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ECONOMIC AND SOCIAL DEVELOPMENT TO REDUCE INEQUALITY AMONG SMALL-BOAT FISHING GROUPS WITH LOW-INCOME

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Abstract

The objectives of this research are 1) to study the opportunities and potential of products from seafood processing from small-boat fishing groups; 2) to develop high-value seafood products from small-boat fishing groups; 3) to create a savings model for small-boat fishing groups, and 4) to transfer innovations from seafood processing and saving model. The population are small-boat fishermen in Yaring, Pattani, Thailand. The research results can be summarized as follows: 1) There exists a notable market opportunity and internal potential, driven by advantages in production costs stemming from direct access to abundant. Additionally, the community benefits from inherited knowledge in food preservation techniques. 2) Development of high-value seafood products: It focuses on three products: fermented fish, ready-made dried fish chili, and crispy baked fish with sweet Budu sauce, marketed under the brand name "IKAN YAMU". 3) Savings model development: This model combines income from Wadiah deposits with additional revenue generated from the sale of processed food products of groups. 4) Transfer product innovations through training sessions. Participants expressed a high level of satisfaction with the training, and their knowledge levels significantly increased.

Keywords: Inequality, Small Boat Fishing Groups, Processing High-Value Seafood Products, Saving Money

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Introduction

The saying “the rich are becoming wealthier while the poor are becoming poorer” reflects the longstanding issue of economic inequality in Thai society. The contributes to a reduction in income inequality alongside economic growth (Jauch & Watzka, 2016). Amar et al. (2020) discovered that income alone is not the sole determinant of poverty; the government must also enhance and provide essential support to effectively reduce poverty levels. Therefore, the country's development must strive for a harmonious balance between the national economy and its foundational sectors to foster equity and alleviate inequality within Thai society.

Pattani Province, situated in the southern border region, grapples with some of the most acute issues of poverty and income inequality in Thailand. A significant portion of the population, totaling 30.34 percent, is employed in agriculture and fishing due to the province's extensive coastline, which spans approximately 116.4 kilometers. The majority of fishermen are residents residing in six districts: Nong Chik, Muang, Yaring, Panare, Sai Buri, and Mai Kaen. Over the past four decades, coastal fishermen have seen a substantial decline in fish stocks. This decline can be attributed to challenges related to resource depletion and habitat degradation for marine life, compounded by the 2015 fisheries law, which did not align with the traditional way of life of the villagers. Another issue arises from the high cost of oil. Specific types of commercial fishing vessels, like trawlers, and the use of light-luring purse seines have exacerbated the problem. These boats operate within a three-nautical mile limit, encroaching on the livelihoods of local fishing groups and small-scale fisheries. This has led to conflicts and competition for resources, resulting in small-boat fishermen losing their primary source of income. Despite higher production costs, there are fewer aquatic animals available for harvest. Many local fishing communities in Pattani have disintegrated, leading workers to migrate for employment in neighboring countries. This has given rise to a cascade of additional issues, including debt, family strife, reduced quality of life, unemployment, and various forms of inequality, all of which contribute to challenges in population quality and overall national development. In light of these extensive challenges, the research team places great emphasis on addressing the issue of poverty among small-boat fishermen residing in economically disadvantaged coastal communities, primarily in Yaring, Pattani.

The objectives of this study are outlined as follows: 1) To study the opportunities and potential of products from seafood processing from small-boat fishing groups with low incomes in Yaring, Pattani. 2) To develop high-value seafood products from small-boat fishing groups with low incomes in Yaring, Pattani. 3) To create a savings model for small-boat fishing groups with low incomes in Yaring, Pattani. And 4) To transfer innovations from the seafood processing and saving model for small-boat fishing groups with low incomes in Yaring, Pattani.

Literature Review

Organisation for Economic Co-operation and Development (2012) stresses the income inequality has increased in past decades. In each case, the analysis identifies “win-win” policies that can both reduce inequality and promote economic growth. Designing policies to reduce inequality for households must be systematic. Starting from increasing the ability to earn income both from work and investment (labor and capital income) for households to increasing the efficiency of tax revenue allocation and government transfer expenditures (redistribution) consists of 1) policy to increase household income measure effectiveness through all channels, including the gross inequality value calculated from the total household income (household market income) and the net inequality value calculated from the household disposable income (household disposable income), which is equal to the total income after deducting tax plus transfer money received from the government 2) tax and transfer policy effectiveness is measured by the difference between gross and net inequality to compare household income inequality before and after the implementation of tax and transfer policies. This large difference

reflects tax collection that does not increase or reduce inequality, and the efficiency of tax revenue allocation to reduce inequality through government transfer payments. Ultimately, implementing this policy of systematically reducing inequality will result in inclusive and sustainable economic growth (inclusive and sustainable growth).

Thailand boasts abundant biological diversity, which serves as a rich source of raw materials for food production. The technology for producing ready-to-eat food has made significant advancements and is poised to continue evolving, leading to the development of new food processing techniques and styles that can generate added value. The contemporary lifestyles and living conditions of people have cultivated a demand for food that is not only convenient and easily accessible but also offers specific health benefits, freshness, and complete nutritional value (Chulalongkorn University Intellectual Property Institute, 2017). It's worth noting that the majority of Thai processed seafood businesses fall within the category of small and medium-sized enterprises. These smaller businesses often require more support compared to their larger counterparts, as they may encounter a greater number of challenges, especially in aspects such as production, quality control, personnel, marketing, and research and development for diversifying their product range and exploring new markets. The food industry plays an important role in creating sustainability for the Thai economy both nationally and regionally. The food industry has three megatrends: 1) globalization & changing economies, emphasizing convenience for consumers. 2) health & wellness, emphasizing food that comes from nature without contaminants has properties to help prevent or treat disease 3) sustainability & food safety emphasizes products that do not affect the environment which is in line with driving economic development through the new economic model towards sustainable development or BCG Model which consists of B is the bio economy, C is the circular economy, and G is the green economy that emphasizes sustainable use of resources environmentally friendly, consider environmental sustainability, consumer health, create benefits for the public taking into account the well-being of people such as farmers and people in the community. Come as a solution to solve Thailand's economic problems. This is not only an opportunity for entrepreneurs in the agriculture and food business, but also helps support farmers and communities to have sustainable income (Edyvean et al., 2023).

Currently, both the agricultural and business sectors are operating in a highly dynamic environment. Market competition is intensifying, prompting entrepreneurs to recognize the significance of gaining a competitive edge. Specifically, understanding cost information emerges as a crucial tool in making strategic decisions aimed at maximizing benefits. This knowledge aids in devising plans to lower production expenses or in strategically allocating limited resources to yield the highest returns. In this study, the term "costs" pertains to the measurable monetary value of resources, represented by financial figures. These resources are utilized in the production of seafood processing products, to generate present and future returns. Small boat fishermen incur varying production costs based on the type of seafood processing product being produced. Product costs encompass the aggregate expenses involved in purchasing, converting, and maintaining the product in its current state. Purchase costs include associated taxes, transportation expenses, as well as conversion costs, which comprise labor and production costs such as indirect labor, indirect raw materials, depreciation, and similar expenditures. Additionally, other directly relevant costs encompass raw materials. Consequently, seafood product processing encompasses direct materials used in production, direct labor linked to operations, and manufacturing overhead that aids in the continuous execution of production activities until the final product is achieved (Kiattikulwattana, 2015).

Research Methodology

This study utilized a mixed-method approach. The research was conducted within the Budi community, located in Laem Pho Subdistrict, Yaring, Pattani. The study population consisted

of individuals engaged in local fishing activities, including boat owners with locally registered fishing boats in Laem Pho Subdistrict, Yaring, Pattani. The total population was 386 people, as reported by the Yaring Fisheries Office in 2019. For the research, the team selected a target group using the Krejcie & Morgan table, resulting in a total sample size of 191 individuals.

However, owing to unprecedented circumstances, an outbreak of COVID-19 occurred. In light of this situation, the research team employed specific criteria for selecting groups through the Purposive Sampling method. This involved identifying individuals listed as heads of households or members of households actively engaged in local fishing, specifically as owners of registered local fishing boats with the Pattani Provincial Fisheries Office. These boats were categorized as being of size less than or equal to 1 (≤ 1). Additionally, the selected individuals had incomes falling below the absolute poverty threshold, signifying that their earnings were insufficient for daily sustenance. This approach allowed for a comparison between different income groups within the fisheries sector. It's important to note that the poorest fishermen were only able to cover their basic living expenses, particularly when compared to those in small boat fishing occupations in Ban Budi, who had even lower incomes. To study the development of seafood products and the savings model within small-boat fishing groups with low incomes, the research team facilitated a group discussion process. This process involved key stakeholders, including a representative from the local fishing community, the village headman, an assistant to the village headman, the president of the Laem Pho housewives' group, the chairman of the local fishing boat association, and religious leaders. The total target group for this study amounted to 100 people.

Two types of research tools were utilized in this study: semi-structured interviews for qualitative research and questionnaires for quantitative research. The specifics of each are outlined below.

In the qualitative research, group discussions were employed as the research tool. Semi-structured interviews were conducted to delve into three specific issues in line with the research objectives: Objective 1: Studying the opportunities and potential of seafood processing products from small-boat fishing groups with low incomes in Yaring, Pattani. Objective 2: Develop high-value seafood products from small-boat fishing groups with low incomes in Yaring, Pattani. Objective 3: Creating a savings model for small-boat fishing groups with low incomes in Yaring, Pattani. The quality and effectiveness of the tool were further affirmed through the validation process of group discussions.

In the quantitative research, data was gathered through the administration of questionnaires. These questionnaires were designed to solicit opinions regarding the implementation of the project on "Socio-economic development to reduce inequality among small-boat fishing groups with low income." This included gathering insights related to objective 4, which pertains to the transfer of innovations from the seafood processing and savings model for small-boat fishing groups with low incomes in Yaring, Pattani.

Research Results

The opportunities and potential of seafood processing products from small-boat fishing groups with low incomes in Yaring, Pattani

The study found that non-standardized animals are sold at lower prices, and there is a large quantity of them, such as 'Cobe fish or Basi fish'. A notable feature is that these fish have small bones embedded in the meat, making them less popular for cooking. As a result, a common conclusion was reached regarding the opportunities and potential of seafood processing products from the small-boat fishing group, which involved processing three high-value cob fish products: fermented fish, ready-made dried fish chili, and crispy baked fish with sweet Budu sauce. From the analysis can be determined as follows: the strength of production is the raw materials consisting of fresh, chemical-free fish. There is a wealth of traditional wisdom

in production preservation techniques. Additionally, there are no expenses associated with shipping costs for raw materials. The presence of equipment for catching aquatic animals, complete fishing areas, and strategic marketing factors contribute to the processing of high-value products such as sun-dried fish and sweet fish. The trend towards healthier eating habits, with a preference for seafood over red meat, has led to increased production in the processed seafood business to meet growing demand.

Development of high-value seafood products from small-boat fishing groups with low incomes in Yaring, Pattani

Developing seafood products into a high-value economy: In terms of wisdom, the business demonstrates exceptional expertise in transforming traditional food preservation techniques into high-value products. It introduces ready-to-eat local menus based on time-honored traditional recipes, offering a unique taste that embodies the distinctiveness of Yaring. Product development prioritizes key factors, with a primary focus on utilizing seafood as the main raw material. For instance, three distinct products are created from Cob fish: fermented fish, ready-made dried fish chili, and crispy baked fish with sweet Budu sauce.

Calculation of production costs and determining selling prices: From the cost analysis, the selling price can be determined as follows:

1) Fermented Fish: Initial investment in office equipment and depreciation, using the straight-line method, resulted in a total cost of 3,774 baht and an annual equipment depreciation of 754.80 baht. Total production cost: 1,027.97 baht. 1.1) Direct raw materials: 10 kilograms of fish meat obtained from 20 kilograms of fresh Cob, at 15 baht each, totaling 300 baht. 1.2) Direct labor costs: 313 baht per day. 1.3) Variable production expenses: 273.20 baht. Total fixed production costs: 141.77 baht, including equipment depreciation of 14.52 baht and selling/administrative expenses of 127.25 baht. Selling price: 18 baht per piece. Break-even point: Producing and selling 100 units at 18 baht each (weighing 12.2 grams per unit) necessitates producing 16 units or more.

2) Ready-made dried fish chili: Initial equipment investment: 6,674 baht, with an annual equipment depreciation of 1,328.80 baht. Total production cost: 1,414.80 baht. Variable production costs: 1,262.08 baht, including 2.1) Direct raw materials: 10 kilograms of fish meat from 20 kilograms of fresh Cob, at 15 baht each, totaling 300 baht. 2.2) Direct labor costs: 313 baht per day for fishermen. 2.3) Variable production expenses: 649.08 baht. Total fixed production costs: 151.80 baht, including equipment depreciation of 25.55 baht. Selling price: 28 baht per unit. Break-even point: Producing and selling 100 units at 28 baht each (each bag weighing 900 grams) requires producing 10 packs or more.

3) Crispy Baked Fish with Sweet Budu sauce: Initial equipment investment: 25,271 baht, with an annual equipment depreciation of 5,054.20 baht. Total variable costs for sweet Budu sauce: 175.85 baht, with a cost of 0.08 baht per gram for 2,240 grams. Total production cost: 1,288.45 baht. Variable production costs: 3.1) Direct raw materials: 8 kilograms of fish meat from 20 kilograms of fresh Cob, at 15 baht each, totaling 300 baht 3.2) Direct labor costs: 313 baht per day for fishermen. 3.3) Variable production expenses: 451 baht. Total fixed production costs: 97.20 baht, including equipment depreciation. Selling price: 52 baht per unit. Break-even point: Producing and selling 100 units at 52 baht each (each bag weighing 109.60 grams) requires producing a total of 5 bags.

Creating a savings model for small-boat fishing groups with low incomes in Yaring, Pattani

It was found that in terms of development planning and determining the key elements of the savings model, the following factors were identified: 1) Income: This includes earnings from the collection of aquatic animals and income generated from processing these aquatic animals. 2) Expenses: These encompass various costs such as personal consumption, housing, child education, debt repayment, and other miscellaneous expenses. 3) Savings: This represents the

difference between income and consumption and forms the basis of the savings model. It includes the purpose of saving, barriers to saving, and the development and implementation of the savings model. The study revealed that small-boat fishermen generate income through the processing of products. The profits generated from the sale of goods are allocated as follows: 20% is shared back with the group members, and the remaining 80% is reinvested into the group.

Transferring innovations from the seafood processing and saving model for small-boat fishing groups with low incomes in Yaring, Pattani

In the process of transferring product innovations from seafood processing and implementing the savings model for small fishing groups with low incomes in Yaring, Pattani, Regarding participant satisfaction with the training for transferring product innovation from seafood processing and savings models, the overall satisfaction level was high. Furthermore, an analysis of feedback on participation in the training for product innovation transfer from seafood processing and savings models revealed that most trainees had a certain level of knowledge before the training. As for the benefits derived from the training, the majority found that the acquired knowledge enabled them to establish additional career opportunities (71.00%) and also to generate income for their families (68.00%). Additionally, the training was seen as a valuable resource for the community, particularly in terms of enhancing the overall quality of life (82.00%), and fostering positive relationships between the community and Yala Rajabhat University (54.00%).

Conclusion and Discussion

The Opportunities and Potential of Products from Seafood Processing from Small-Boat Fishing Groups with Low Incomes in Yaring, Pattani

The small aquatic animals, particularly the Cob fish, locally referred to as "Basi fish" in the dialect, are abundantly caught by fishermen. These fish are economically priced and are suitable for further processing into seafood products. Fishermen employ methods such as sun-dried fish and sweet fish to enhance the market value of the fish, allowing them to fetch higher prices compared to selling them fresh in the market. One such opportunity arises from the scarcity of seafood raw materials. This scarcity can be leveraged by fishermen to produce processed seafood products that have an extended shelf life, thus addressing the supply-demand gap. This observation aligns with the findings of Chinasak Suwan-achariya, Kalasom Latae and Nittaya Suwanmanee their study on methods to mitigate shortages of processed seafood raw materials. Their research concluded that addressing the shortage problem requires improved information tracking of daily raw material availability and establishing networks to access these raw materials. Additionally, exploring alternative materials, such as substituting crispy clams for squid, can contribute to overcoming these challenges (Suwan-achariya et al., 2018).

Development of High-Value Seafood Products from Small-Boat Fishing Groups with Low Incomes in Yaring, Pattani

The study's findings reveal that small-boat fisheries with low incomes in Yaring, Pattani possess a remarkable heritage of wisdom and expertise in food preservation, passed down through generations. This traditional knowledge, encompassing the production of sun-dried fish and sweet fish, can be harnessed to create high-value products. This venture to produce local, ready-to-eat menus, featuring a distinctive appearance and unique characteristics, stems from the aspiration to further elevate seafood processing products. These outcomes underscore the concept of the creative economy, a paradigm that fosters growth and propels economic advancement. It harnesses creativity to imbue products or services with added value, guided by the principle of identifying and synthesizing distinctive elements into the creative process. Which corresponds to sustainability & food safety emphasizes products that do not affect the

environment and Green Economy concept that emphasizes sustainable use of resources environmentally friendly, consider environmental sustainability, consumer health, and create benefits for the public taking into account the well-being of people such as farmers and people in the community (Edyvean et al., 2023).

Production costs are allocated based on the type of seafood processing chosen by fishermen. They have the option to produce one of three products: fermented fish, ready-made dried fish chili, and crispy baked fish with sweet Budu sauce. In their pursuit to generate additional income. On the flip side, when small boat fishermen organize into groups to process two or three types of food, they can collectively reduce the investment in equipment that can be utilized interchangeably, such as two-position scales, mixing bowls, mixing cups, spoons, sealing machines, and so forth. This leads to an augmentation of their operating capital and a reduction in fixed expenses. Additionally, the depreciation of equipment for producing larger quantities or smaller batches is considered an expense for each production cycle (Pewnuan & Pansripong, 2020).

The determination of price and the break-even point in production in seafood processing is based on a calculation that considers the return on investment in equipment, production costs, as well as sales and administrative expenses for each production cycle (Aujirapongpan, 2010). The production break-even point signifies the production level at which there are neither profits nor losses—meaning that the income from sales, minus production costs and operating expenses, equals zero baht. If production and sales fall below this break-even point, the manufacturer will incur a loss from the sale of that product. Conversely, if the manufacturer manages to sell the product in quantities exceeding the break-even point, they will realize a profit from production.

The majority of these fishermen demonstrated a keen awareness of local identity. They opted for the brand name “IKAN YAMU,” which is in Malay and signifies Cob fish, effectively connecting the product to the raw materials used in its production, as well as to the locale of Yaring. The utilization of the Malay language aligns seamlessly with the Muslim cultural context of the members of the small boat fishing group in Yaring, Pattani. The focus on modern packaging is aimed at enhancing the value of the products. These findings can be further interpreted within the framework of the creative economy, which is characterized by a concept that fosters growth and propels economic development through the application of creativity to imbue products or services with added value. This is achieved by identifying a distinct identity, synthesizing its elements, and leveraging it as a source of inspiration for creativity and development. This is consistent with research focused on the development of small enterprises in border provinces, where adopting a creative economy approach has proven fruitful. Under this approach, various facets of businesses, including product designs, branding, packaging, target markets, pricing, and marketing promotions, can undergo innovation and enhancement (E-sor et al., 2017).

Development of a Savings Model for Small-Boat Fishing Groups with Low Incomes in Yaring, Pattani

Small-boat fishermen derive their income from catching various aquatic animals, including fish, shrimp, and shellfish. However, their daily earnings are uncertain and relatively modest. If fishermen can transition from processing low-value aquatic animals to high-value products, this would result in an overall increase in income and subsequently lead to enhanced livelihoods. These findings resonate with the research conducted by Chanthadoem et al. (2019), which indicates that fishermen experience unpredictable and daily fluctuating incomes. Additionally, the study aligns with the work of Samavardhana & Phrigboonchan (2021), who observed that the community enterprise of the Ban Wang Rae Fish Raising and Processing Group has successfully developed grilled fish products. This development has increased the value of their products, created job opportunities, and augmented overall income. This is

consistent with the work of Jumroon & Suwanna (2018) underscores that gainful employment provides individuals with the means to support their families, reduce expenses, and allocate funds for savings. Additionally, Emaldarani & Kanmani (2019) highlight the prevalence of savings and the investment patterns of fishermen. It is essential to take steps to improve their income and reduces their expenditure to obtain socio-economic balanced society.

Transferring Product Innovations from Seafood Processing and Savings Models to Small-Boat Fishing Groups with Low Incomes in Yaring, Pattani

The small boat fishing group faces economic hardship, with their income falling below the standard. Their primary source of income is local fishing. To address these economic challenges and achieve prosperity, it is essential to adhere to the principles outlined by the Chulalongkorn University Intellectual Property Institute (2017). They advocate for the development of a grassroots economy, which refers to an economic system within local communities that is self-sustaining and fosters mutual support. This approach leads to robust and enduring growth within these communities.

Conclusion

Thailand is a country characterized by high levels of income inequality. Strengthening the grassroots economy is essential for establishing a robust foundation for the Thai economy. Pattani, located in the southern border region, experiences some of the most severe poverty and income disparities in Thailand, particularly among small-boat fishing groups who are predominantly engaged in coastal fishing. The researcher aims to solve the problem of inequality in a sustainable way by creating income opportunities from processing high-value seafood product development and increasing savings together. The research results can be summarized as follows:

- 1) Opportunities and potential of products from seafood processing from small-boat fishing groups with low incomes in Yaring, Pattani: There exists a notable market opportunity and internal potential, driven by advantages in production costs stemming from direct access to abundant, inexpensive, fresh, chemical-free fish. Additionally, the community benefits from inherited knowledge and experience in food preservation techniques.
- 2) Development of high-value seafood products: This development is based on an understanding of consumer behavior in Yaring, Pattani. It focuses on three products: fermented fish, ready-made dried fish chili, and crispy baked fish with sweet Budu sauce, marketed under the brand name "IKAN YAMU".
- 3) Savings model development: This model combines income from Wadiah deposits with additional revenue generated from the sale of processed food products within the groups. Members also receive compensation for their processing efforts, along with a 20 percent share of excess profits from product sales.
- 4) Transfer product innovations: Innovations in seafood processing, particularly in the three aforementioned products, through training sessions. Participants expressed a high level of satisfaction with the training, and their knowledge levels significantly increased. The researcher follows up on the project by studying the ability to put the research results into practice after development, when the group has profits, it will result in more money for members, which leads to increased savings opportunities, which can create economic stability at the household level from seafood processing. Therefore, when governments have to reduce inequality among small-boat fishing groups with low-income administrators should be concern about increase ability to household income along with contribution to personal saving. It must begin with creating economic stability at the household level in order to create sustainable economic stability at the grassroots. Enhancing the socio-economic development of these small-boat fishing groups could be a key step in addressing poverty and inequality.

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Data Availability Statement: The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

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