

Economic Development Strategy Based on the Sempian Coffee Commodity in Rangsang Pesisir District, Meranti Islands Regency

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Abstract. Rangsang Pesisir District serves as the central area for extensive Sempian (Liberika) coffee plantations in the Meranti Islands Regency. This coffee variety grows optimally on peat swamp lands and can also adapt well to mineral soils, which suit the environmental conditions of Rangsang Pesisir District. The Liberika coffee produced in the Meranti Islands is considered unique and holds significant potential to contribute to regional economic growth and improve community welfare. However, the welfare of coffee farmers has not yet reached its optimal level. Most farmers continue to sell coffee as raw beans due to limited access to information, technology, and marketing networks. Consequently, they are often forced to sell their harvests to local collectors at prices that do not reflect the true market value. The main objective of this study is to formulate a local economic development strategy based on the Sempian (Liberika) coffee commodity. Primary data were obtained through questionnaires distributed to coffee farmers, while secondary data were collected from relevant institutional reports and official documents. The research employed descriptive analysis and SWOT analysis methods. The findings indicate that the coffee production achieved by farmers ranges from 22–43% per harvest, and with optimal management, it has strong potential to compete in broader markets. The recommended strategies to enhance community welfare include improving the quality and productivity of coffee commodities, empowering farmer groups, and developing coffee clusters to strengthen distribution and market access.

Keywords: Coffee commodity, Economic development strategy, Farmer empowerment, Liberika coffee, SWOT analysis

1. Introduction

Development is a process of transforming limited potential into new, more productive potential to improve community welfare [1]. Regional development is carried out through a spatial approach that integrates social, economic, cultural, environmental, and institutional aspects. In the context of regional autonomy as stipulated in Law Number 32 of 2004, local governments have the authority to manage regional superior potentials as an effort to enhance community welfare and strengthen regional competitiveness. One of the commonly used approaches in regional development is Local Economic Development (LED) [2]. This approach emphasizes the utilization of local resources to promote job creation, increase community income, and reduce interregional disparities.

In Indonesia, one of the leading plantation commodities with high economic value is coffee. This commodity plays an important role as a source of foreign exchange and serves as a livelihood for millions of farmers. Indonesia is the third-largest coffee producer in the world after Brazil and Vietnam, with three main types of coffee: Arabica, Robusta, and Liberica. Specifically, Liberica coffee has agronomic advantages as it can grow on peatland and is resistant to various plant diseases [3]. In Indonesia, this type of coffee is widely cultivated in Riau and Jambi Provinces, particularly in the Meranti Islands Regency, which is known as the main production center of Liberica coffee in Riau. Coffee commodities from this region have even become export products marketed to neighboring countries such as Malaysia and Singapore [4].

Coffee plantations in the Meranti Islands Regency are spread across several districts, with the largest located in Rangsang Pesisir District. These plantations are generally smallholder farms that use an intercropping system with coconut and areca nut trees [5]. Farmers also apply the concept of organic farming by using manure as a substitute for chemical fertilizers to maintain environmental quality and reduce production costs. Coffee farming serves as the main source of income for the people of Rangsang Pesisir District, alongside coconut and areca nut production. The coffee commodity contributes significantly to the regional economy [6]. According to BPS data from 2019, coffee production in Rangsang Pesisir District increased from 1,281 tons in 2014 to 1,881 tons in 2019 [7].

However, the increase in production has not fully corresponded to the improvement of farmers' welfare, as most coffee is still sold in the form of raw materials without adequate post-harvest processing, and access to markets remains limited. Therefore, innovation and local economic development strategies based on coffee commodities are needed to enhance added value, product competitiveness, and sustainable community welfare in Rangsang Pesisir District.

2. Research Methods

The purpose of this study is to formulate a local economic development strategy based on coffee commodities to improve the economy and community welfare in Rangsang Pesisir District. The scope of the study to be examined in this research includes :

- To identify the driving and inhibiting factors that affect the productivity of community coffee plantations in order to improve the economic level, using descriptive analysis that explains the productivity of coffee plantations in enhancing economic welfare.
- To formulate a local economic development strategy by identifying internal and external factors that influence local economic development activities. The next stage involves integrating these factors using a SWOT analysis, which is then compared with the desired conditions in local economic development activities [8].

Table 1. SWOT Matrix

	Strengths	Weakness
Opportunity	SO Utilizing strengths to address threats	WO Minimizing weaknesses to address threats
Threat	ST Utilizing strengths to seize opportunities	WT Overcoming weaknesses to seize opportunities

* Rangkuti, 2015

This study employs a qualitative descriptive method. The descriptive method is used to describe phenomena that occur naturally based on field facts, while the qualitative descriptive method aims to gain an in-depth understanding and to discover new theories or knowledge at a

particular time [9]. The research was conducted from October to November 2021 in Rangsang Pesisir District, Meranti Islands Regency. The data used in this study consist of two types: primary and secondary data. Primary data were obtained through field observations and direct interviews with respondents. Secondary data were collected from various institutions and relevant sources, including the Department of Public Works and Spatial Planning (PUPR) of Meranti Islands Regency, the Regional Development Planning Agency (Bappeda) of Meranti Islands Regency, the Central Statistics Agency, district and village profiles, as well as various literature sources such as books and scientific journals.

The population in this study includes all coffee farmers, collecting traders, and relevant institutions in the Meranti Islands Regency. Sampling was carried out using the purposive sampling technique, considering that the conditions and farming activities in the research area are relatively homogeneous. Based on data from the Central Statistics Agency of Meranti Islands Regency, the number of coffee farmers in Rangsang Pesisir District from 2015 to 2020 reached 440 people [10]. The key informant in this study is the Head of the Department of Agriculture and Plantation of Meranti Islands Regency, as the party with extensive knowledge regarding the development and advancement of the plantation sector in Rangsang Pesisir District. The number of farmer samples was determined using the Slovin formula, based on the total population of coffee farmers in Rangsang Pesisir District [11].

$$n = \frac{N}{1 + Ne^2}$$

Where:

n = sample size

N = population size

e = critical value (desired margin of error), this study uses 10% as the critical value.

$$n = \frac{440}{1 + 440(10\%)^2} = 81 \text{ Respondents}$$

The research area is located in Rangsang Pesisir District, which lies in the eastern part of the Meranti Islands Regency, directly facing the Malacca Strait and Tanjung Balai Karimun in Riau Islands Province. The total area of the Meranti Islands Regency is 3,707.84 km², while the area of Selatpanjang City is 45.44 km². Rangsang has potential natural resources in the plantation sector, particularly coconut, rubber, and coffee, as well as in the fisheries sector. Geographically, the Meranti Islands Regency is located between approximately 0°42'30"– 1°28'0" N latitude and 102°12'0"–103°10'0" E longitude. It is situated on the eastern coast of Sumatra Island, with coastal areas bordering several neighboring countries, and is part of the Indonesia–Malaysia–Singapore Growth Triangle (IMS-GT). Indirectly, it also serves as a hinterland area for the Batam–Tanjung Balai Karimun Free Trade Zone (FTZ).

In order to take advantage of the opportunities and benefits of its geographical position and to promote economic growth in border areas with neighboring countries Malaysia and Singapore, the Meranti Islands Regency has strong potential to function as a Cross-Border Gateway or International Gateway connecting mainland Riau with neighboring countries through sea routes. This role complements the city of Dumai, which was previously designated and functions as a National Strategic Activity Center, serving as the nation's front porch, international gateway, and a hub for trade and industry.

Table 2. Research Variables

No.	Variables	Indicators
1	Factors Affecting the Productivity of Community Coffee Plantations in Improving the Economic Level	Supporting Factors : 1. Labor 2. Marketing Aspects 3. Production 4. Fertilizer 5. Land 6. Production Output Inhibiting Factors : 1. Pests 2. Fertilizer
2	Local Economic Development Strategy Based on Coffee Commodities to Improve the Economy and Community Welfare	Internal Factors : 1. Strengths 2. Weaknesses External Factors : 1. Opportunities 2. Threats

* Analysis Results, 2021

3. Results and Discussion

3.1. Factors Influencing the Productivity Level of Coffee Plantations

The characteristics of coffee farming can be observed through the factors that influence the productivity level of coffee plantations in improving the community's economic well-being, namely farmers' capital, land area, labor, the amount of fertilizer used, harvest frequency, yield, quantity of fertilizer, and coffee price.

1. Farmers' Capital

Most coffee farmers in Rangsang Pesisir District have business capital ranging from IDR 3–4 million (58%), IDR 6–8 million (22.9%), IDR 9–10 million (9.9%), and IDR 11 million (6.2%). The community in this area belongs to the middle-income group, and the capital range of IDR 3–4 million is considered appropriate for the land area owned, thus not burdening farmers in managing their coffee plantations. The relatively affordable capital and sufficient income have a positive impact on their welfare.

Farmers' business capital includes investment and operational costs. Investment costs are incurred at the beginning of cultivation, while operational costs (labor and production inputs) remain relatively consistent each year after the plants start producing. Some farmers also receive government assistance, such as Direct Fertilizer Assistance (BLP) and Direct Superior Seed Assistance (BLBU), which help reduce their capital needs. The amount of capital required largely depends on the plantation's land area — the larger the land, the greater the capital needed.

2. Land Area

The size of agricultural land plays an important role in farming efficiency. Ownership of small plots tends to be less efficient compared to larger ones. The larger the land area controlled, the more efficient the use of agricultural inputs will be (Mubyarto, 2003). Most coffee farmers in Rangsang Pesisir District own land areas of 3–5 hectares (51.9%), while 23.6% have 2 hectares, 13.6% have 1 hectare, and 11.1% own 6–8 hectares. These data indicate that the majority of farmers possess medium-sized land holdings (3–5 hectares). Rangsang Pesisir

District actually has a vast land area; however, a significant portion consists of peatlands that are difficult to access by land transportation, making them less optimally utilized. On average, a land size of 3–5 hectares is considered sufficient to meet the livelihood needs of coffee farmers, although productivity is sometimes hampered by pest attacks.

3. Labor

Most coffee farmers in Rangsang Pesisir District employ 2–4 workers (59.3%), while 29.6% employ 5–7 workers, 9.9% employ 8–9 workers, and only 1.2% employ 10 workers. The number of workers is generally adjusted according to the land area owned — the larger the land, the more labor is required to ensure a more efficient harvesting process. However, most labor is only employed during the harvest season. The majority of farmers in Rangsang Pesisir utilize Family Labor (TKDK) to reduce costs and speed up the harvesting process. Nevertheless, the availability of labor is often insufficient during the harvest season, as ripe coffee cherries must be picked immediately to prevent spoilage.

4. Fertilizer Use

Most coffee farmers in Rangsang Pesisir District use between 251–500 kg of fertilizer, accounting for 39 respondents (48.1%). Farmers who use 100–250 kg of fertilizer total 18 respondents (22.2%), 501–1000 kg total 19 respondents (23.5%), and 1001–1500 kg total 5 respondents (6.2%). The amount of fertilizer used is closely related to the land area owned—the larger the land, the more fertilizer is required to support coffee plant growth. With an average land size of 3–5 hectares, the use of 251–500 kg of fertilizer is considered moderate and appropriate for the farmers' land needs.

5. Harvest

Most coffee farmers in Rangsang Pesisir District experience a harvest period of 3–4 times per year (93.4%), while only 4.9% of farmers harvest 1–2 times per year. Basically, Liberica coffee can be harvested 3–4 times annually, depending on weather and rainfall conditions. Liberica plants grown on tidal peatlands are capable of bearing fruit throughout the year, with peak harvest periods occurring in May–June and November–January. A lower harvest frequency is generally due to land being intercropped with other plant varieties besides coffee. Harvesting 3–4 times a year provides farmers with a continuous source of income, ensuring financial stability and improving their families' economic welfare.

6. Production

Coffee production in Rangsang Pesisir District shows that farmers with yields of 1,000–1,500 kg and 1,500–2,000 kg each account for 22.2%. The highest production range is 2,001–2,500 kg, achieved by 43.3% of respondents, while 12.3% produce 2,501–3,000 kg. The average coffee production in this area reaches 2,000–2,500 kg per harvest, which is considered relatively high and has the potential to improve the community's economic welfare, given the relatively high market price of coffee beans. Harvesting is done by picking ripe coffee cherries from plants aged 1.5–3 years. Coffee cherries are considered ready for harvest when they turn red, while green indicates unripe, yellow indicates semi-ripe, and blackish indicates overripe fruit. The average coffee productivity reaches around 1,000 kg/ha/year; however, this result largely depends on fertilizer use, climatic conditions, pest attacks, and harvesting time. When harvesting is carried out at the right time, the yield tends to be higher. Conversely, untimely harvesting can reduce production. During the peak harvest season, coffee production increases significantly, providing farmers with the best returns from their coffee plantation efforts.



Figure 1. Coffee Bean Harvest
Source: Field Survey Results, 2021

7. Types of Fertilizer

Coffee farmers in Rangsang Pesisir District use various types of fertilizers, with compost being the most dominant at 66.7%. The use of KCl fertilizer reaches 23.5%, urea 6.1%, and NPK is used by only 3.7% of farmers. Coffee is a crop that requires a high level of nutrients, thus additional fertilization is necessary. Most farmers use organic fertilizers (compost or manure) because they help maintain soil structure and assist in controlling pests and diseases. Chemical fertilizers are used as supplements, such as NPK to support plant growth, urea to improve leaf freshness and greenness, and KCl to enhance yield and resistance to pests and diseases.

8. Selling Price

The selling price of coffee beans in Rangsang Pesisir District varies. About 21% of farmers sell at a price of IDR 1,000–2,000/kg, 32.1% sell at IDR 2,100–3,000/kg, 42% sell at IDR 3,100–4,000/kg, and 4.9% sell at IDR 4,100–5,000/kg. In general, the price of fresh coffee cherries ranges from IDR 2,500–4,000/kg, while peeled coffee beans reach IDR 30,000–40,000/kg. However, prices are not always stable, as collectors often set different purchase rates. Farmers usually sell their harvest in two forms—coffee cherries and peeled beans — with the latter fetching a much higher price. This price difference directly affects the income and welfare of coffee farmers in Rangsang Pesisir District.

3.2. Inhibiting Factors

These issues often lead to lower yields and reduced public interest in cultivating coffee. The main obstacle faced by coffee farmers in Rangsang Pesisir District is pest infestation, experienced by 61.7% of farmers. Fertilizer-related constraints are reported by 16% of farmers, while other challenges are faced by 22.2%. Pests are the most significant factor hindering productivity, particularly the coffee berry borer (*Hypothenemus hampei*), which damages *Liberica* coffee cherries. In addition, civets also pose a problem as they often consume high-quality coffee cherries, causing losses for farmers. Meanwhile, fertilizer-related issues are relatively minor, as some farmers substitute inorganic fertilizers with organic ones such as manure, which are easier to obtain and help reduce production costs.

3.3. Policies and Efforts for Coffee Plantation Development in Rangsang Pesisir District

Policies and Efforts for Coffee Plantation Development in Rangsang Pesisir District :

1. Coffee Selling Price Policy

To date, there is no official policy regarding the determination of coffee prices. The selling price is still set by collectors, without regulation from the sub-district or district government. Price differences between Rangsang Pesisir District and the Meranti Islands Regency are due to transportation costs borne by the collectors.

2. Policies and Activities for Farmer Empowerment

The government implements the “Farmers for Farmers” program, in which the heads of farmer groups receive training on coffee plantation management from local government authorities, the police, and private parties. This program aims to improve the quality of seedlings, cultivation techniques, and coffee processing skills. The government also collaborates with CV. Zahora to provide training and raise awareness about the potential and uniqueness of Liberica coffee, with the goal of fostering community economic independence.

3. Authority in Optimizing Regional Potential

Based on Law Number 32 of 2014, local governments have the authority to manage and develop regional potential through regional autonomy policies. The Meranti Islands government seeks to optimize the potential of Liberica coffee by planning the development of a Liberica Coffee Industry Center in Kaburapat Village, Rangsang Pesisir District, in order to stimulate community economic growth.

4. Institutional Capacity and Performance

Farmer institutions are still dominated by Village Unit Cooperatives (KUD) and NGOs, which play roles in services, capital provision, and coffee marketing. Although considered adequate, a specialized institution is needed to focus on addressing coffee farmers’ issues so that guidance and assistance can be carried out more effectively.

5. Government Assistance

The district and sub-district governments have provided assistance in the form of superior seedlings, fertilizers, and access to capital through cooperation with financial institutions. This support aims to increase the productivity and quality of coffee yields, as well as to support the establishment of the Liberica Coffee Industry Center in Rangsang Pesisir District.

3.4. Local Economic Development Strategy for Liberica Coffee Plantations

The local economic development strategy to improve the economic level and community welfare in Rangsang Pesisir District is based on :

1. Internal Factors

Internal factors in local economic development based on coffee commodities in Rangsang Pesisir District consist of key strengths and weaknesses.

a. From the strength perspective, there are three key aspects: :

1. Natural Resource Potential: The geographical conditions and a hot-humid climate with high rainfall support the growth of coffee plants on peatlands. The majority of the community works as farmers, and coffee cultivation continues to increase each year.
2. Advantages of Liberica Coffee: It can grow well on peatlands, has a distinctive flavor with notes of jackfruit and chocolate, and the beans are larger compared to Robusta and Arabica. Its productivity is high (2,000–3,000 kg/year), and harvesting can be done 2–3 times per year. Liberica coffee has also been developed into processed products with locally branded packaging featuring Malay cultural elements to increase market value.
3. Role of the Community and Local Groups: Local groups, such as the Rangsang Pesisir Meranti Liberica Coffee Care Community (MPKLRM), are active in extension services, training, and applying for geographical indication protection. These groups play a crucial role in branding and strengthening the capacity of local farmers.

b. From the weakness perspective, coffee development still faces obstacles in supporting institutional aspects.

The role of farmer groups and cooperatives has not been fully optimized, and coordination among institutions remains weak. As a result, the institutional functions as a means of empowerment, partnership, and improvement of farmers’ welfare have not been fully realized.

2. External Factors

External factors influencing local economic development based on coffee commodities in Rangsang Pesisir District consist of key opportunities and threats.

a. Opportunities

1. Stakeholder Partnerships: A significant opportunity arises from the synergy between the government, private sector, and civil society in supporting the development of coffee commodities as a driver of the local economy. The Meranti Islands Regency government has included local economic development in the 2016–2021 RPJM, creating political support, policies, and participation from various parties in improving infrastructure, providing training, and strengthening farmers' capacities.
2. Regional Policy: The existence of regional autonomy policies based on Law Number 32 of 2014 provides an opportunity for Rangsang Pesisir District to manage its regional potential independently and creatively. This autonomy serves as a momentum for the area to develop coffee plantations as a superior commodity and to enhance competitiveness in local, regional, national, and international markets.

b. Threats

1. Economic Instability: Fluctuations in national economic conditions can hinder local economic development, especially for small businesses such as coffee farmers. Economic policies that do not favor micro-entrepreneurs result in the benefits of resource utilization not being evenly enjoyed by the community.
2. Plant Pest and Disease Attacks: Liberica coffee plants are vulnerable to pest infestations, particularly *Hypothenemus hampei* (coffee berry borer), as well as animal disturbances such as civets that consume high-quality coffee cherries. These attacks reduce productivity and cause losses for farmers.
3. Globalization and Trade: In the era of free trade, high competitiveness is required; however, local coffee products still face challenges in meeting global market quality standards. Low productivity and efficiency make farmers less prepared to compete internationally.
4. Price Fluctuations: Coffee prices often fluctuate due to the dominance of large traders and limited price information access for farmers. The absence of clear pricing policies weakens farmers' bargaining power and negatively affects production motivation as well as the sustainability of local economic development.

3.5. SWOT Analysis

Local Economic Development Strategy Based on Coffee Commodities in Rangsang Pesisir District :

1. Strategy : S–O (*Strength–Opportunities*)

This strategy uses internal strengths to take advantage of existing external opportunities. Alternative strategies :

a. Improving the quality of coffee commodity production

Efforts are carried out through the provision of superior seedlings, the use of organic fertilizers, and technical training for farmers to enable them to produce high-quality, competitive Liberica coffee.

b. Establishing coffee clusters

The community is encouraged to form cluster-based business units to process coffee into value-added products, reduce farmers' losses, and strengthen networks among stakeholders and supporting institutions.

c. Developing partnerships between coffee farmers and business actors

Through partnership forums involving local government, the private sector, financial institutions, and the community, economic planning and decision-making are carried out in a participatory and sustainable manner.

2. Strategy : S–T (*Strength–Threats*)

This strategy leverages internal strengths to face external threats. Alternative strategies :

- a. Developing domestic and export markets
The government and farmers collaboratively expand the market reach of Liberica coffee, especially to international markets, while ensuring production quality and quantity.
- b. Developing a conducive business climate
Local governments play a crucial role in improving services, providing infrastructure, and simplifying regulations to attract investment and support the growth of the coffee industry in the region.

3. Strategy : W–O (*Weakness–Opportunities*)

This strategy focuses on minimizing internal weaknesses to take advantage of external opportunities. Alternative strategies :

- a. Empowerment of farmer groups
Strengthening the capacity of farmer groups is carried out through extension services, technical training, and socialization so that farmers can increase productivity and manage coffee crop pests and diseases.
- b. Penguatan Kapasitas Kelembagaan Penunjang
Cooperatives, NGOs, extension agencies, and financial institutions are strengthened to effectively carry out empowerment functions, distribute production outputs, and provide farmers with access to capital.

Table 3. SWOT Analysis

	Strenghts (S)	Weakneses (W)
	Natural Resource Potential	Supporting Institutions
	Advantages of Liberica Coffee	Inadequate Technology
	Role of the Community and Local Groups	
Opportunities (O)	Strategy : S-O	Strategy : W-O
Stakeholder Partnerships	1. Improving the quality and production of coffee commodities	1. Empowerment of farmer groups
	2. Establishing coffee clusters	2. Strengthening the capacity of supporting institutions
Regional Policies	3. Developing partnerships between coffee farmers and business actors .	
Threats (T)	Strategy : S-T	Strategy : W-T
Economic instability	1. Developing domestic and export markets	1. Building partnership alliances with local governments
Attack by plant pests and pathogens	2. Developing a conducive business climate	2. Developing price information technology
Globalization and market trade		3. Increasing coffee crop productivity
Price fluctuations		

* Analysis Results, 2021

4. Strategy : W–T (*Weakness–Threats*)

This strategy aims to minimize internal weaknesses to avoid external threats. Alternative strategies: :

- a. Building partnership alliances with local governments
The sub-district government collaborates with other regions producing similar commodities to stabilize prices, expand marketing networks, and create mutually beneficial markets.

- b. Developing price information technology
Local governments need to develop an internet-based price information system so that farmers can quickly and accurately access market price data and gain protection against monopolistic trading practices.
- c. Increasing coffee crop productivity
Through the application of modern cultivation technologies and supportive government policies for production efficiency, coffee productivity can be increased to ensure the sustainability of the local coffee industry.

5. Conclusions

The analysis results indicate that the independent variables collectively have a significant effect on Liberica coffee production in Rangsang Pesisir District. The productivity achieved by coffee farmers ranges from 22–43% per harvest and still has the potential to increase if development is carried out optimally. This productivity improvement is expected to strengthen the competitiveness of Liberica coffee in broader markets, both domestic and export. Based on the SWOT analysis, ten main strategies were identified for developing a local economy based on coffee commodities: improving the quality of coffee production, forming coffee clusters, establishing local economic development partnership forums at the Rangsang Pesisir sub-district level, developing domestic and export markets, creating a conducive business climate, empowering farmer groups, strengthening the capacity of supporting institutions, improving cultivation technologies, building partnership alliances with local governments, developing price information technology, and sustainably increasing agricultural productivity. Overall, the implementation of these strategies is expected to enhance Liberica coffee productivity, strengthen farmers' positions within the economic value chain, and support the welfare of the community in Rangsang Pesisir District.

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