

Analysis of Leading Commodities of Plantation Sub-Sectors in Tanah Laut District, South Kalimantan Province

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ABSTRACT

Leading commodities are crucial for understanding the potential of commodities in both national and international markets. Exceptional products can serve as distinct catalysts for regional growth. This study aims to investigate potential alternative plantation commodities, assess the development of production growth rates, analyze regional market share growth, proportional growth of net commodity growth in the plantation sub-sector, and identify the position of plantation sub-sector commodities in Tanah Laut District. Time series data from 2013 to 2021 were utilized, employing Shift Share Analysis, Location Quotient (LQ) Analysis, Dynamic Location Quotient (DLQ) Analysis, and Klassen Typology. The analysis revealed that although palm oil and cloves are basic commodities, they are experiencing a decline in perspective, whereas rubber, coconut, sugar palm, coffee, and pepper are prospective commodities for future development. Shift Share Analysis concluded that the regional market share growth of palm oil has good competitiveness and a positive Proportional Growth value, with coffee and sugar palm exhibiting rapid growth. Klassen Typology Analysis indicated that coconut, coffee, pepper, and sugar palm fall within the category of advanced but pressured sectors, while palm oil is categorized as a potential sector.

Keywords: Dynamic Location Quotient, Leading Commodities, Location Quotient, Shift Share.

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1. INTRODUCTION

Tanah Laut Regency is one of the administrative regions in South Kalimantan Province, Indonesia, encompassing an area of 3631.35 km², or approximately 9.71% of the total area of the province. This regency holds significant potential in the development of agricultural commodities, as its planting area constitutes 13% of the total agricultural land in the province. The majority of South Kalimantan's GDP is derived from the agricultural sector. It was estimated that in 2021, the sectors of agriculture, livestock, hunting, and agricultural services contributed 9.39%, or IDR 18,085 billion, to the GDP of South Kalimantan, with Tanah Laut Regency accounting for 10.92% or IDR 1.611 billion. In Tanah Laut Regency, the Gross Regional Domestic Product (GRDP) from the plantation business field alone contributed the highest at 4.21%, which amounts to IDR 621 billion.

The plantation sub-sector serves as a livelihood for many in the agricultural sector. Given the abundance of

land with significant potential and an ideal environment for expansion and development, plantation companies have ample room to grow. The agricultural industry heavily relies on plantation crops to generate foreign exchange. Plantation goods are the main agricultural exports from Indonesia, including traditional crop products such as palm oil, rubber, tea, coffee, and tobacco [1].

Plantations play a crucial role in the local economy by enhancing welfare and prosperity while strengthening the economic foundation at the state, local, and federal levels. They contribute to soil and water conservation supporting ecological functions, carbon sequestration, oxygen production, and social-cultural areas, and support protected areas, serving to unify the nation [2].

Plantations are the largest contributors to regional economic development. The multiplier effect of plantation development in various regions has a positive impact on the availability of labor and opportunities for business and



increasing regional income. Plantations contribute significantly to the Indonesian economy as a source of GDP growth, foreign exchange, and employment absorption, yet they are not optimized. This is because the growth rate of plantation contributions is more driven by the impact of increasing international market prices for plantation commodities rather than by an increase in the volume of production [3].

Regional leading goods, commodities with comparative and competitive advantages, are valuable because they can compete and endure longer than similar commodities in other locations, based on technology and socioeconomic factors in effective commodity cultivation [4]. Each region has different leading commodities, so recognizing these leading commodities can help the government identify potential areas for development.

1.1. Objectives and Benefits of the Research

The objectives of this study were to:

1. Investigate potential plantation commodities in Tanah Laut Regency that could be enhanced.
2. Assess the development of the production growth rate of plantation sub-sector commodities in Tanah Laut Regency.
3. Analyze the growth in regional market share, proportional growth, and net growth of commodities in the Plantation Sub-Sector in Tanah Laut Regency.
4. Identify the position of commodities within the Plantation Sub-Sector in Tanah Laut Regency, taking into account the commodities of the Plantation Sub-Sector in South Kalimantan Province.

This research is expected to provide information, insights, and knowledge regarding leading commodities in the plantation sub-sector in Tanah Laut Regency, South Kalimantan Province.

2. RESEARCH METHODS

2.1. Location and Duration of the Study

This research commenced with the proposal writing in September 2023 and continued until June 2024. The study area was Tanah Laut Regency, South Kalimantan Province.

2.2. Types and Sources of Data

Secondary data for this study were collected using documentation data collection methods. This research utilized time series data from the Central Bureau of Statistics of South Kalimantan Province, covering the years 2013 to 2021, the Tanah Laut Regency Bureau of Statistics, and the South Kalimantan Province Department of Plantation and Livestock.

2.3. Data Analysis

In accordance with the research objectives, the methodology used was as follows:

2.3.1. Location Quotient Analysis

The basic or prospective sectors in a region are identified using the Location Quotient approach. This technique

offers a comparative analysis of the relative capacity of a specific sector within a region and in a broader geographical area [5]. The formula for LQ is as follows:

$$LQ = \frac{(v_i/v_t)}{(V_i/V_t)}$$

where

v_i – Production/Planted area of commodity i in Tanah Laut Regency (ton/ha)

v_t – Total production/Planted area of the plantation sub-sector in Tanah Laut Regency (ton/ha)

V_i – Production/Planted area of commodity i in South Kalimantan Province (ton/ha)

V_t – Total production/Planted area of the plantation sub-sector in South Kalimantan Province (ton/ha)

From the results of the LQ calculations, two criteria can be categorized:

- Commodity i is considered a basic commodity whose production is sufficient to meet the needs of Tanah Laut Regency and can be exported to other areas if $LQ > 1$.
- Commodity i is classified as a non-basic commodity if LQ is less than 1, meaning that if Tanah Laut Regency cannot meet its needs, then supply from other areas is required.

2.3.2. DLQ Analysis

DLQ analysis uses the growth rate for the main components, following a principle similar to that of the Location Quotient analysis. By comparing the local economic sector with the regional association economic sector, one can determine the location quotient. The formula for DLQ is as follows:

$$DLQ = \left(\frac{(1 + g_i)/(1 + g)}{(1 + G_i)/(1 + G)} \right)^t$$

where

g_i – Average growth rate of commodity i production in Tanah Laut Regency

g_j – Average growth rate of total commodity production in Tanah Laut Regency

G_i – Average growth rate of commodity i production in South Kalimantan Province

G – Average growth rate of total commodity production in South Kalimantan Province

t – Period of analysis

From the DLQ calculations, three criteria can be categorized:

- The growth rate of commodity i production in Tanah Laut Regency is higher compared to South Kalimantan Province if $DLQ > 1$.
- If DLQ is 1, then the growth rate of commodity i production in Tanah Laut Regency is comparable to the growth rate of production in South Kalimantan Province.
- If DLQ is less than 1, it means the increase in output of commodity i in Tanah Laut Regency is slower compared to production in South Kalimantan Province.

TABLE I: CLASSIFICATION OF PLANTATION SECTORS BASED ON COMBINED VALUES OF LQ AND DLQ

Nilai	LQ > 1	LQ < 1
DLQ > 1	Superior	Prospective
DLQ < 1	Leading	Underdeveloped

This research also looks at the combination of LQ and DLQ scores to determine the classification of a commodity according to Table I.

2.3.3. Shift-Share Analysis

Sectoral performance in a specific area can be explained using shift-share analysis. The shift-share analysis is a simple method using proportion concepts, which allows us to identify which sectors are leading in a particular area by comparing them to other areas. Production ratios are used in shift-share analysis to compare output in plantation sub-sectors, specifically as follows [6]:

$$PP = \left\{ \left(\frac{NP_{diak}}{NP_{dial}} \right) - \left(\frac{NP_{kak}}{NP_{kal}} \right) \right\} \times NP_{tpal}$$

$$PPW = \left\{ \left(\frac{NP_{tpak}}{NP_{tpal}} \right) - \left(\frac{NP_{diak}}{NP_{dial}} \right) \right\} \times NP_{tpal}$$

$$PB = PP + PPW$$

where

PP – Proportional growth

PPW – Regional share growth

PB – Net growth

NP_{diak} – Production of commodity i in Tanah Laut Regency in 2021

NP_{dial} – Production of commodity i in Tanah Laut Regency in 2013

NP_{kak} – Production of commodity i in South Kalimantan Province in 2021

NP_{kal} – Production of commodity i in South Kalimantan Province in 2013

NP_{tpak} – Total production of the plantation sub-sector in South Kalimantan Province in 2021

NP_{tpal} – Total production of the plantation sub-sector in South Kalimantan Province in 2013

After calculating the SSA formula using the PB value, it is clear that:

- Commodity i is considered to be in a high or advanced (progressive) growth group if the PB value is greater than 0.

- If the PB value is less than 0, then commodity i falls into the slow growth (non-progressive) group.

2.3.4. Klassen Typology Method Analysis

Using the plantation sub-sector of South Kalimantan Province as a reference area, the Klassen Typology Analysis is employed to determine the position of the plantation sub-sector in Tanah Laut Regency according to Table II.

3. RESULTS AND DISCUSSION

3.1. LQ Analysis

Based on the LQ values for Tanah Laut Regency's plantation sub-sector from 2013 to 2021, the following table summarizes the findings

Based on Table III LQ analysis results, the oil palm commodity has an LQ value of 1.1 for production and an average LQ value of 1.3 for land area. The clove commodity has an LQ value of 2.6 for both production and land area. This indicates that both oil palm and clove commodities experience production surpluses when meeting local demand alone and have the potential for export beyond the region. Conversely, commodities with LQ values less than 1, including rubber, coconut, coffee, pepper, nutmeg, and aren't, are categorized as non-leading commodities.

3.2. DLQ Analysis

The DLQ analysis is fundamentally similar to the LQ analysis but with a focus on growth rates. The objective of DLQ analysis is to determine the future repositioning of leading commodities in a region. The results of the DLQ analysis are presented in DLQ analysis are presented in Table IV.

The DLQ analysis shows that rubber has a DLQ value of 1.1, coconut and aren have DLQ values of 1.7, and coffee and pepper have DLQ values of 1.6. The commodities rubber, coconut, aren, coffee, and pepper are categorized as prospective commodities for future development. Oil palm has a DLQ value of 1, indicating its growth rate is comparable to that of the province. Commodities with a DLQ value below 1, such as clove and nutmeg, exhibit slower growth compared to the provincial growth rate.

Based on Table V, Location Quotient (LQ) and Dynamic Location Quotient (DLQ) analysis for Tanah Laut Regency, oil palm and clove are classified as base or leading sectors but are less prospective and show a decline in growth, likely due to the age of the crops.

TABLE II: CLASSIFICATION OF PLANTATION SECTORS ACCORDING TO KLASSEN

<i>Quadrant I</i>	<i>Quadrant II</i>
Advanced and rapidly growing sectors	Pressured but advanced sectors (stagnant sectors)
$Sa > S$ and $Ska > Sk$	$Sa < S$ and $Ska > Sk$
<i>Quadrant IV</i>	<i>Quadrant III</i>
Prospective or developing industries (emerging industries)	Relatively underdeveloped sectors (under-developed sectors)
$Sa < S$ and $Ska < Sk$	$Sa > S$ and $Ska < Sk$

Notes: Ska –Growth rate of the value of production i in Tanah Laut Regency, Sk –Growth rate of the value of production i in South Kalimantan Province, Sa –Contribution of i to the total value of production in Tanah Laut Regency, S –Contribution of i to the total value of production at the provincial level in South Kalimantan.

TABLE III: AVERAGE LQ VALUES BASED ON LAND AREA AND PRODUCTION OF TANAH LAUT REGENCY FROM 2013–2021

Commodity	Average LQ value		Notes
	Land area	Production	
Rubber	0.6	0.5	Non basis
Coconut	0.2	0.3	Non basis
Oil palm	1.3	1.1	Basis
Coffee	0.3	0.4	Non basis
Pepper	0.2	0.2	Non basis
Clove	2.6	2.6	Basis
Nutmeg	0.3	0.1	Non basis
Aren	0.3	0.1	Non basis

Source: Processed Data.

TABLE IV: DYNAMIC LOCATION QUOTIENT (DLQ) ANALYSIS RESULTS FOR TANAH LAUT REGENCY IN 2021

Commodity	(1 + Gi)	(1 + G)	((1 + Gi)/(1 + G))	t	DLQ
Rubber	1.0	1.0	1.0	9.0	1.1
Coconut	1.0	1.0	1.0	9.0	1.7
Oil palm	1.0	1.0	1.0	9.0	1.0
Coffee	1.0	1.0	1.0	9.0	1.6
Pepper	0.9	1.0	0.9	9.0	1.6
Clove	1.0	1.0	1.0	9.0	0.4
Nutmeg	1.0	1.0	1.0	9.0	0.4
Aren	1.0	1.0	0.9	9.0	1.7

Source: Processed Data.

TABLE V: LOCATION QUOTIENT (LQ) AND DYNAMIC LOCATION QUOTIENT (DLQ) ANALYSIS RESULTS FOR TANAH LAUT REGENCY

Value	LQ > 1	LQ < 1
DLQ > 1	–	Rubber, coconut, coffee, pepper, aren
DLQ < 1	Oil palm and clove	Nutmeg

Source: Processed Data.

TABLE VI: RESULTS OF SHIFT-SHARE ANALYSIS FOR LEADING PLANTATION SUBSECTOR COMMODITIES IN TANAH LAUT REGENCY, 2021

Komoditas	PP	PPW	PB
Karet	–150	–677	–827
Kelapa	–255	–640	–895
Kelapa Sawit	–23591	4792	–18799
Kopi	9	–36	–27
Lada	–3	–7	–11
Cengkeh	–49	–52	–102
Kemiri	–36	–22	–58
Aren	19	–26	–7

Source: Processed Data.

On the other hand, rubber, coconut, coffee, pepper, and aren, while not yet base sectors, show potential due to their growth and future prospects, indicating they could eventually become base sectors. Nutmeg, categorized as a lagging sector with both LQ and DLQ values below 1, suggests that nutmeg does not currently play a significant role in Tanah Laut Regency and lacks potential as a base commodity in the future.

3.3. Shift-Share Analysis

The shift-share method elucidates the influence of the plantation sub-sector commodities on a broader regional scope. The following Table VI shows the development of plantation sub-sector commodities in Tanah Laut Regency and South Kalimantan Province.

Based on the shift-share analysis calculations, the values of PP and PB for oil palm are less than 0, indicating it belongs to the slow growth group. However, the PPW calculation for oil palm is 4792, which suggests that oil palm has good competitiveness. The PP values for coffee at 9 and areca at 19 indicate these commodities are experiencing rapid growth. For rubber, coconut, pepper, clove, and nutmeg, the shift-share analysis results show PP, PPW, and PB values of less than 0, which categorize these commodities as slow, with poor competitiveness, and slow growth.

Negative shift-share values signal that the overall growth of the agricultural sector is slower compared to the national sector's growth. Therefore, it can be said that although the agricultural sector possesses substantial resource potential, the relatively low level of technology implementation causes the productivity growth of this sector to be moderate [7].

Based on the Table VII the commodities of coconut, coffee, pepper, and areca fall into the category of advanced but pressured sectors, which means that the growth rate in Tanah Laut Regency is less compared to the growth rate in South Kalimantan Province, and their contribution to total production in Tanah Laut Regency is greater compared to their contribution to total production in South Kalimantan Province; this sector can be considered as more saturated. The commodities of oil palm and clove fall into the category of potential sectors, meaning the growth rate in Tanah Laut Regency is greater compared to

TABLE VII: KLASSEN TYPOLOGY ANALYSIS QUADRANTS FOR PLANTATION SUBSECTOR COMMODITIES IN TANAH LAUT REGENCY, 2013–2021

<i>Quadrant 1</i>	<i>Quadrant 2</i>
–	Commodities: Coconut, coffee, pepper, and areca
($S_a > S$ and $S_{ka} > S_k$)	($S_a < S$ and $S_{ka} > S_k$)
<i>Quadrant 4</i>	<i>Quadrant 4</i>
Commodities: Rubber and nutmeg	Commodities: Oil palm and clove
($S_a < S$ and $S_{ka} < S_k$)	($S_a > S$ and $S_{ka} < S_k$)

the growth rate in South Kalimantan Province, and their contribution to total production in Tanah Laut Regency is smaller compared to their contribution to total production in South Kalimantan Province; this industry could be considered as rapidly developing. The commodities of rubber and nutmeg are categorized under relatively lagging sectors, indicating their growth rate in Tanah Laut Regency is smaller compared to the growth rate in South Kalimantan Province, and their contribution to total production in Tanah Laut Regency is also smaller compared to their contribution to total production in South Kalimantan Province, which does not include them in the base sector due to their lower growth rate compared to South Kalimantan Province.

4. CONCLUSIONS

Based on the results obtained from four analyses, it was found that:

1. The LQ analysis identified oil palm and clove as base commodities, indicating they are dominant commodities.
2. The DLQ analysis for oil palm showed a production growth rate comparable to that of South Kalimantan Province. For clove, the result was lower at 0.4, indicating that compared to South Kalimantan Province, the growth rate of output in the district is lower.
3. The shift-share analysis categorized oil palm within the slow-growth group while maintaining a competitive advantage. Clove products were not considered to be slow-growing or non-competitive in the shift-share study.
4. Based on the Klassen typology analysis, oil palm and clove fall into quadrant 3, indicating these are commodities with potential and capable of development.

5. RECOMMENDATIONS

Commodities that are leading in the plantation sub-sector should be a focus for the Tanah Laut district government for redevelopment as a potential that can be better utilized. Specifically, for oil palm and clove commodities, which are considered base commodities according to the LQ and DLQ analyses but are experiencing declines due to the age of the plants, replanting initiatives are necessary. Moreover, the Klassen typology

analysis categorizes these as both leading and potential commodities if further developed. One recommendation for the local government is to expand the land used for these commodities and to enhance the yield and quality of palm oil products, promoting the Palm Oil Plantation Rejuvenation Program (PSR).

Utilizing leading commodities in the plantation subsector in Tanah Laut district is expected to provide value that contributes more significantly to the local income of Tanah Laut Regency.

CONFLICT OF INTEREST

The authors declare that they do not have any conflict of interest.

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