Analysis of Industrial Based on Plantation Commodities in the Development of Jambi Province Area Development

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ABSTRACT

Research on plantation commodities in Jambi Province with the aim of analyze and find out 1. Relative position and superiority of plantation commodities2. Basic and non-plantation commodity base sectors 3. Growth of plantation commodities 4. Potentialplantation commodity 5. Industrial cluster of plantation commodity in Jambi Province. The theory of the structure of the agricultural and plantation industries, the theory of leading industrial sectors based on agricultural and plantation inputs, regional development planning and development theory, economic growth theory, leading sector theory, shift share theory, location quotient theory, growth ratio theory, overlay theory and industrial cluster theory . Secondary data on production, land area, plantation GRDP. The methodology with the explorative research method is descriptive. Analysis: 1. Shift-Share analysis. 2. Location Quotient Analysis 3. Growth Ratio Model 4. Overlay Analysis 5. Industrial cluster analysis with Quartile and Hierarchical Cluster analysis techniques. Research results: 1. Palm and rubber comparative superiority in all districts in Jambi, and comparative superiority of cinnamon & coffee in Kerinci, Merangin & Bungo Districts 2. Rubber and palm commodity commodities Base sector Kerinci, Merangin, Batang Hari, Bungo; The coffee and cinnamon commodity is the base sector in the Kerinci, Merangin, Sorolangun areas; as well as basic commodity chocolate at Bungo & Kerinci. 3. oil palm and rubber are dominant and their potential growth in all areas in Jambi; coffee, cinnamon, cocoa plantations are dominant and their potential growth is in Kerinci, Merangin, Bungo; while cloves, coconut, areca nut, candlenut, kapok, sugar palm, vanile, sugarcane, patchouli are less developed. 4. Industrial needs for processing: a. Rubber and oil palm commodities in all districts in Jambi b. Deep coconut in West and East Tanjung Jabung c. Coffee in Kerinci and Merangin Regencies d. Cinnamon bark in kerinci f. Patchouli in Sorolangun. 5. There are 3 clusters for the development of superior commodity plantation industries in Jambi, namely a) Clusters of areas for developing the leading commodity plantation industries oriented towards easy market access, namely the districts of Bungo, M. Jambi, Sorulangun, B. Hari, and Tebo b) Clusters of industrial development areas for superior commodity plantations are oriented towards proximity to raw materials, namely Kerinci and Merangin Regencies c) Clusters of areas for developing superior commodity plantation industries oriented to the availability of labor, namely West Tanjab and East Tanjab Regencies.

Keywords: Industry, Cluster, Plantation, Area, Planning,

I. INTRODUCTION

Agriculture and plantation-based industries in Indonesia and various countries currently believe that they can contribute to the economy of their nation. Several studies have been conducted to see the development and progress of the agricultural-based industrial sector in the economy. Simatupang (2007) stated that in 2000, in the United Kingdom, the contribution of agriculture-based industries to GDP was 27.9% and growth was 9%. In New Zealand, the contribution of agriculture-based industry to GDP was 33.1%. Australia's agriculture-based Industry contribution to its GDP is 23.3%. Indonesia sees that the plantation commodity agricultural-based industrial sector is a potential industrial sector to be developed.

In 2008–2012, the average contribution of the agricultural industry in Indonesia was IDR 104.638 trillion or 6.3% of Indonesia's GDP, capable of absorbing a workforce of 5.4 million workers with a labor participation rate of 5.8% and labor productivity. work reached 19.5 million rupiah per worker each year. This productivity is higher than the national productivity which reaches less than IDR 18 million per worker per year. Meanwhile, the growth of the creative industry reached 7.3% per year, higher than the national economic growth of 5.6% per year. On the other hand, Tubagus Fiki Chikara Satari (2008) and Togar Simatupang (2007), stated that agriculture-based creative industries grew and were resistant to economic crises.

Jambi Province has territories5,100,000 ha of land area, covering an area of 2,179,440 ha (42.73%) are forest and agricultural areas, and non-agricultural areas covering 2,920,560 ha (52.27%). Has a large enough plantation, where there are 7 mainstay plantation commodities, namely: (1) Rubber plantations covering an area of 669,521 hectares, with the designation: community plantations covering an area of 665,303 hectares or 99.37%, and private plantations covering an area of 4,218 hectares or 0.63%. (2) Oil palm plantations have an area of 791,025 ha, with the designation: Smallholder plantations = 527,297 ha or 66.66%, State plantations = 23,810 ha or 3.01%, and private plantations = 239,918 ha or 30.33%. (3) Coconut with an area of 118,994 Ha (People's Plantation), (4) Coffee with an area of 25,847 Ha (People's Plantation), (5) Cocoa with an area of 2,354 Ha (People's Plantation), (6) Casiavera Area of 46,132 Ha (People's Plantation), (7) Pinang area of 20,694 hectares (smallholder plantations) with a contribution of 649,959 household workers, PDRB 17.2% of the total GDP of Jambi Province with a value of Rp. 26.3 Trilliu. Production of the people's mainstay rubber commodity was 326137 tons in 2015 and palm oil production was 1,555,697 tons, and coconut in production was 106,698 tons 2014. (Jambi Provincial Plantation Office 2019),

Plantations in Jambi Province are spread across all districts, so as to encourage the creation of a plantation commodity industry or agro industry. This structural change, in addition to causing an increase in per capita income, also has an impact on the workforce, reducing unemployment, advancing technology and increasing human resources which will lead to the discovery of new innovations in plantation commodity-based industries in producing new products. In supporting this, the plantation policies in the province of Jambi in 2019, namely: 1. Supervision of FFB and Bokar trade, 2. Improved processing and quality of results (UPPB Model), 3. Rejuvenation of Oil Palm, Rubber, 4. Facilitation of plantation business disruption, 5. Development of the quality of plantation seeds, 6. Development of coffee, cocoa and deep coconut, patchouli, sugarcane, 7.

Discussing the plantation commodity industry that needs to be developed in the country / region, means paying attention to the availability and how to use plantation commodity resources. The availability and utilization of plantation commodities for industry can meet domestic consumption and exports in encouraging increased economic growth. In order to increase economic growth in Jambi in the future, it is necessary to plan for regional development by developing a commodity-based industry or agro industry. The purpose of this study is to determine:1. Relative position and advantages of plantation commodities2. Base sector and non base commodity plantation sector 3. Plantation commodity growth 4. Potential Plantation commodity industry 5. Plantation commodity industrial cluster Jambi Province

II. EMPIRICAL THEORY AND STUDY
Industrial Economics Theory

Industrial development to increase national income and the welfare of the population must be in line with the potentials of various regions with all the problems that exist in the region concerned and must be integrated between the agricultural-plantation and industrial sectors as an effort for the welfare of the local people concerned.Various Agro-Based Industrial Clusters (12 Industrial Clusters) that can be made into the plantation raw material industry are: 1) Oil Palm Processing Industry Cluster, 2) Rubber Industry Cluster and Rubber Goods, 3) Cocoa Industry Cluster, 4) Coconut Processing Industry Cluster, 5) Coffee Processing Industry Cluster, 6) Sugar Industry Cluster, 7) Tobacco Products Industry Cluster, 8) Fruit Processing Industry Cluster, 9) Furniture Industry Cluster, 10) Fish Processing Industry Cluster, 11) Paper Industry Cluster, 12) Industrial Cluster Milk Processing. (Ministry of Industry 2009).

Regional Development Planning and Development Theory

The difference in the level of wages between the agricultural sector and the industrial sector ($Wp < Wi$) encourages the movement of labor from the agricultural sector to the industrial sector, hence urbanization. Labor moving from the agricultural sector to the industrial sector will get higher income ($Yi > Yp$), so that the demand for agricultural products (food) increases, this is what drives output growth in that sector, seen from the AD side; and in the long run the rural economy will experience growth. On the other hand, there has been a change in the pattern of public demand which has experienced an increase in income, by consuming a large portion of their income for various industrial products and services. This change in consumption patterns is the driving force behind output growth and product diversification in the industrial and service sectors. Meanwhile, the Chenery theory of structural transformation theory (pattern of development) focuses on structural changes in the stages of the process of economic change in Developing Countries (NSB) which are undergoing a transformation from traditional agriculture to the industrial sector as the main engine of economic growth. (Arthur Lewis, Jhingan 2012).

Economic Growth Theory

Basically, regional growth uses the concepts of economic growth as an aggregate placed on factor movements. The flow of capital and labor that flows from one region to another opens up opportunities for differences in growth rates between regions. The economic potential of a region is a regional economic capacity that is feasible and feasible to develop, so that it will continue to develop into a source of livelihood for the local people, even helping the regional economy as a whole to develop independently and sustainably (Soeparmoko, 2002). The potential economic sector is a commodity that has advantages, namely comparatively superior and competitively superior.

Theory of Commodity Excellence and Position

Development priorities become more concrete and sharp, so each region / country can determine the regional / state superior commodity that can be developed. This view is in line with the government's policy strategy with the regional development concept of superior industrial commodities based on agriculture and plantations. Discussing superior products or commodities that need to be developed in the regions means paying attention to the availability and how to use agricultural and plantation resources as input for product development, especially the development of regional superior commodities. (Syafrizal 1997)

The shift-share method can identify shifts in the role of the economy, observing a shift in the structure of the economy in relation to an increase in the regional economy, where the regional economy which is dominated by a slow growth sector will grow below the level of regional economic growth above it. With this Shift-Share technique, besides being able to observe deviations from various comparisons of economic performance between regions, competitive advantage and commodity specialization and can also detail the causes of changes in several variables and isolation of various factors that cause changes in the economic structure of a region in its growth, from one period of time. The Shift-Share model can also be referred to as industrial mix analysis, because the existing industrial composition greatly affects the growth rate of the region. This means whether the industry located in the region is included in the rapidly developing industrial group and whether the industry is suitable to be located in that region or not. (Goschin, Z.2014)

Industrial Location Theory

The location of the industry is close to raw materials if: 1) The raw materials used are easily damaged, 2) Transportation of finished goods is easier than transportation of raw materials, 3) The raw materials used are heavier than the products produced. Market-based industrial location, if: 1) The production produced is heavier than the raw material, 2) The raw material used is not easily damaged, 3) The market area is large, 4) The resulting production is more easily damaged after processing, 5) Prestige factor .

Industrial locations based on transportation costs, industrial locations as far as possible in areas with smooth transportation both the amount of production and the raw materials needed. Industrial locations are labor-oriented, namely (1) The quantity or number of workers accommodated by the industry (2) The quality or quality of the workforce owned by the industry. Industrial location that follows economic factors, availability of labor, proximity to markets, availability of raw materials, transportation costs, marketing areas and others. (Alfred Webber; Tarigan 2006)

Economic Sector Basis and Non-Basis Sectors

Location quotient (LQ) is generally used to determine the base and non-base sectors, with the aim of seeing the comparative advantage of a commodity in an area. **Tarigan (2007)**namely: a. the basic sector is the economic sector capable of meeting the needs of both the domestic market and markets outside the region itself and can be used as a leading commodity; b. The non-basic sector is an economic sector that is only able to meet the needs of the region itself. This sector is known as a non-superior commodity.

Growth Ratio Theory (MRP)

The Growth Ratio Model is to compare the growth of an activity both on a wider scale and on a smaller scale and is an analytical tool used to see the description of potential economic activities (economic sector), especially the regional economic structure based on the criteria for the growth of both regional economic structures. internal and external (Yusuf, 1999, in Agus, 2009).

Overlay Theory

Overlay analysis to describe potential economic activities based on growth and contribution criteria. This analysis is used to identify leading sectors both in terms of contribution and growth by combining the results from the LQ analysis and the MRP analysis. So this analysis consists of three components, namely Location Quotient (LQ), Reference Area Growth Ratio (RPr) and Study Area Growth Ratio (RPs). (Yusuf, Maulana. 1999).

Cluster Theory

Cluster analysis is classifying objects based on the similarity of characteristics among these objects. Thus, the characteristics of a good cluster are: Internal homogeneity (within cluster); namely the similarity between members in one cluster. External heterogeneity (between cluster); that is the difference between one cluster and another. The clustering step in cluster analysis includes the following 3 things: 1. Measuring the similarity of distances. 2. Forming a cluster hierarchically. 3. Determine the number of clusters. The method of grouping in cluster analysis includes: Hierarchical Method; start a grouping with two or more objects which have the closest similarity. Then forwarded to other objects and so on until the cluster will form a kind of 'tree' where there are clear levels (hierarchy) between objects, from the most similar to the least similar. A tool that helps to clarify this hierarchical process is called a "dendogram. (Arsyad, Lincolin 2010)

III. METHODOLOGY

4.1 Data Collection Methods

The data collection method in this study was obtained through a secondary survey. The secondary survey consists of

institutional survey and literature survey. Secondary survey data in this study include administrative data

region, demographic data, district, provincial and national plantation commodity production data, GRDP

Districts and Provinces, data on the selling price of Jambi plantation commodities, data on Jambi area infrastructure and others

related data.

4.2. Data analysis

The stages of research on industrial cluster analysis for importing superior plantation commodities in the development planning of Jambi province, namely: 1) Determining the Relative Position and Competitive Advantages of Plantation Commodities using the Shift-Share Analysis technique. 2) Determine the base sector and non-plantation commodity base using the Location Quotient analysis technique and Klassen Typology. 3) Determine the potential for plantation commodities using the Growth Ratio Model (MRP) analysis technique and Overlay Analysis. 4) Determine the potential of plantation commodities by combining the previous 1-3 analysis results 5) Determine the cluster of Jambi's plantation commodity industrial areas using Quartile and Hierarchical Cluster analysis techniques.

4.2.1. Determining Competitive Advantages and Position of Plantation Commodities

Shift-share analysis divides growth as the change (D) of a variable in a province such as GRDP, value added, income or output, over a certain period of time. National growth (N), proportional growth (M) and competitive advantage (C). The effect of national growth is called the share effect, the proportional growth effect is called the proportional shift and the effect of competitive advantage is called the differential shift or regional share.

$Dij = Nij + Mij + Cij$ $Nij = Yij$. rn $Mij = Yij (rin - rn)$ $Cij = Yij (rij - rin)$

This growth element is a regional competitive advantage that can drive regional export growth. Through these three components, it can be seen which components or elements of growth have driven regional economic growth.

$Dij = Yij$. $rn + Yij (rin - rn) + Yij (rij - rin)$

$(Nij) = Yij$. $(Yn, t - Yn) / Yn$, is a Regional Share

$Mij = Yij (Yin, t - Yin) / Yin - rn)$, represents Proportional Shift (PS)

$Cij = Yij (Yij, t - Yij) / Yij - rin)$, is a Differential Shift (DS)

DS is used to see changes in growth from an activity in the study area to that activity in the region reference, while the PS for see the change in the growth of an activity in the reference area against total activity (GRDP) in the reference area (Field and Mac Gregor 1993), If PS 0 = (+) and PS 0 = (-) If and DS 0 = (+) and Ds 0 = (-)><><

Of the four categories, it can determine the relative position of plantation commodities (Freddy, 2001) as shown in table 1.

Table 1.
Position of District Level Plantation Commodities in Jambi Province

Differential shift (DS)	Proportional shift (PS)	
	Negative (-)	Positive (+)
Positive (+)	Tend to be Potential (Highly Potential)	Fast Growing
Negative (-)	Retarded (Depressed)	Develop (Developing)

Estaban-Marquillas Modification Criteria for shiftshare analysis in determining competitive advantage and specialization. (Herzog and Olsen, 1997 in Makmun and Irwansyah, 2013) are:

$Dij = Yij (rn) + Yij (rij - rn) + Y * ij (rij - rin) + (Yij - Yi * j) (rij - rin)$

the impact of allocations in table 2 below will likely occur.

Table 2.
Evaluation criteria shift share analysis modification Esteban-Marquillas

Commodity	rij - rin	Yij - Y * ij	Competitive advantage	Specialties
1	> 0	> 0	√	√
2	> 0	<0	√	X
3	<0	> 0	X	√
4	<0	<0	X	X

4.2.2. Determination of the Type of Plantation Compariative Leading Commodities

The determination of the comparative superior commodity types of plantation in Jambi district was carried out by using the Location Quotient (LQ) analysis technique. The Location Quotient model has the following formula:

LQ = (vi / vt) / (Vi / Vt)

The output formulation for the LQ value is as follows:

LQ> 1, the plantation commodity i is the economic base. andhas a comparative advantage

LQ <1, plantation commodity i is not the base sector in district k and not has a comparative advantage

LQ = 1, the plantation commodity has the same growth rate as the reference area.

4.2.3. Analysis of the Trend of Plantation Commodity Growth
a. Growth Ratio Model (MRP)

The MRP analysis is divided into two criteria, namely the Study Area Growth Ratio (RPs) and Reference Area Growth Ratio (RPr).

b. Overlay Analysis

According to Aditya (2013) Overlay analysis is used to identify leading sectors both in terms of contribution and growth by combining the results of LQ analysis and MRP analysis. So that this analysis consists of three components, namely Location Quotient (LQ), Reference Area Growth Ratio (RPR), and Study Area Growth Ratio (RPS). The classification results are as shown in Table 3. below.

Table 3.
Trend of Growth in Plantation Sector (for each District / City)

Plantation Sub Sector	LQ	RPS	RPR	Classification
1	+	+	+	Dominant
	-	+	+	Potential
2	+	+	-	Potential
	+	-	-	Saturated
3	+	-	+	Saturated
	-	-	-	Marginal
4	-	-	+	Marginal

4.2.4. DetermineJambi Plantation Commodity Input Based Industry
Determine whether or not an input-based industry is needed for plantation commodity in the Jambi area by referring to and guided by the results of the Shift-Share Analysis, Location Quotient analysis and Growth Ratio Model, namely: relative position of commodities, competitive advantage of commodities, level of commodity specialization, comparative advantage of commodities, and commodity development priority. The determination of the input-based industry for plantation commodity in Jambi is shown in table 4.

Table 4.
Potential Classification of Plantation Commodity Industry

Plantation Sector	Commodity Relative Position	Excellence Competitive	Excellence Comparative	Specialization Level	Trend of Development	Classification Industry Potential
	Rapid Growth	Competitive	Comparative	Specialties,	Dominant	Main / Priorits Indispensable Industry
	Tend to Potential	Competitive	Comparative	No Specialization,	Potential	Second Industry Required
	Developing	Competitive	Comparative	Not a specialty	Saturated	Third Industry Not Required
	Backward	Competitive	Not Comparative	Not a specialty	Marginal	Fourth Still No Industry Required

Source. Combined analysis results from table 1 to table 3.

4.2.5. Determining the Cluster Development of Plantation Commodity Based Industrial Areas in Jambi

Determination of Industrial Claster Development Areas based on raw material input for plantation commodities, using analysis techniques Quartiles and Hierarchical Cluster. In particular, the purpose of cluster analysis is to classify data into small groups of data based on similarity of entities. Indicators of cluster formation for industrial development areas include: 1. Proximity of raw material sources 2. Availability of labor 3. Ease of Market Access

The cluster formation stage for industrial development based on raw materials oriented to raw materials is carried out using Quartil analysis techniques. The area grouping is based on the output value of LQ and DS in the results of the previous analysis and the value of the contribution of commodity production. So that a regional cluster will be formed which is a group of areas that have LQ> 1, DS≥0, and high production contribution values.

IV. RESEARCH RESULTS AND DISCUSSION
5.1. General Form of Jambi Province Regency

The position of Jambi Province is quite strategic because it is directly adjacent to and facing the IMS-GT area (Indonesia, Malaysia, Singapore Growth Triangle). The total area of the Province is 53,435.72 km2 with a land area of 50,160.05 km2 and an area of 3,274.95 km2 of water consisting of: Kerinci Regency 3,355.27 Km2 (6.67%), Bungo Regency 4,659 Km2 (9.25%) , Merangin Regency 7,679 Km2 (15.25%), Sarolangun Regency 6,184 Km2 (12.28%), Batanghari Regency 5,804 Km2 (11.53%), Muaro Jambi Regency 5,326 Km2 (10.58%), West Tanjab Regency 4,649 , 85 Km2 (9.24%), East Tanjab Regency 5.445 Km2 (10.82%), Tebo Regency 6,641 Km2 (13.19%), Jambi City 205.43 Km2 (0.41%) and Sungai Penuh City 391 , 5 Km2 (0.78%)

Administratively, the number of sub-districts and villages / wards in Jambi Province in 2010 was 131 Districts and 1,372 Villages / Kelurahan, with the highest number of Districts and Villages / Kelurahan in Merangin Regency, namely 24 Districts and 212 Villages / Kelurahan. Topographically, Jambi Province consists of 3 (three) groups of altitude variations (Bappeda, 2010): Lowland areas 0-100 m (69.1%), located in the eastern to central region. This lowland area is located in Jambi City, West Tanjung Jabung Regency, East Tanjung Jabung Regency, parts of Batanghari Regency, Bungo Regency, Tebo Regency, Sarolangun Regency and Merangin Regency, Plains areas with a moderate height of 100-500 m (16.4%) , in the middle region. This area of moderate altitude is located in Bungo Regency, Tebo Regency, Sarolangun and Merangin Regencies as well as parts of Batanghari Regency; and upland areas> 500 m (14.5%), in the western region. This mountainous area is located in Kerinci Regency, Sungai Penuh City and parts of Bungo Regency, Tebo Regency, Sarolangun Regency and Merangin Regency.

5.2. Analysis Results

5.2.1. Determining the Relative Position and Competitive Advantages of Plantation Commodities
a. Position of Plantation Commodities

The results of the analysis of shift-share Differential Shift (DS) and Proportional Shift (PS) are as shown in Table 5 below

Table. 5.
Results of Differential Shift (DS) and Proportional Shift (PS)

Plantation Commodities	Kerinci	Merangin	Sorulangun	B. Day	M. Jambi	West Tanjab	East Tanjab	Tebo	Bunggo
Rubber	CB	CB	CB	CB	CB	CB	CB	CB	CB
Palm oil	CB	CB	CB	CB	CB	CB	CB	CB	CB
Inner Coconut	TB	TB	TB	TB	B	CB	CB	TB	CB
Cinnamon Bark	CB	CB	TB	CB	TB	TB	TB	TB	CB
Coffee	CB	TB	TB	TB	TB	CB	TB	TB	CB
Pepper	TB	B	TB	CB	TB	CB	TB	TB	TB
Clove	TB	B	TB	CB	TB	TB	TB	TB	TB
Chocolate	CB	PP	TB	TB	TB	TB	TB	TB	TB
betel nut	TB	CB	TB	TB	CB	TB	CB	CB	CB
Candlenut	TB	CB	TB	TB	CB	TB	TB	TB	TB
Kapok	TB	TB	CB	CB	TB	TB	TB	TB	TB
Aren	TB	TB	TB	TB	B	TB	TB	TB	TB
Vanilla	TB	B	TB	TB	TB	TB	TB	TB	TB
Tea	TB	B	TB	CB	TB	TB	TB	TB	TB
Cane	B	B	TB	TB	TB	TB	TB	TB	TB
Tobacco	B	TB	TB	TB	TB	TB	TB	TB	TB
Patchouli	PP	TB	TB	TB	TB	TB	TB	TB	TB

Source: From the Results Processed Differential Shift (DS) and Proportional Shift (PS) Tables 3.1 to 3.10 in the appendix.
Shell: CB = Potential Tendent; PS = Rapid Growth; TB = Underdeveloped B = Developing

From the results of the analysis table 5 above. a)Rubber and oil palm are commodities with a potential position in all districts in Jambi province; b) The coconut commodity tends to have the potential in Tanjung Jabung Barat and Tanjung Jabung Timur Districts; c) The coffee commodity tends to have the potential in Kerinci, Merangin and Bungo Districts; d) Cocoa commodity tends to have the potential in Kerinci, Merangin and Tanjung Jabung Barat Districts; e) The Pinang commodity tends to have potential in Merangin, Bantang Hari, Muaro Jambi, Tanjung Jabung Timur and Bungo Districts; f) Patchouli commodity with rapid growth in Kerinci and Sarolangun Regencies; Other plantation commodities did not develop.

b.Competitive Advantage and Specialization Level of Jambi Plantation Commodities
Analysis Results modification *Shift-Share* in deciding competitive advantage and level of specialization of plantation commodities as shown in Table 6 below

Table. 6.
Competitive Advantage and Specialization Level of Jambi Plantation Commodities

Commodity	Kerinci		Merangin		Sorulangun		B. Day		M. Jambi		West Tanjab		East Tanjab		Tebo		Bunggo	
	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y	R	Y
Rubber	0.06	54.01	0.05	15.29	0.08	11.34	0.002	32.01	0.31	32.43	0.18	74.03	0.707	63.21	0.12	52.04	0.13	46.97
Palm oil	0.15	59.86	0.002	25.67	0.07	16.32	0.01	40.34	0.29	14.55	0.16	34.13	1.82	29.01	0.06	23.91	0.24	21.68
Coconut	-0.27	64.22	0.04	17.46	0.02	12.99	-0.31	-15.16	-0.22	-13.19	0.02	28.56	0.06	24.61	-0.01	-20.22	0.03	18.09
K. Sweet	0.004	67.62	-0.08	018	0.009	13.55	0.01	-79.21	-0.19	-66.93	0.01	-13.4	0.01	-11.7	0.01	-96.15	0.01	-84.5
Coffee	0.06	70.35	0.09	18.76	-0.68	13.99	-0.50	-17.16	-0.43	-14.82	0.03	-12.6	-0.41	-14.4	-0.25	-11.26	-0.02	-74.1
Pepper	-0.31	71.12	2.19	0.92	-1.11	0.11	0.06	30.45	-1.61	-38.42	0.19	21.81	0.92	14.85	-0.60	12.85	-0.60	14.48
Clove	-0.03	71.11	0.35	2.92	0.35	4.21	0.35	-5.38	0.15	-45.44	0.35	21.79	0.35	14.83	0.35	12.83	0.35	14.47
Chocolate	0.66	71.09	0.25	5.91	-0.34	14.10	-0.64	-3.52	-0.22	-56.59	3.71	20.51	-0.20	13.74	-0.58	11.94	-0.34	13.65
betel nut	-0.59	70.14	0.007	6.71	-0.23	13.95	0.57	-21.90	7.08	-18.63	-0.04	-21.5	0.08	-21.9	-0.23	-17.5	0.01	-13.1
Candlenut	-0.08	2.12	0.20	0..92	-0.35	1.31	-0.31	-23.06	1.15	-25.26	0.05	21.31	0.05	14.42	0.05	12.49	0.05	14.16
Kapok	0.31	1.12	-0.20	18.92	0.31	0.11	0.59	8.09	-0.69	-61.6.90	0.31	21.75	0.31	14.79	0.31	12.80	0.31	14.44
Aren	-0.52	71.11	0.023	8.03	0.08	4.11	-0.61	17.89	-0.68	-92.9.1	-0.52	21.67	-0.52	14.73	-0.52	12.75	-0.52	14.39
Vanilla	0	71.12	-6.8	18.92	0.35	3.11	-6.8	-0.14	-7.00	-11.65	-6.80	21.89	-6.80	14.92	-6.8	12.91	-6.80	14.53
Tea	0	70.75	0.46	6.84	0.47	0.06	0.46	-81.69	0.27	-69.03	0.47	58.22	0.46	12.76	0.46	16.61	0.46	43.23
Cane	-0.01	70.97	-2.35	2.89	-2.35	14.09	-2.35	-33.98	-2..55	-28.72	-2.36	15.21	-2.35	92.44	-2.35	82.29	-2.35	10.28
Tebkau	-0.7	71.12	-35.1	1.92	-5.08	14.11	-35.1	-6.61	-3.27	-55.92	-4.08	21.77	-35.07	14.81	-35.1	12.82	-2.07	14.45
Patchouli	37.43	71.11	-2.32	18.92	1.39	14.11	-2.80	-14.20	-3.21	-12.01	-1.01	21.62	-3.01	14.68	-2.00	12.71	-4.00	14.36

Source: Analysis Results
Information: R = rij-rin and Y = Yij– Y* ij

From the results of the analysis in Table 6 above: a) Rubber and Oil Palm are specialty commodities and have competitive advantages in all districts in Jambi Province; b) Coconut is a specialty commodity and has competitive advantages in Merangin, Sarolangun, Tanjung Jabung Barat, Tanjung Jabung Timur and Bungo Regencies, but in Kerinci Regency, Coconut commodity is only a specialization commodity and has no competitive advantage; c) Coffee is a specialty commodity and has competitive advantages in Kerinci and Merangin Regencies but in Kerinci

Regency, coffee commodity is only a specialty commodity and has no competitive advantage; d) Chocolate is a specialty commodity and has a competitive advantage in Kerinci Regency, Merangin and Tanjung Jabung Barat but in the districts of Tanjung Jabung Timur and Bungo the cocoa commodity is only a specialty commodity and does not have any competitive advantage; e) Pinang is a specialty commodity and has a competitive advantage in Merangin Regency, but in Batang Hari District, Muaro Jambi and Bungo the Pinang commodity has competitive advantages; f) Patchouli has a competitive advantage and specialization commodities in Kerinci and Sarolangun Regencies and in Merangin, West Tanjung Jabung, East Tanjung Jabung and Bungo Regencies, patchouli is a specialty commodity. but in Batang Hari District, Muaro Jambi and Bungo, the pinang community has a competitive advantage; f) Patchouli has a competitive advantage and specialization commodities in Kerinci and Sarolangun Regencies and in Merangin, West Tanjung Jabung, East Tanjung Jabung and Bungo Districts, patchouli is a specialty commodity. but in Batang Hari District, Muaro Jambi and Bungo, the pinang community has a competitive advantage; f) Patchouli has a competitive advantage and specialization commodities in Kerinci and Sarolangun Regencies and in Merangin, West Tanjung Jabung, East Tanjung Jabung and Bungo Regencies, patchouli is a specialty commodity.

5.2.3.Determining the Base Sector and the Comparative Advantages of Jambi Plantation Commodities.
The results of the Location Quotient (LQ) analysis are as shown in Table 7 below:

Table 7
Average Location Quotient (LQ) Jambi Province Plantation Commodities. 2010-2019

Commodity	Jambi Province Regency								
	Kerinci	Merangin	Sorulangun	B. Day	M. Jambi	West Tanjab	East Tanjab	Tebo	Bunggo
Rubber	1.53	1.48	1.85	1.61	1.81	1.14	1.01	1.81	2.94
Palm oil	2.58	2.76	1.75	1.81	1.04	1.02	1.06	1.74	2.55
Coconut	1.52	0.07	0.03	0.03	0.05	3.23	3.73	0.06	1.67
Sweet Skin	1.07	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.02
Coffee	2.95	3.89	0.01	0.02	0.03	0.73	0.99	0.20	0.06
Pepper	0.74	0.55	0.40	0.77	0.02	0.61	0.07	0.00	0.00
Clove	1.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chocolate	1.67	0.55	0.00	0.71	2.52	1.40	2.57	0.27	1.21
betel nut	0.52	0.11	0.07	0.01	0.02	2.38	2.24	0.04	1.51
Candlenut	0.67	0.71	0.03	0.25	0.60	0.04	0.05	0.00	0.00
Kapok	0.93	0.65	0.00	0.74	0.08	0.00	0.00	0.00	0.00
Aren	0.51	0.24	0.34	0.67	0.87	0.00	0.00	0.00	0.00
Vanilla	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tea	0.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cane	0.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tobacco	0.19	0.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Patchouli	1.13	1.56	1.04	0.00	0.00	0.00	0.00	0.00	0.00

Source: Analysis Results

From the results of the Location Quotient (LQ) analysis table 7 above:

a) Rubber and Palm Oil sector base and is a commodity of comparative advantage in all

Districts in Jambi Province; b) Coconut is the base sector and is a commodity of comparative advantage in the districts of Kerinci, Tanjung Jabung Barat, Tanjung Jabung Timur and Bungo; c) Basic sector coffee and is a commodity of comparative advantage in Kerinci and Merangin Districts d) Cocoa is the base sector and is a commodity of comparative advantage in the districts of Kerinci, Muaro Jambi, Tanjung Jabung Barat, Tanjung Tajung Timur and Muaro Bungo e) Pinang is the base sector and is a commodity a comparative advantage in the districts of West Tanjung Jabung, Tanjung Tajung Timur and Muaro Bungo f) Patchouli is the base sector and is a commodity of comparative advantage in the districts of Kerinci, Merangin and Sarolangun. . Rubber, Palm Oil, Coconut,

5.2.4. Result Determination of priority for the development of plantation commodities for each district in Jambi

The results of the overlay identification analysis in identifying the Dominant, Potential, Saturated, and Marginal sectors of the plantation commodities of each Regency in Jambi Province are as follows:

Rubber and oil palm commodities are the dominant commodities in all districts in Jambi Province and coffee commodities are the dominant commodities in the Kerinci and Merangin districts, because these commodities are superior commodities and have high growth in the study district and have strong growth. high also in the reference area of Jambi Province.

Coconut commodity is a potential commodity in the districts of Kerinci, Tanjung Jabung Barat, Tanjung Jabung Timur and Bungo; Pinang commodity is a potential commodity in West Tanjung Jabung Regency, because it is a superior commodity and has high sectoral growth in the study area of the Regency and does not have low commodity growth in the reference area of Jambi Province.

The cocoa commodity is a saturated commodity in the districts of Kerinci, Muaro Jambi, Tanjung Jabung Barat, Tanjung Jabung Timur and Bungo; Patchouli commodity is a saturated commodity in Kerinci, Merangin and Sarolangun Regencies. Other commodities are marginal in Jambi province. (See the results of the analysis table 8

Table 8.
Trend and Growth of Plantation Commodities in Jambi Province

Score	Kerinci Regency						
	Rubber	Palm oil	Coconut	Coffee	Chocolate	betel nut	Patchouli
Average LQ	1.53	2.58	1.52	2.95	1.67	1.52	1.13
RPs	6.21	8.19	1.27	4.55	0.01	0.17	0.39
RPr	1.05	2.03	0.9	1.24	1.76	0.92	2.03
Overlay	+++	+++	++ -	+++	+ - +	+ - -	+ - +
Classification	Dominant	Dominant	Potential	Dominant	Marginal	Marginal	Saturated
	Merangin Regency						
Average LQ	1.48	2.76	0.07	3.89	0.55	0.11	1.56
RPs	1.12	3.60	3.11	1.85	0.02	6.15	0.05
RPr	1.05	2.03	0.9	1.24	1.76	0.92	2.03
Overlay	+++	+++	- + -	+++	- - +	- + -	+ - +
Classification	Dominant	Dominant	Marginal	Dominant	Marginal	Marginal	Marginal
	Sarolangun Regency						
Average LQ	1.85	1.75	0.03	0.01	0.00	0.07	1.04
RPs	5.73	3.32	5.45	0.01	0.00	0.01	0.03
RPr	1.05	2.03	0.9	1.24	1.76	0.92	2.03
Overlay	+++	+++	- + -	- - +	- - +	- - -	+ - +
Classification	Dominant	Dominant	Marginal	Marginal	Marginal	Marginal	Saturated
	Batang Hari Regency						
Average LQ	1.61	1.81	0.03	0.02	0.71	0.01	0.00
RPs	7.77	3.59	7.97	0.01	0.00	5.37	0.00
RPr	1.05	2.03	0.9	1.24	1.76	0.92	2.03
Overlay	+++	+++	- ++	- - +	- - +	- + -	- - +
Classification	Dominant	Dominant	Potential	Marginal	Marginal	Marginal	Marginal
	Muaro Jambi Regency						
Average LQ	1.81	1.04	0.05	0.03	2.52	0.02	0.00
RPs	3.60	5.71	1.26	6.01	0.06	0.09	0.00
RPr	1.05	2.03	0.9	1.24	1.76	0.92	2.03
Overlay	+++	+++	- + -	- ++	+ - +	- - -	- - +
Classification	Dominant	Dominant	Saturated	Potential	Saturated	Marginal	Marginal
	West Tanjung Jabung Regency						
Average LQ	1.14	1.02	3.23	0.73	1.40	2.38	0.00
RPs	5.12	2.38	3.22	2.42	0.007	3.29	0.00
RPr	1.05	2.03	0.9	1.24	1.76	0.92	2.03
Overlay	+++	+++	++ -	- ++	+ - +	+ + -	- - +
Classification	Dominant	Dominant	Potential	Potential	Saturated	Potential	Marginal
	East Tanjung Jabung Regency						
Average LQ	1.01	1.06	3.73	0.99	2.57	2.24	0.00
RPs	6.24	5.40	1.01	0.01	0.16	0.00	0.00
RPr	1.05	2.03	0.9	1.24	1.76	0.92	2.03
Overlay	+++	+++	++ -	- - +	+ - +	+ - -	- - +
Classification	Dominant	Dominant	Potential	Marginal	Saturated	Marginal	Marginal
	Tebo Regency						
Average LQ	1.81	1.74	0.06	0.20	0.27	0.04	0.00
RPs	1.94	1.52	3.20	0.01	0.03	0.01	0.00
RPr	1.05	2.03	0.9	1.24	1.76	0.92	2.03

Overlay	+++	+++	- + -	- - +	- - +	- - -	- - +
Classification	Dominant	Dominant	Marginal	Marginal	Marginal	Marginal	Marginal
Bungo Regency							
Average LQ	2.94	2.55	1.67	0.06	1.21	1.51	0.00
RPs	3.79	1.51	3.47	0.00	0.00	0.00	0.00
RPr	1.05	2.03	0.9	1.24	1.76	0.92	2.03
Overlay	+++	+++	++ -	- - +	+ - +	+ - -	- - +
Classification	Dominant	Dominant	Potential	Marginal	Saturated	Marginal	Marginal

5.2.6. AnalysisDetermination of Industrial Development Zone ClustersPlantation Commodity

The cluster determination of the plantation commodity industrial development area in Jambi Province was carried out using Quartile and Hierarchical Cluster analysis techniques.

The cluster division of plantation-based industrial development areas is classified as follows:

1. Industrial development areas are oriented towards the proximity of raw material sources.

2. Industrial development areas are oriented towards easy market access.

3. Industrial development areas are oriented towards the availability of labor.

1) Quartile Analysis

The cluster formation stage for plantation-based industrial development areas oriented to raw materials for production is carried out using Quartil analysis techniques. The grouping of these regions is based on the output value of LQ and Differential Shift (DS) in the results of the previous analysis as well as the value of the contribution of commodity production, so that a regional cluster will be formed which is a group of regions with LQ> 1, DS≥0, and high production contribution values. Following are the results of the calculation of Quartil analysis using Excel.

Table 9
Quartile Analysis Output Description

district	Contribution Value (%)	
	Low	High
Rubber	≤ 2.43	2.44 - 3.15
Palm oil	≤ 2.75	2.74 - 3.16
Coconut	≤ 3.62	3.63 - 4.52
Coffee	≤ 3.75	3.76 - 4.69
Chocolate	≤ 2.51	2.52 - 3.14
betel nut	≤ 2.32	2.33 - 2.90
Patchouli	≤ 1.25	1.26 - 1.88

Based on the compilation of LQ> 1 values, DS values ≥ 0, and the production contribution value of each commodity, areas with high potential for raw materials and geographically adjacent to each other are classified as clusters of industrial development areas oriented towards raw material sources. The regional cluster consists of the districts of Kerinci, Merangin, Sorulangun, Batang Hari, Muaro Jambi, Tanjung Jabung Barat, Tanjung Jabung Timur, Tebo and Muaro Bungo.

2) Hierarchical Cluster

Cluster formation of industrial development areas that are oriented towards the proximity of raw materials, availability of labor sources and easy market access is carried out using Hierarchical Cluster analysis techniques. The results of the Hierarchical Cluster Technique for Leading Commodity Areas of Plantation, Development Area Cluster Classification as shown in the dendrogram below.

Dendrogram Using Averange Lingkage (Between Groups)
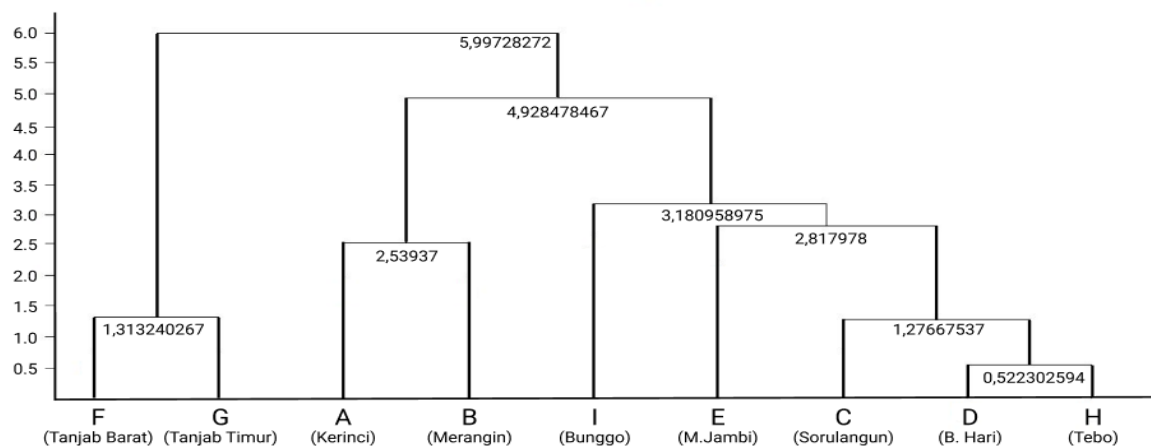
Rescoled Distance Cluster Combine

Figure 1. Dendogram. The results of the division of regional clusters based on the output of the Hierarchical Cluster analysis

From the dendrogram above, a cluster of areas for prime commodity plantations in Jambi Province can be created:

Table 10
Industrial Development Area Cluster

Development Area Cluster Classification	
Regional Characteristics	Cluster 1
The cluster of areas for the development of the leading plantation commodity industry oriented towards ease of market access	Bungo Regency
	M. Jambi Regency
	Sorulangun Regency
	District B. Day
	Tebo Regency
Regional Characteristics	Cluster 2
The cluster of areas for the development of the leading plantation commodity industry oriented towards proximity to raw materials	Kerinci Regency
	Merangin Regency
Regional Characteristics	Cluster 3
The cluster of areas for the development of the leading plantation commodity industry oriented to the availability of labor	West Tanjab Regency
	East Tanjab Regency

Source: Analysis Results, 2020

From the results of determining the industrial area based on the results of the analysis, the conclusions for each regency-city in the province of Jambi above will be clarified using a map of the area. The map of the area for the industry related to the plantation sub-sector is like the map of the area below:
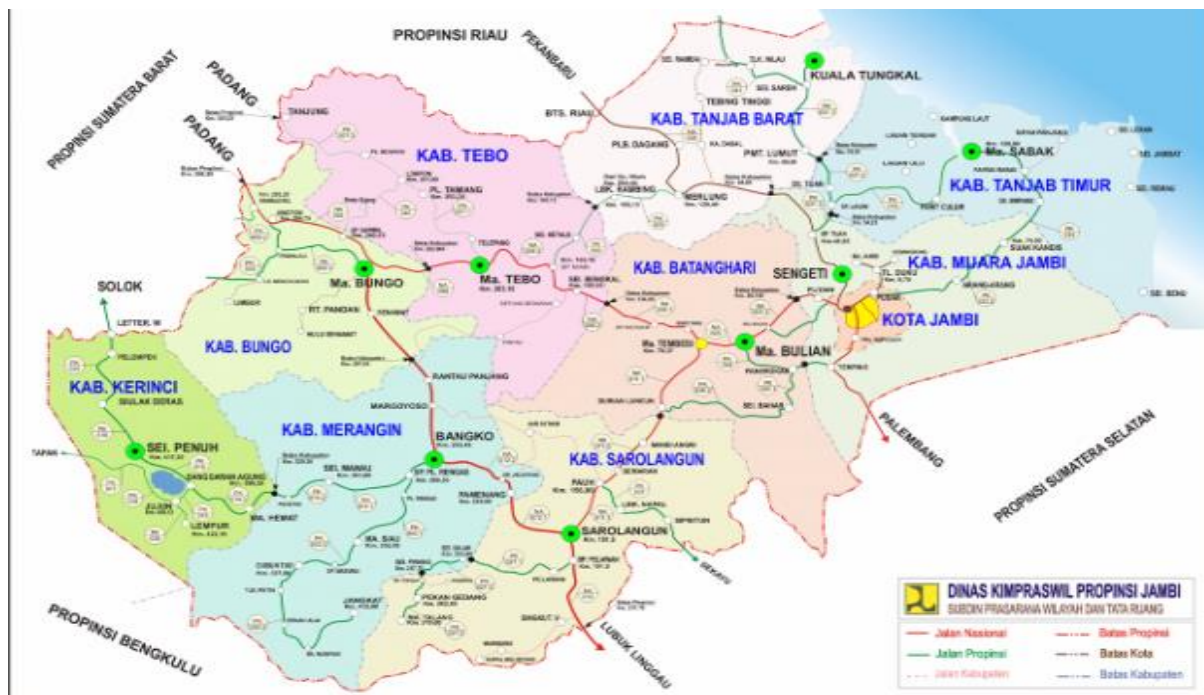
V. CONCLUSION

The results of the study can be concluded as follows:
1. The leading plantation commodities are further developed in support of industrial sector activities in Jambi is rubber, oil palm, coconut, coffee, chocolate, areca nut and patchouli
2. Three clusters of plantation-based industrial development areas were formed in regional development Jambi
3. Cluster formation supports the development of industrial sector development activities by adjusting potential territory owned

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