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SEA2VALUE: EMPOWERING TOK BALI COMMUNITIES THROUGH FISH-BASED PRODUCT INNOVATION

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Abstract:

Fish-based product innovation has significant potential to strengthen rural coastal economies by transforming local marine resources into value-added products. The Fish Lunak and Fish Paste Project in Tok Bali, Pasir Puteh, Kelantan, is a community-based social business initiative designed to support local livelihoods through downstream seafood processing. Although previous studies have examined fisheries livelihoods and community entrepreneurship, limited research has explored how fish-based social business initiatives may support income opportunities, entrepreneurial capacity and perceived wellbeing among single mothers in coastal communities. This context-specific qualitative case study explored the project's livelihood potential, implementation challenges and perceived sustainability through semi-structured interviews with five single mothers, supported by field observation and document review. The data were analysed thematically, with Bronfenbrenner's Ecological Systems Theory guiding the interpretation of how individual, family, community, institutional, market and policy contexts shaped participants' experiences. Five themes were identified:

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transformation of local fish resources into value-added products; perceived income-generation opportunities; development of entrepreneurial and food-processing skills; market access and commercialisation challenges; and the need for continuing institutional and community support. Participants described gaining exposure to product handling, processing, packaging and basic business practices, while viewing product sales as a potential supplementary income source; however, actual income change was not quantitatively measured. Given the small, context-specific sample, the findings do not establish causal effects or broad generalisability. Instead, they suggest that Sea2Value may represent an emerging community-based social business model that warrants further implementation and evaluation.

Keyword:

Community Economy; Community Project; Fish Lunak; Fish Paste; Product Innovation; Single Mothers; Social Business;

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Introduction

Coastal communities in Malaysia are closely connected to marine resources as a source of livelihood, income and local identity. In areas such as Tok Bali, Pasir Puteh, Kelantan, fishing and seafood-related activities play an important role in supporting household economies (Masri et al., 2024). However, many coastal communities still face challenges such as limited employment opportunities, low household income, dependence on raw fish sales, unstable market prices and lack of value-added product innovation.

Traditionally, fish and seafood are often sold as fresh raw materials. While this provides immediate income, the economic return may be limited, especially when market prices fluctuate or when fish supply exceeds demand. Downstream processing offers an opportunity to increase the value of local marine resources by transforming raw fish into processed products such as fish paste, fish balls, dried fish, fish crackers, fish floss, ready-to-cook fish products and other seafood-based innovations.

The Sea2Value initiative, particularly through the Fish Lunak and Fish Paste Project in Tok Bali, was introduced as a community-based effort to strengthen local economic activities through product innovation. The project aims to empower community members by equipping them with skills in fish processing, product development, basic business management, marketing and technology use. By transforming local fish into value-added products, the project seeks to generate additional income and enhance community wellbeing.

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Fish lunak and fish paste products have potential because they are practical, locally relevant and marketable. Fish paste can be used as a base ingredient for various food products, while fish lunak offers an innovative seafood product that may appeal to local consumers (Bashir et al., 2017). However, to ensure sustainability, the project requires proper training, capital support, processing technology, quality control, packaging, branding and market access. This study examines Sea2Value as an emerging rural community entrepreneurship initiative. It focuses on the experiences of five participating single mothers and explores how fish-based product innovation may support perceived income opportunities, entrepreneurial capacity and rural wellbeing within the specific context of Tok Bali.

Problem Statement

Although Tok Bali is known as a coastal area with access to marine resources, local communities may not fully benefit from the economic potential of fish-based products. Many fishing communities remain dependent on the sale of raw seafood, which is vulnerable to price instability, seasonal supply changes and limited bargaining power. Without downstream processing and product innovation, the community may lose the opportunity to increase product value and expand income sources.

The Fish Lunak and Fish Paste Project were introduced to address this issue by encouraging the development of fish-based downstream products. However, community-based product innovation projects often face sustainability challenges. These include limited capital, lack of processing equipment, inconsistent product quality, weak branding, restricted market access and limited technical knowledge (Ravishankar & Krishnamoorthy, 2024). Entrepreneurs may also require continuous guidance in food safety, packaging, pricing, digital marketing and customer management.

Another concern is that community projects may not succeed if they are implemented as short-term interventions without strong local ownership and support systems. The success of fish-based product innovation depends not only on the individual entrepreneur but also on family support, community networks, agency assistance, market structures and policy environment (Bacq et al., 2022).

Although scholarship has addressed fisheries-based livelihoods, value-added seafood processing and community entrepreneurship, limited attention has been given to how these dimensions intersect in social business initiatives involving economically vulnerable single mothers in Malaysian coastal communities. This study addresses that gap through a qualitative examination of the experiences of five Sea2Value participants and the broader ecosystem influencing project sustainability. Bronfenbrenner's Ecological Systems Theory provides an analytical structure for examining how individual, family, community, institutional, market and policy-level factors interact in shaping participants' experiences.

Research Objectives

The objectives of this study are:

1. To explore the potential of Fish Lunak and Fish Paste product innovation in improving the livelihood of the Tok Bali community.
2. To identify the key benefits of the Sea2Value project in terms of income generation, skill development and community capacity building.

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3. To examine the challenges faced in implementing and sustaining fish-based downstream product innovation.
4. To analyse the role of individual, family, community, institutional and policy support systems in influencing project sustainability.
5. To propose strategies for strengthening fish-based product innovation as a sustainable community entrepreneurship model.

Research Questions

This study is guided by the following research questions:

1. How do the Fish Lunak and Fish Paste Project contribute to livelihood improvement among the Tok Bali community?
2. What are the main benefits of the project in terms of income generation, skills and local entrepreneurship?
3. What challenges are faced in implementing and sustaining the project?
4. How do ecological support systems influence the success of the project?
5. How can the Sea2Value initiative be strengthened as a sustainable community entrepreneurship model?

Literature Review

Coastal Communities and Rural Livelihood Development

Coastal communities often depend on fisheries and marine-based activities as their main source of livelihood. These activities include fishing, seafood collection, fish processing, small-scale trading and other marine-related work that supports household income and local economic activity (Béné et al., 2016; FAO, 2020). However, high dependence on fisheries may expose coastal communities to economic vulnerability, especially when fish prices fluctuate, catch volumes decline or weather conditions disrupt fishing activities. In many rural coastal areas, income is often irregular because fishing activities are influenced by seasonal changes, market demand, fuel costs and access to fishing equipment. Therefore, rural livelihood development requires strategies that can diversify income sources and reduce dependency on raw resource extraction alone.

Product innovation and downstream processing can strengthen coastal livelihoods by creating value-added products from marine resources. Instead of selling raw seafood at low or unstable prices, coastal communities can process marine resources into products such as dried fish, fish crackers, seafood paste, frozen products, ready-to-cook items or other local food products (Little et al., 2016). This can increase income potential, reduce post-harvest losses and create new entrepreneurial opportunities for local communities. Through downstream processing, communities are able to extend the value chain of fisheries products and participate in more profitable economic activities beyond harvesting.

In addition, livelihood development among coastal communities should include skills training, business guidance, marketing support and community participation. Local participants need knowledge in product handling, packaging, branding, pricing, hygiene, financial records and digital marketing to ensure that their products can compete in the market (Peredo & Chrisman, 2006; Yusoff et al., 2020). Support from universities, government agencies, NGOs and local industry partners can help communities improve product quality and access wider market

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opportunities. Therefore, coastal livelihood development should not focus only on increasing fish catches, but also on strengthening local capacity, encouraging innovation and building sustainable community-based enterprises.

Fish-Based Product Innovation

Fish-based product innovation refers to the development of new or improved products using fish as the main raw material. Innovation may involve product formulation, processing techniques, packaging, branding, storage, shelf-life improvement and marketing strategies. For small-scale entrepreneurs and coastal communities, product innovation is important because it allows them to move beyond selling raw fish and develop products with higher market value. Instead of depending only on fresh fish sales, communities can diversify their income through processed fish products that are more stable, marketable and suitable for different consumer needs (Prosperi et al., 2018).

Fish paste is one example of a versatile fish-based product that can be used in various food preparations. It can be developed for household consumers, food stalls, small catering businesses and local markets because it is easy to use and can be adapted into different dishes. Fish paste also has potential to be packaged as a semi-processed product that saves preparation time for consumers. In addition, fish lunak can be developed as a ready-to-cook or ready-to-eat product if supported by proper processing techniques, suitable seasoning, attractive packaging and safe storage methods. These products can increase the value of local fish resources while creating new opportunities for community-based entrepreneurship.

However, fish-based product innovation requires technical knowledge, hygiene practices, quality control and market testing. Community participants need training in food handling, product standardisation, packaging, labelling, costing and pricing to ensure that the products are safe, consistent and competitive. Market testing is also important to understand consumer preferences, suitable product size, taste, packaging design and price range (Radu et al., 2023). Therefore, fish-based product innovation should be supported by continuous guidance from relevant agencies, university facilitators or food technology experts so that coastal communities can transform local fish resources into sustainable income-generating products.

Community Entrepreneurship

Community entrepreneurship refers to entrepreneurial activities that are developed within and for the benefit of a community. It emphasises the use of local resources, community participation, collective benefit and sustainable livelihood development. Unlike individual entrepreneurship, which usually focuses on personal business growth and profit, community entrepreneurship places stronger attention on shared wellbeing, social value and local capacity building. Through this approach, community members are not only involved as workers or producers, but also as active participants who contribute ideas, manage resources and share the benefits of economic activities.

In the context of Tok Bali, fish-based entrepreneurship is highly relevant because it builds upon existing marine resources, local skills and coastal food culture. The community already has access to fishery resources and practical knowledge related to seafood handling, preparation and local consumption patterns (Mohd Salleh & Abdul Halim, 2018). Therefore, fish-based products such as fish paste, fish lunak and other processed seafood items can be developed as

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community enterprise products with commercial potential. By transforming local fish resources into value-added products, the community can reduce dependence on raw fish sales and create more stable income opportunities.

The Sea2Value project can create opportunities for income generation while strengthening community skills and economic resilience. Through this project, participants can be exposed to product development, food processing, packaging, branding, costing, marketing and basic business management (Tambunan, 2019; Yusoff et al., 2020). These skills are important to help the community move from informal production towards more structured and sustainable entrepreneurship. In the long term, Sea2Value has the potential to become a community-based enterprise model that not only improves household income, but also strengthens local identity, encourages cooperation and supports sustainable livelihood development among coastal communities in Tok Bali.

Challenges in Small-Scale Food Processing

Small-scale food processing enterprises often face various challenges that can affect their ability to produce, market and sustain their products. These challenges commonly include limited capital, inadequate equipment, weak production facilities, hygiene issues, product standardisation, packaging, labelling and market access (Tambunan, 2019; Musa & Chinniah, 2016). Many small entrepreneurs operate with limited financial resources, making it difficult for them to purchase suitable processing tools, improve production space or invest in attractive packaging. As a result, their products may remain small in scale and may not be able to meet wider market demand consistently.

Another major challenge is the lack of technical knowledge related to food safety, quality control, branding and digital marketing. In food processing, entrepreneurs need to understand proper hygiene practices, safe handling procedures, product storage, shelf-life management and labelling requirements. If these aspects are not properly managed, product quality may be inconsistent and customer confidence may be affected. Weak branding and limited marketing skills can also reduce the ability of small-scale entrepreneurs to position their products effectively in local markets, supermarkets, online platforms or community-based sales channels (Hassan & Ali, 2021).

For community-based seafood products, additional challenges may include unstable raw material supply, limited storage facilities, lack of cold chain systems and insufficient processing technology. Seafood products are sensitive to freshness, temperature and handling methods, so proper storage and processing are important to maintain quality and safety. Without adequate support, community entrepreneurs may struggle to expand production, meet customer expectations or compete with established food producers. Therefore, small-scale food processing initiatives such as Sea2Value require continuous technical guidance, access to suitable equipment, food safety training, packaging support and market linkage strategies to ensure long-term sustainability.

Bronfenbrenner's Ecological Systems Theory

Bronfenbrenner's Ecological Systems Theory explains development through interactions between individuals and layered social and environmental systems. The microsystem concerns immediate settings such as family and everyday work; the mesosystem concerns relationships

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among these settings; the exosystem covers institutions and structures that indirectly shape opportunities; the macrosystem encompasses cultural values, policies and economic conditions; and the chronosystem captures changes over time (Bronfenbrenner, 1979).

In this study, the theory informed both data collection and interpretation. Interview questions concerning motivation, household support, community relationships, assistance from agencies, market access and future expectations were aligned with the ecological levels. During thematic analysis, codes were first developed from participants' accounts and supporting observations, then interpreted across the microsystem, mesosystem, exosystem, macrosystem and chronosystem. This approach enabled the study to assess project sustainability as an interaction between personal readiness, family and community relationships, institutional support, market conditions, policy structures and change over time.

The framework is therefore used as an interpretive lens rather than as an additional description introduced after the findings. It helps explain why participants' skills and motivation alone may be insufficient without family support, community cooperation, technical guidance, equipment, market access and an enabling policy environment.

Methodology

Research Design

This study employed a qualitative case study design to explore the potential of the Fish Lunak and Fish Paste Project as a community-based social business initiative in Tok Bali, Pasir Puteh, Kelantan. A qualitative approach was selected because the study aimed to understand the experiences, perceptions, challenges and empowerment outcomes of single mothers involved in fish-based product innovation. The case study design was appropriate because the research focused on a specific social business project implemented within a rural coastal community (Creswell & Poth, 2018; Yin, 2018).

Study Location

The study was conducted in Tok Bali, Pasir Puteh, Kelantan. Tok Bali was selected because it is a coastal area with strong fisheries resources and potential for fish-based downstream product development. The location provides a relevant context for examining marine resource-based entrepreneurship, community economic development and livelihood empowerment among single mothers.

Participants and Sampling

The study involved five single mothers who participated directly in the Fish Lunak and Fish Paste social business project. Purposive sampling was used because these participants possessed first-hand, information-rich experience of product development, perceived income opportunities, skills gained, implementation challenges and support needs. The sample was appropriate for an in-depth case study of one bounded community initiative; it was not intended to represent all single mothers or coastal communities. Consequently, the findings are interpreted as context-specific insights rather than statistically generalisable conclusions.
The selection of single mothers as participants was appropriate because this group often faces economic vulnerability, including limited income opportunities, household responsibilities and

financial pressure. Their involvement in the project provides an opportunity to examine how fish-based product innovation can support livelihood improvement and social empowerment (Ibrahim et al., 2024).

Data Collection

Data were collected through semi-structured interviews with five single mothers involved in the project. Semi-structured interviews were used because they allowed the researcher to ask guided questions while giving participants the flexibility to share their experiences in detail. The interviews focused on participants' involvement in the Fish Lunak and Fish Paste Project, perceived benefits, income opportunities, skills development, marketing challenges and sustainability needs.

The interviews were supported by field observation and document review. Field observation was conducted to understand the production environment, processing activities, use of equipment, product preparation, packaging and local community context. Document review involved examining relevant project materials, notes, photographs, training records or supporting documents related to the implementation of the project.

Interview Protocol

The interview questions were developed from the research objectives and informed by Bronfenbrenner's ecological levels. Questions on motivation, skills and confidence addressed the individual and immediate environment; questions on family and community support addressed the microsystem and mesosystem; questions on institutional assistance and market access addressed the exosystem; and questions on future sustainability captured wider policy, market and temporal influences. The following questions were used as the interview guide:

1. Can you explain your involvement in the Fish Lunak and Fish Paste Project?
2. What motivated you to participate in this social business project?
3. How does this project help you and your household economically?
4. What skills have you gained from producing fish-based products?
5. How has this project affected your confidence as a single mother?
6. What are the main challenges in producing Fish Lunak and Fish Paste?
7. What challenges do you face in marketing the products?
8. What kind of support do you need to continue this project?
9. How does your family or community support your involvement?
10. What are your hopes for the future of this project?

Data Analysis

The data were analysed using thematic analysis. The process began with repeated reading of interview notes, observation notes and supporting documents to achieve familiarity with the data (Braun & Clarke, 2006). Meaningful statements were coded, similar codes were grouped into categories, and categories were developed into themes. Themes were reviewed collaboratively against the data sources and refined to ensure internal coherence.

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The initial coding remained grounded in participants' accounts of livelihood opportunities, skills, empowerment, marketing challenges, operational constraints and support needs. Bronfenbrenner's Ecological Systems Theory was then used as an interpretive lens to map the themes across individual and family contexts, community relationships, institutional and market structures, broader policies and changes over time. This two-stage process avoided imposing the theory before participant-derived themes had been established.

Trustworthiness of the Study

Several strategies were applied to strengthen the trustworthiness of the study. First, data triangulation was used by combining semi-structured interviews, field observation and document review. Second, member checking was conducted by confirming key points with participants to ensure that the researcher's interpretation reflected their actual views. Third, peer review was conducted with the research team to refine the themes and ensure consistency in data interpretation. Fourth, thick description was used to explain the study context, participant background and project implementation process.

Ethical Considerations

The study was conducted according to ethical research principles. Participants were informed about the purpose of the study and their participation was voluntary. Consent was obtained before interviews were conducted. The identities of all participants were protected by using participant codes instead of personal names. The data were used only for academic and research purposes. The study also respected participants' privacy, dignity and life circumstances as single mothers.

Findings

The findings are based on semi-structured interviews with five single mothers participating in the Fish Lunak and Fish Paste project, supported by field observation and document review. Five themes were identified: transformation of local fish resources into value-added products; perceived income-generation opportunities; development of entrepreneurial and food-processing skills; market access and commercialisation challenges; and the need for continuing institutional and community support. Because the study did not quantitatively measure income or wellbeing, these themes represent participants' experiences and perceptions rather than verified causal effects.

Theme 1: Transformation of Local Fish Resources into Value-Added Products

The first theme concerns participants' recognition that locally available fish could be processed into products with greater market potential. Their accounts, supported by observations of product preparation and project materials, indicated that Fish Lunak and Fish Paste offered alternatives to selling fish only as a raw commodity (Rizwan & Arivukumar, 2025).

Fish paste is a practical product because it can be used for various food preparations. It can also be sold to households, food sellers and local consumers. Fish lunak offers another form of innovation that can attract customers who are interested in convenient seafood products.

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These accounts suggest that processing, packaging and marketing may create additional value from local marine resources. Within Sea2Value, the shift from raw fish to marketable processed products was therefore understood as a potential pathway for livelihood diversification rather than evidence of an already established income increase.

Theme 2: Income Generation and Livelihood Improvement

The second theme concerns perceived income-generation opportunities. Participants viewed sales of fish-based products as a possible supplementary income source that could help with household expenses and reduce reliance on limited income streams. However, the study did not collect longitudinal sales or household-income data; accordingly, the finding reflects perceived opportunity rather than a measured increase in income.

Participants also described the project as a platform for exploring small-scale business opportunities using resources available in their local environment. Their experiences are consistent with the role of community-based entrepreneurship in supporting livelihood diversification (Shahidullah, 2023), although the commercial viability of the products remains to be evaluated.

Although the project was still developing, the findings indicate that Fish Lunak and Fish Paste have market potential if supported by quality control, packaging and consistent production. The ability to generate income depends on the entrepreneur's capacity to produce regularly, attract customers and manage costs effectively.

Theme 3: Development of Community Skills and Entrepreneurial Capacity

The third theme concerns participants' exposure to fish processing, product preparation, packaging, basic management, marketing and technology use. These concrete areas of learning were the clearest evidence of early capacity development reported in the interviews and observed through project activities.

Across the interview accounts, participants described learning product handling, processing methods, packaging and basic business practices. They also associated this learning with greater confidence in exploring a small-scale food enterprise. These findings indicate perceived skills development, not independently tested competency gains (Badriyah et al., 2023).

The findings suggest that community entrepreneurship projects should include continuous training. Skills in food hygiene, product standardisation, costing, pricing, branding and digital marketing are essential to ensure product quality and business sustainability.

Theme 4: Market Access and Product Commercialisation Challenges

The fourth theme highlights challenges related to market access and commercialisation. Although Fish Lunak and Fish Paste have potential, the project faced several constraints in reaching wider markets. These included limited branding, packaging, promotion and customer networks.

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Participants identified the need for support in defining target customers, promoting products, setting suitable prices and building customer trust. These accounts show that product development alone was insufficient without a feasible route to regular sales.

The findings also indicate that digital marketing could help expand market reach. Platforms such as WhatsApp, Facebook and TikTok may be useful for promoting products to local consumers. However, digital marketing requires skills in product photography, caption writing, customer communication and order management.

Commercialisation also requires attention to food safety, packaging quality and product shelf life. Without these elements, it may be difficult for fish-based products to enter larger markets.

Theme 5: Continuous Support as a Condition for Sustainability

The fifth theme concerns the need for continuous support. The project required assistance in capital, technology, equipment, technical guidance and marketing. Limited capital may restrict the ability to purchase equipment, packaging materials and raw materials. Restricted processing technology may also affect product consistency and production volume.

Participants' experiences indicated that initial training alone was insufficient and that continuing mentoring was needed to sustain production and marketing beyond the early implementation phase. Potential sources of support included universities, government agencies, NGOs, local authorities and market partners.

Interpreted through Bronfenbrenner's framework, participants' motivation, skills and family support operated within the microsystem; relationships among participants, families, community members and facilitators formed the mesosystem; agency assistance and market access represented the exosystem; rural entrepreneurship policies, food regulations and local economic values reflected the macrosystem; and changing demand, technology and production conditions formed the chronosystem. This mapping shows how the five themes were shaped by interacting ecological levels rather than by individual effort alone.

Discussion

The findings suggest that Sea2Value has potential as an emerging community-based economic initiative. Participants perceived fish-based product innovation as a way to add value to local marine resources and explore supplementary income opportunities. These interpretations are specific to five participants in Tok Bali and should not be generalised to coastal communities more broadly.

The first major contribution of the project is value creation. By transforming fish into Fish Lunak and Fish Paste, the project shifts the community from raw material dependency to downstream product development. This can increase product value and open new market opportunities.

Second, participants perceived processed fish products as a possible source of supplementary income and a foundation for micro-enterprise development. Because the study did not measure changes in sales, profit or household income, the evidence supports perceived livelihood potential rather than demonstrated economic improvement.

Third, participants reported exposure to food processing, packaging, marketing and basic management practices. These accounts suggest early capacity development and greater confidence, although future evaluation should assess whether these skills are retained and applied independently over time.

Fourth, the ecological analysis connects the participant-derived themes to multiple systems. Skills and motivation were situated within participants' immediate settings; family-community-facilitator relationships shaped participation; agency assistance and market access affected opportunity; and policies, regulations and changing market conditions influenced longer-term prospects. Bronfenbrenner's theory thus explains the interaction among the findings rather than functioning as an added-on description.

Fifth, the project faces sustainability challenges. Limited capital, technology, market access and continuous guidance must be addressed. Without proper support, the project may remain small or become inactive. Therefore, the Sea2Value project should be developed through a structured support ecosystem involving training, financial assistance, technical mentoring and marketing support.

Overall, the findings indicate that fish-based product innovation may develop into a viable rural entrepreneurship initiative when supported by local ownership, continuing capacity development and institutional collaboration. Its economic effects and long-term sustainability remain to be tested through larger and longitudinal evaluation.

Implications of the Study

This study provides several implications for community development, rural entrepreneurship and coastal economic empowerment.

First, community-based projects should focus on value-added product development. Coastal communities can increase income by processing marine resources rather than relying only on raw product sales.

Second, training should be practical and continuous. Beneficiaries need hands-on training in food processing, hygiene, packaging, costing, branding and marketing.

Third, market access should be planned from the beginning. A community product cannot be sustained if there is no clear customer base or sales strategy.

Fourth, institutional support is important. Universities, government agencies and NGOs can play a role in providing training, technical expertise, equipment support and monitoring.
Fifth, policy support is needed to strengthen small-scale food entrepreneurs. Assistance in certification, food safety compliance, packaging and digital marketing can help entrepreneurs move toward wider commercialisation.

Recommendations

Based on the findings, several recommendations are proposed to strengthen Sea2Value as a rural community entrepreneurship initiative. First, a structured training module should cover fish processing, hygiene, packaging, costing, pricing and digital marketing. This module can

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provide participating single mothers with systematic guidance in improving product quality, production skills and business readiness. Suitable processing equipment should also be considered to support product consistency, production capacity and operational efficiency.

The project should also focus on strengthening product branding and market development. Fish Lunak and Fish Paste products can be improved through proper product names, logos, labels and attractive packaging. At the same time, support should be given in developing simple financial records to monitor costs, sales and profit. Market linkages with local shops, food stalls, restaurants, cooperatives and community markets should also be created to expand product reach. Digital marketing platforms such as WhatsApp, Facebook and TikTok can be used to promote the products more effectively (Fadila et al., 2022).

Continuing support is important to the project's longer-term prospects. Mentoring by university facilitators, relevant agencies or experienced entrepreneurs should guide participants in production, marketing and business management. Food-safety guidance and certification support should also be explored if products are marketed more widely (Yani et al., 2024). Family and community involvement may distribute workload and strengthen local ownership. Finally, follow-up evaluation should assess product demand, sales, income changes, skills retention and project continuity over time.

Proposed Sea2Value Community Entrepreneurship Model

Based on the findings and Bronfenbrenner's Ecological Systems Theory, this study proposes the Sea2Value Community Entrepreneurship Model. The model consists of five interconnected components:

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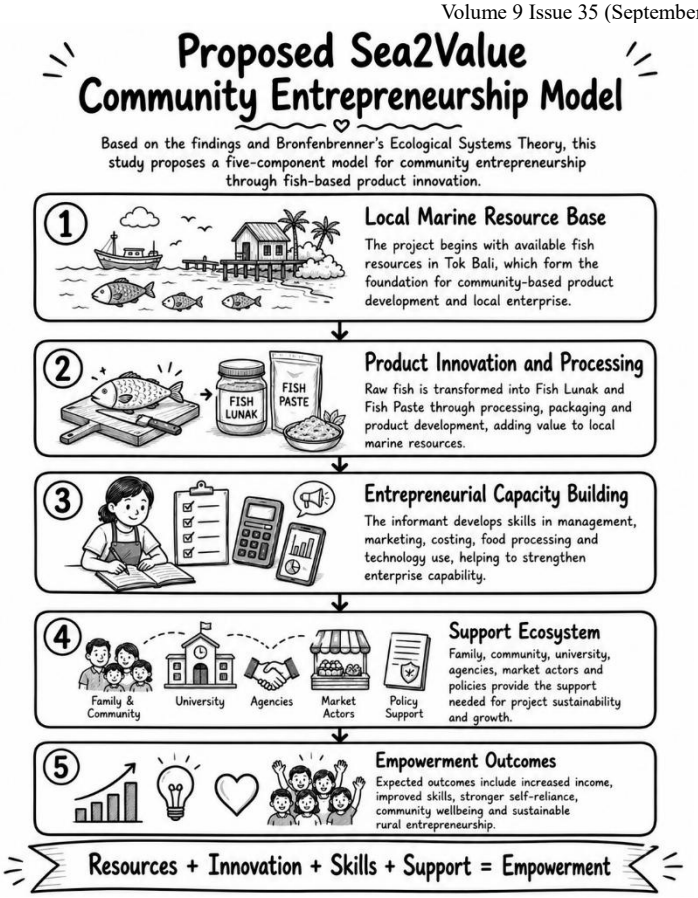


Figure 1. Proposed Sea2Value Community Entrepreneurship Model
Source: Authors' Conceptualisation

The model illustrates how local marine resources may be transformed into a community-based entrepreneurship initiative through product innovation and processing, entrepreneurial capacity development and an enabling support ecosystem. The ecological layers highlight the roles of participants and families, community and facilitator relationships, universities and agencies, markets and policies, and adaptation over time. The proposed outcomes—including income opportunities, skills, self-reliance and perceived wellbeing—should be treated as intended or emerging outcomes requiring further evaluation rather than as effects already established by this case study.

Conclusion

The Sea2Value project in Tok Bali illustrates the potential of fish-based product innovation as an emerging community-based social business initiative involving single mothers. Participants viewed Fish Lunak and Fish Paste as possible sources of supplementary income and reported exposure to food-processing, packaging and basic business skills. These findings indicate perceived livelihood and capacity-building opportunities rather than verified changes in income or wellbeing.

Participants also identified challenges involving capital, processing technology, market access, branding, production consistency and continuing guidance. Bronfenbrenner's Ecological Systems Theory shows that the project's prospects depend on interactions among individual

readiness, family support, community relationships, institutional assistance, market structures, policy conditions and adaptation over time.

This study is limited by its purposive sample of five participants, its focus on a single project in one coastal community and the absence of longitudinal income and wellbeing measures. The findings therefore cannot be generalised broadly or used to establish causal impact. Nevertheless, Sea2Value may be regarded as a promising social business model for further development. Future studies should involve larger and more diverse samples, participant-level evidence and longitudinal measures of sales, income, skills application and perceived wellbeing.

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