



(REVIEW ARTICLE)



Contributions of the palm plantation sub-sector to the regional economic development of Boalemo

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Abstract

This research delivers (1) an analysis of palm plantation sub-sector contributions to the regional economic development of Boalemo and (2) formulated alternative strategies to develop palm plantation related to the regional economic development of Boalemo. A survey method was applied. Empirical primary and secondary data collection was by interviews, observation, and questionnaire distribution. Data collected were analyzed using trend analysis and regional economic analysis made up of a localization analysis, specialization analysis, economic structure analysis, and economic share analysis. Results demonstrated that (1) The palm plantation sub-sector contributed by 3% to the regional economic development of Boalemo as the commodity was not special and not distributed. Its bases were only in three sub-districts in Boalemo. That was, only 40% of the total Boalemo area became the center for palm plantation commodity distribution and (2) An aggressive strategy was deployed as a reliability strategy for developing palm in Boalemo. It put the palm plantation sub-sector in Quadrant 1, which was considered very auspicious because of its power and opportunities.

Keywords: Palm Contribution; Economic Development; Development Strategy

1. Introduction

Palm is one of the plantation commodities greatly contributing to the national economy. It is an instrumental producer of biofuels (biodiesel), food oil, industrial oil, and pharmaceutical raw material (Pitriani, 2019). Palm, additionally, has a positive effect on national social and economic development due to its role as one of the highest exported plantation commodities in Indonesia. Palm, accordingly, is noteworthy as a source of foreign exchange and taxes. In addition, palm plantation, in terms of its production process and industrial processing, can also create work opportunities and open job fields, especially for rural communities, and as such, has a positive impact on community health promotion (Azahari, 2018).

The agricultural sector is acclaimed as one of the key sectors endorsing national economic recovery and particularly fostering national food security and sovereignty in confronting crisis threats. The strong and resistant economic structure of the Republic of Indonesia builds on a strong agricultural sector. Indonesia is the global main exporter with palm specialization and has contributed by a half of global palm oil supplies. Statistics Indonesia (BPS) confirmed the high contribution of the agricultural sector to Indonesia's economic growth. The sector contributed a positive growth of 3.51% in year on year (YOY) in Quarter III-2021. It was recorded as one of the sectors consistently contributing to economic growth, specifically during the pandemic. It grew by 1.35% in Quarter III-2021. Economically speaking, 66.42% of the Gross Domestic Product (GDP) came from industries, agriculture, trades, construction, and expansion. Based on the description, we have to admit that the agricultural sector is the main pillar of national economy, and it has consistently grown and contributed to national GDP by 14.3% in Quarter III-2021.

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19.1% out of the amount is the contribution of palm commodity, which is divided into 15.6% of the total contribution from non-oil and gas exports and 3.5% of the contribution to national GDP. Apart from its contribution to GDP, the palm plantation sub-sector also contributes to national economic development at a high investment value and trade balance of the national agricultural commodity. It serves as a source of foreign change from exported commodities and contributes to increases in national revenue from taxes, export taxes, duties, provision of food materials and raw materials for industries. Finally, it absorbs workers, in which 16.2 million Indonesian workers work at the palm sector.

Palm is the prominent and key plantation commodity in Indonesia. The plant, whose primary products are palm oil (CPO) and palm kernel oil (PKO), comes with a high economic value and has the highest contribution to foreign exchange among other plantation commodities. Palm has been included into business in the forms of palm plantation and palm processing factory producing oil and other derivative products (Fauzi et al., 2012). Crude palm oil or CPO is a reliable agricultural commodity in Indonesia. Palm plantation produces crude palm oil used as a raw material by other industries as derivative products, e.g., oleofood (cooking oil, margarine, and shortening) and oleochemistry (fatty acid, fatty alcohol, and glycerine) (Machfud & Rika, 2008).

Palm production had a positive influence on producing countries, but the influence is also accompanied by degraded environmental quality due to massive land use, which causes decreased land areas and, most importantly, changes in social community structure at the palm plantation area (Pye, Daud, Harmono, & Tatat, 2012). Palm area expansion, which has a negative contribution to the environment, engenders a biodiversity loss. It also gives rise to greenhouse gas emission as a result of areal expansion by burning down the forest, air pollution, and water pollution (Dislich, 2017; Saharjo & Munoz, 2005; Wilcove & Koh, 2010). From a social perspective, the aftermath of palm expansion carried out by big companies frequently incurs conflicts over community land rights and workers (Hidayat, Offermans, & Glasbergen, 2018; Overbeek, Kröger, & Gerber, 2012; Pye, 2012).

In 2010, areas in Gorontalo Province drew the interest of investors who were anxious to make investment in the palm plantation sub-sector. The investment was opened nearly at the same period in four out of six districts/city areas, i.e., Puhwato, Boalemo, Gorontalo Utara, and Gorontalo. Boalemo, in a plain view, is considered an area with a successful agribusiness management system, especially related to its palm sub-sector agriculture, which is more eminent than other districts. The indicator is notable with a developed raw material processing system of fresh fruit bunches in the downstream sub-sector of palm agriculture and the fact that the only CPO processing factory in Gorontalo Province is located in Boalemo.

The above arguments lead us to the paramount importance of research on “Contributions of the Palm Plantation Sub-Sector to the Regional Economic Development of Boalemo”. This research explores palm sub-sector contributions to the regional economic development of Boalemo and formulates an alternative strategy for developing palm plantation related to economic development

2. Material and methods

A survey method composed of primary and secondary surveys was employed. A primary data survey was conducted to determine the strategy for developing palms, whereas a secondary one was performed to collect data on palm contributions to socio-economic development in Boalemo. Data collection was undertaken by questionnaire distribution, interviews, and observation. Collected research data were analyzed using a trend analysis, localization analysis, specialization analysis, structural analysis, and SWOT analysis.

3. Results

3.1. Economic Analysis of Palm Areas

3.1.1. Localization Analysis

Table 1 exhibits the results of the analysis of the coefficient of localization of the business competitiveness of plantation plant commodities in Boalemo. Table 1 indicates that the entire plantation sub-sector commodity in Boalemo was distributed. Each sub-district hence had a potency of plantation plants.

Table 1 Localization Analysis of the Business Competitiveness of Plantation Plant Commodities in Boalemo

| Commodity | Localization | |
|-----------|--------------|-------------|
| | Value | Category |
| Palm | 0.5631 | Distributed |
| Coconut | 0.6080 | Distributed |
| Coffee | 0.6179 | Distributed |
| Cacao | 0.4914 | Distributed |
| Sugarcane | 0.0123 | Distributed |

Source: Processed Data, 2023

The coefficient of localization (location index) evaluated the suitability level of a plant to geographical and environmental conditions in a certain area. A value < 1 pointed out that the suitability level of a plant in the area was relatively low. The coefficients of localization plantation plants, e.g., palm, coconut, coffee, cacao, and sugarcane, in Boalemo were < 1. It could thus be assumed that these plants had a low suitability level to the area. These plants might not grow well or come with optimum results in Boalemo. The causing factors were climate, types of soil, humidity, and others which affected the growth and productivity of the plants. This situation required alternative plantation plants which were more suitable to the geographical and environmental conditions of Boalemo.

3.2. Specialization Analysis

The results of the analysis of the coefficient of specialization of the business competitiveness of plantation plant commodities in Boalemo are presented in Table 2. Table 2 shows that palm significantly belonged to a non-special category at a value of 0.0445. Among the reasons were:

Table 2 Specialization Analysis of the Business Competitiveness of Plantation Plant Commodities in Boalemo

| Commodity | Specialization | |
|-----------|----------------|-------------|
| | Value | Category |
| Palm | 0.0445 | Non-special |
| Coconut | 3.7707 | Special |
| Coffee | 0.0021 | Non-special |
| Cacao | 0.1493 | Non-special |
| Sugarcane | 0.0200 | Non-special |

Source: Processed Data, 2023

3.3. Total Production

The palm population was relatively small compared to the coconut one, impacting the amount of production capacity generated by palm. Besides, palm just started being cultivated in Boalemo in 2010. The trees bore their first fruit in the eighth year, i.e., in 2018. The fruiting period was much longer in comparison with coconut, which was local plants been long cultivated in the endemic area of Sulawesi.

3.4. Farmer Characteristics

The number of farmers cultivating palm trees was relatively small than that of farmers cultivating coconut. A farmer capacity level was the key indicator to measure palm tree cultivation capacity in Boalemo.

3.4.1. Capital

Cultivating palm plantation plants required relatively higher capital compared to other preeminent plantation commodities. It led to the consequence that this commodity gained little interest from local farmers to cultivate. Most

palm farmers in Boalemo were plasm farmers, whose all of operational requirements for cultivating, maintaining, and harvesting palm were distributed by PT Argo Artha Surya as the parent company.

3.4.2. Processing

Processing of palm fruit bunches harvested in palm plantation in Boalemo was also a factor giving a non-special category to this commodity. As suggested by our field research and observation, most of palm processing activities were left by plasm farmers to factories which later processed palm fruit into crude palm oil. Meanwhile, in terms of other plantation commodities, such as coconut, the farmers could sell it directly to buyers and self-process it, allowing them to earn results more expeditiously in comparison with that earned by processing palm commodity.

3.4.3. Contributions of the Palm Plantation Sub-Sector to the Gross Regional Domestic Income of Boalemo

The Gross Regional Domestic Income (GRDI) constituted the value of an item and services which could entirely be gained or resulted within a certain period in an economy (BPS RI, 2020). Calculating palm contributions to Boalemo GRDI was carried out using the Gross Domestic Product Calculation based on constant price calculated from the beginning of palm commodity production in Boalemo in 2018. The total amount of palm plantation plant commodity production in Boalemo in the last five years is stated in Table 3.

Table 3 Total Production, Price, and Revenue of Palm Commodity in 2018-2022

| Year | Total Production (kg/ha) | Production Value Added/Year (kg/Year) | Average Price/Year (IDR/kg) | Total Revenue (IDR/Year) |
|------|--------------------------|---------------------------------------|-----------------------------|--------------------------|
| 2018 | 1,227 | 0 | 1140.80 | 1,399,762 |
| 2019 | 1,643 | 416 | 1013.42 | 1,664,735 |
| 2020 | 3,631 | 1988 | 1309.18 | 4,753,633 |
| 2021 | 3,664 | 33 | 2136.88 | 7,829,528 |
| 2022 | 3,704 | 40 | 2195.18 | 8,130,947 |

Source: Processed Data, 2023

Table 3 demonstrates the total revenue from the palm plantation sub-sector in Boalemo in 2018 by IDR1,399,762.00, and the highest revenue was IDR8,130,947.00 in 2022. Once the total revenue was identified, the total contribution of the palm plantation sub-sector to GRDI related to the agricultural business field sector in Boalemo could be determined. Grounded on processed data, the palm plantation sub-sector had given contributions to the agricultural business field sector since 2018 to date. The palm sector contributed IDR625,158.40 in 2018, IDR468,200.04 in 2019, IDR623,169.68 in 2020, IDR1,044,934.32 in 2021, and IDR1,299,546.56 in 2022. We could see that increases were made from 2020 to 2022. The reason was increases in cost of sales of fresh fruit bunches and increases in palm production capacity and palm plantation areas in Boalemo.

As regards the trend of GRDI value added percentages, the palm sub-sector contributed by 1% in 2018, 1% in 2019, 3% in 2020, 4% in 2021, and 5% by projection in 2020. If the percentage was summed, the palm plantation sub-sector had contributed to Boalemo GRDI by 14%.

3.5. Measuring the Economic Structure Related to the Palm Plantation Sub-Sector in Boalemo

An economic structural analysis aimed to identify the contribution or role of each economic activity of a sector to the regional economy within a particular year (Baruwadi, 2008). Predicated by processed data, agricultural, forest, and fishery sectors contributed by above 50% to the economic structure of Boalemo in 2018-2022. The palm commodity plantation sub-sector, and yet, had only contributed by 1% to increases in the economic structure value in Boalemo for four consecutive years but showed an increase of 3% in 2022. In conclusion, palm commodity remained a non-special commodity in Boalemo, while other plantation plan commodities had been considered as special.

3.6. Economic Growth Rate Related to the Palm Plantation Sub-Sector

An economic growth rate in a particular area was measured based on increases in goods and service production from time to time. This measurement aimed to determine performance output achieved in a certain area which conducted development, specifically in the economic field (Baruwadi, 2008). The percentages of the regional economic growth rate from 2018-2022 are exhibited in Table 4.

Table 4 Regional Economic Growth Rate of Boalemo

| Business Field | Economic Growth Rate Percentage in Boalemo in 2018-2022 | | | | |
|--|---|--------|---------|---------|---------|
| | 2018 | 2019 | 2020 | 2021 | 2022 |
| Mining farming and fishery | - | 0.04 | -0.01 | 0.01 | 0.01 |
| <i>Palm</i> | - | -0.04 | 0.04 | 0.12 | 0.07 |
| Mining and modification | - | 0.0002 | 0.00001 | 0.00011 | 0.00018 |
| Processing industry | - | 0.001 | 0.01 | 0.00011 | 0.0008 |
| Procurement of water, garbage and waste management, and recycling | - | 2.31 | 3.71 | 1.58 | 2.06 |
| Electricity and gas procurement | - | 2.39 | 1.28 | 1.11 | 4.54 |
| Construction | - | 0.09 | 6.95 | 0.05 | 0.003 |
| Wholesale and retail trades, car and motorcycle reparation | - | 0.01 | -0.03 | 0.39 | 1.15 |
| Transportation and warehousing | - | 0.14 | -0.09 | 0.05 | 0.11 |
| Accommodation and consumption provision | - | 0.07 | -0.19 | 0.05 | 1.07 |
| Information and communication | - | 0.10 | 0.12 | 0.05 | 4.33 |
| Financial and insurance services | - | -0.19 | 0.27 | 0.24 | -17.6 |
| Housing | - | 0.07 | 0.06 | 0.04 | 3.42 |
| Company services | - | 0.003 | -0.02 | 0.06 | 0.004 |
| Administration of government, defence, and mandatory social security | - | 0.13 | -0.07 | -0.18 | 0.27 |
| Educational services | - | 0.28 | 0.19 | 0.11 | 0.13 |
| Health services and social activities | - | 0.39 | 0.09 | 0.13 | 0.05 |
| Other services | - | 0.05 | -0.04 | 1.39 | 0.003 |
| GRDI | - | 5.88 | -0.43 | 5.08 | -0.45 |

Source: Processed Data, 2023

Table 4 indicates fluctuating economic sector growth rates in Boalemo in the last five years from 2018. An increase in the economic growth rate at a GRDI percentage of 8.58% broke out in 2022, while there was a greatly significant decline to 0.43% in 2020. The cause was allegedly the COVID-19 pandemic situation. However, based on the analysis of the research results related to agricultural sectors, especially the palm plantation sub-sector, the sub-sector remained contributing to the economic growth rate increase by 0.07% in 2022 despite a decline impact to -0.01%

3.7. Economic Contributions to the Palm Plantation Sub-Sector to the Economy of Gorontalo Province

Another approach to measuring the role of the palm plantation sub-sector in the regional economic development of Boalemo was quantifying the economic contributions of the palm commodity to Gorontalo Province. In this research, we divided the variable of regional palm plant contributions from Boalemo by the variable of palm contributions from all districts/cities in Gorontalo Province. The contribution quantification is pointed out in Table 5.

Table 5 Economic Contributions of the Palm Plantation Sub-Sector to Gorontalo Province

| Business Field | Economic Contributions | | | | |
|--|------------------------|---------------|---------------|---------------|---------------|
| | 2018 | 2019 | 2020 | 2021 | 2022 |
| Agriculture, forestry, and fishery | 0.0002 | 0.0002 | 0.0002 | 0.0002 | 0.0002 |
| <i>Palm plantation commodity</i> | <i>0.1129</i> | <i>0.1043</i> | <i>0.1212</i> | <i>0.1648</i> | <i>0.1975</i> |
| Mining and excavation | 0.0047 | 0.0047 | 0.0473 | 0.0047 | 0.0047 |
| Processing industry | 0.0058 | 0.0055 | 0.0055 | 0.0054 | 0.0053 |
| Electricity and gas procurement | 0.4731 | 0.4714 | 0.4740 | 0.4834 | 0.4820 |
| Procurement of water, garbage and waste management, and recycling | 0.4379 | 0.4322 | 0.4515 | 0.4564 | 0.4554 |
| Construction | 0.0072 | 0.0071 | 0.0071 | 0.0071 | 0.0071 |
| Wholesale and retail trades, car and motorcycle repairation | 0.0136 | 0.0134 | 0.0135 | 0.0135 | 0.0134 |
| Transportation and warehousing | 0.0052 | 0.0053 | 0.0053 | 0.0053 | 0.0052 |
| Car and consumption provision | 0.0070 | 0.0070 | 0.0070 | 0.0070 | 0.0122 |
| Information and communication | 0.0064 | 0.0063 | 0.0063 | 0.0063 | 0.0061 |
| Financial and insurance services | 0.0067 | 0.0060 | 0.0061 | 0.0062 | 0.0060 |
| Housing | 0.0084 | 0.0082 | 0.0082 | 0.0085 | 0.0083 |
| Company services | 0.0071 | 0.0070 | 0.0072 | 0.0072 | 0.0071 |
| Administration of government, defence, and mandatory social security | 0.0124 | 0.0123 | 0.0123 | 0.0123 | 0.0123 |
| Educational services | 0.0105 | 0.0103 | 0.0103 | 0.0104 | 0.0103 |
| Health services and social activities | 0.0124 | 0.0124 | 0.0124 | 0.0122 | 0.0122 |
| Other services | 0.0104 | 0.0103 | 0.0105 | 0.0104 | 0.0104 |
| GRDI | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |

Source: Processed Data, 2023

Table 5 presents the economic contributions of the palm plant plantation sub-sector in Boalemo to Gorontalo Province. The contributions were considered relatively small by 1-2%, but the percentage was very stable from 2018-2022.

4. Conclusion

To conclude from results and discussion, predicated on the regional economic analysis, the palm plantation sub-sector in Boalemo contributed by 1-3% to GRDI based on the constant price as palm was a non-special commodity, not distributed, and only had commodity bases in 40% of sub-districts in Boalemo.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to disclosed.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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