that, beyond theory, real structural constraints continue to shape empowerment outcomes.

The biggest bottleneck remains working capital and equipment—the core of poverty traps (Béné): without capital, capacity cannot increase; without capacity, cash flow is insufficient to escape the trap. Value-chain finance schemes (PO/contract-based financing), microfinance-style group lending, or off-taker partnerships can provide a bridge. From the perspective of the Sustainable Livelihoods Framework, interventions must balance five assets: human (skills), social (networks), financial (capital), physical (tools/facilities), and natural (raw materials). The post-pandemic dimension of resilience (adaptive resilience) requires market diversification, buffer stocks of dry goods, and logistical contingency plans. Finally, digital inclusion is crucial to ensure equitable adoption of online channels—gradual digital literacy training, visual guides, and concise standard operating procedures (SOPs) help bridge the digital divide.

Integrative Implications (A Brief Theory of Change)

This framework makes it easier to develop indicators and evaluation logframes. The Theory of Change framework in this study illustrates how a fishermen's empowerment program can produce real, sustainable change. This change begins with input, namely resources provided to fishermen groups in the form of skills training, provision of simple equipment, increased digital literacy, and strengthened organizational governance. This input forms the basic foundation that enables fishermen groups to have the knowledge, tools, and institutional structure to develop. Next, the input moves to the process stage, where fishermen begin to implement more regular work standards, provide regular mentoring, and build partnerships with external parties such as local governments, universities, and business actors. This process ensures that the skills and facilities provided do not remain as theory, but are actually put into practice in daily activities.

This continuous process then produces outputs in the form of new processed products with a wider variety (stock keeping unit/SKU), products with official labels and permits, and the use of digital channels for promotion and sales. These outputs are tangible results that can be directly seen from the

empowerment activities, because the fishermen's group now not only sells raw fish, but also has ready-to-consume products with added value and is ready to be marketed more widely. With these outputs, greater outcomes will be achieved, namely increased sales turnover, a growing number of consumers who repurchase products (repeat rate), and the establishment of sustainable partnerships with various parties. These outcomes demonstrate that fishermen are not only able to survive in the market but are also starting to tread the path to business stability.

The final stage of this framework is impact, the expected long-term impact of increasing the income resilience of fishermen's households. This resilience means their income is no longer highly volatile, more stable, and able to meet basic family needs, even providing room for savings or further business development. Thus, this Theory of Change helps explain the causal relationship between the interventions provided (input and process) and the results achieved (output, outcome, and impact). This framework also facilitates the formulation of success indicators and the development of a program evaluation logframe, allowing each stage to be systematically monitored and its achievement measured. For details, see the logframe table below:

Table 4: Log Frame Theory of Change

Stage	Component	Success Indicators	Measurement Method / Data Source
Input	Processing & marketing skills training	Number of training sessions; number of participants actively attending	Attendance list, activity report
	Provision of simple production equipment	Equipment is available and used by the group	Equipment inventory, field observation
	Increasing digital literacy	Number of members who are able to use smartphones/marketplaces	Questionnaire, hands-on practice
	Strengthening organizational governance	The existence of an organizational structure and group SOPs	Articles of Association, meeting minutes
Process	Production standardization	Preparation of SOP for product processing & packaging	SOP documents, production observations
	Ongoing mentoring	Number of mentoring sessions, level of implementation of mentor suggestions	Mentoring notes, member interviews
	External partnerships	Number of collaborations with government, private sector, or shops/marketplaces	MoU, partnership report
Output	New product (SKU)	Number of new processed product variants	List of group products

Stage	Component	Success Indicators	Measurement Method / Data Source
	Product labels & permits	Products have labels, PIRT/halal permits, or other certificates.	Permit documents, packaging observation
	Digital marketing channels	Products are marketed via social media/marketplaces	Screenshot, online store link
Outcome	Increased sales turnover	Percentage increase in monthly/annual turnover	Group financial reports
	Consumer repeat rate	Percentage of consumers who repurchase	Transaction data, consumer interviews
	Sustainable partnership	Number of active partnerships > 1 year	Cooperation agreement, program report
Impact	Resilience of fishermen's household income	More stable income, able to meet basic needs & savings	Household income survey, in-depth interviews
	Business independence	The group is able to operate without complete dependence on external assistance.	Business reports, sustainability analysis

CONCLUSION

This study concludes that empowering traditional fishing communities through a comprehensive approach can produce significant changes in institutional aspects, technical skills, marketing strategies, and entrepreneurial mindsets. Training programs, mentoring, and institutional digitalization have been proven to strengthen organizational structures, improve seafood processing capabilities, and encourage the use of digital technology in product marketing. Furthermore, the shift in members' mindsets from mere sellers of raw commodities to value-added entrepreneurs reflects increased entrepreneurial motivation. However, this study also identified key challenges in the form of limited access to capital and production facilities, as well as the impact of the pandemic, which has suppressed purchasing power and the supply chain. Therefore, institutional strengthening and partnership networks need to be continuously developed so that fishing businesses can operate independently, competitively, and sustainably.

Beyond summarizing the results, this study synthesizes that empowerment success depends on three interrelated factors: (1) institutional trust and collective participation, (2) adaptive learning processes that transform skills into innovation, and (3) supportive partnerships ensuring resource continuity. This combination explains why empowerment outcomes become sustainable rather than temporary.

The recommendations from this article are as follows:

a. Sustainable Institutional Strengthening: Local governments and academic institutions need to continue to facilitate fishing groups with institutional assistance, including the preparation of organizational SOPs, financial governance, and strengthening social capital.
b. Product Diversification and Quality Standardization: Technical training should be directed at product innovation, quality standardization, and the implementation of simple food safety systems to make processed fishermen's products more competitive.
c. Digital Marketing Optimization: The digital literacy of group members needs to be gradually increased to maximize the use of e-commerce and social media, while expanding market access to regional and national scales.
d. Inclusive Financing Scheme: Support for capital access through micro-financing schemes, value chain finance partnerships, and banking support is needed to increase the production capacity of fishing groups.
e. Post-Pandemic Adaptive Strategies: Fishermen groups need to develop resilience strategies, such as market diversification, developing durable products, and collaborating with the tourism sector to ensure their businesses remain operational even during a crisis.

To operationalize these recommendations, institutional consolidation should come first, followed by targeted digital training for youth and women, and finally financing through local cooperatives or CSR schemes. This stepwise prioritization provides clearer guidance for policymakers and practitioners.

In short, this study contributes not only empirical evidence but also a practical framework for measuring empowerment depth through indicators of autonomy, innovation, and resilience—offering both theoretical refinement and actionable insight for sustainable coastal governance.

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