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By Pawana Nur Indah

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Competitiveness and Development Perspective of Processed Cocoa Industries in East Java

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Abstract. This research aimed to identify the potential development of East Java's cocoa beans and to analyze the competitiveness of East Java's processed cocoa industry development. Quantitative descriptive analysis was the method used in this research with location quotients (LQ) to answer the first goal. Trend analysis and the revealed comparative advantage (RCA) method were applied to answer the second goal. The LQ method showed the potential of East Java's cocoa kernels with rates (0.92-2.97) and average LQ (1.86) per year indicating that East Java's cocoa beans have potential for the development of processed cocoa industry. The competitiveness resulted in the RCA calculation, for processed cocoa commodity it rated < 1. This means that East Java's processed cocoa products have no competitiveness yet in the national market. Several efforts for increasing the competitiveness of processed cocoa industry are as follows: to increase export volume, to maintain export price, to expand the processed cocoa industry clusters, to facilitate financing access, to deregulate policy and to develop infrastructure.

Keywords: Cocoa beans, industry, national market

INTRODUCTION

Cocoa has the highest allocation advantages for increasing farm production. Indonesia has a comparative advantage in producing cocoa beans over other countries.¹ Cocoa is also a commodity that has a competitive advantage and excellence allocation with the highest positive value.² The industrial sector is one of the economic sectors that has a strategic role in improving the economic competitiveness, because the industry sector is directly related to creating employment, reducing poverty and increasing the income of the community. This has a major impact on the economy of a country. Cocoa agroindustry development is hampered, as evidenced by the declining number of processed cocoa industries, as well as reduced installed capacity due to cocoa producers preferring to market cocoa beans abroad with no tariffs compared to the domestic ones affected by tariffs.³ Furthermore, it takes large capital for an entrepreneur to invest in this business. However, investment opportunities are still required as the world cocoa consumption is still increasing.⁴

The quality of cocoa beans exported by Indonesia is known to be very low (in grade 3 and 4). This is due to the traditional management of cocoa products (85% of national production beans are not fermented). Such low quality results in the discounted price of Indonesian cocoa beans and products in the international market as much as USD200/ ton or 10-15% of market price. Moreover, the export tax of processed cocoa (30%) is relatively higher than the import tax burden of cocoa products (5%); consequently, the number of Indonesian cocoa processing factory continues to decline.⁵ Cocoa production in East Java has increased annually, but the lack of cocoa processing

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factories has required farmers to distribute their crops outside East Java or even to export them. Cocoa seed production in 2011 was only 24,788 tons, but then rose to 27,391 tons in 2012. With a processing rate index of 71-75%, most of the exported cocoa has not yet undergone a further processing stage. The figure shows that only 25-29% of cocoa is exported in a processed form. Such conditions may reduce the added value obtained from the export of processed ones, so that further processing is the demand for the development of processed cocoa industry in East Java.

Accordingly, there are some obstacles hampering the development of processed cocoa industry in East Java, so that the existing cocoa processing industry is not well developed, whereas this province has a lot of potential to develop a processed cocoa industry. Therefore, a study on the analysis of the competitiveness of the processed cocoa in East Java is important in order to improve the performance of the processed cocoa industry and generate products that are competitive at the national level.

MATERIALS AND METHODS

This study was conducted to determine the research area of processed cocoa conducted in East Java, considering that it is one of the cocoa producing areas in Indonesia with the hope to provide information for the learning process. One goal is in relationship to competitiveness in the perspective of the development of the processed cocoa industry in East Java as the basis for this research. The data were obtained from related parties, previous research results, relevant evidence and related institutions used to complete the writing of this manuscript. Collecting the secondary data applied the documentation method by gathering articles from years 2006-2015 in terms of the competitiveness data in the perspective of the development of the processed cocoa industry in East Java. The analytical method used to identifying the potential of East Java's cocoa beans was analyses of location quotients (LQ) and to determine competitiveness for the East Java processed cocoa was analysed by revealed comparative advantage (RCA).^{6,7}

RESULTS AND DISCUSSION

Identifying the Potential of East Java's Cocoa Beans

The area analysis (LQ) was employed to determine the commodity base, the distribution characteristics and its contribution as producer of processed cocoa in supporting the economic characteristics of its deployment as well as the contribution of processed cocoa producers to support the regional economy in the research area.⁸ The existence of areas where cocoa is the central commodity does not necessarily indicate that the region is the base area of the commodity. Cocoa commodity centers of East Java as the base sector can be seen in Table 1 using the LQ approach.

TABLE 1 The GDP Growth In The Processed The Regional and National Production Value of Cocoa Beans

Year	V_1 Production Value Cocoa in East Java (000, IDR)	V_i GDP Growth Plantation Production in East Java (000, IDR)	V_1 National Production Value Cocoa (000, USD)	V_i GDP (National Plantation Production) (000,USD)	LQ
2006	13,319,000	6,620,000.33	779,386	41,318.0	0.92
2007	16,489,000	6,821,162.74	780,005	43,199.2	1.23
2008	17,553,000	6,860,314.18	803,593	44,785.5	1.21
2009	22,677,000	7,171,086.42	800,496	45,558.4	1.57
2010	23,192,000	7,237,133.25	797,918	47,150.6	1.37
2011	23,663,000	7,456,131.01	762,231	49,260.4	2.14
2012	25,306,000	6,821,162.74	736,266	43,199.2	2.01
2013	26,299,000	7,728,647.13	720,862	51,763.3	2.62
2014	24,871,000	7,274,904.93	728,414	54,629.3	2.56
2015	23,979,000	7,501,776.03	699,243	57,245.7	2.97

In Table 1, LQ can be calculated from production of East Java cocoa beans and GDP of the processing industry. Similarly, the national cocoa production and the national GDP of the industry had LQ figures or values between 0.92-2.97 with the average 1.86 indicating that the cocoa production from 2006 to 2015 still had potential for the

1 development of the processed cocoa industry in East Java. Of the national total production of cocoa beans, 20 percent is contributed by East Java and the remaining 80 percent is of the central areas of Sulawesi, Sumatra, Aceh and Lampung.

1 Analyzing the Processed Cocoa Competitiveness in East Java

1 Identifying the Development of the Processed Cocoa Competitiveness Factors of East Java

Before analyzing the competitiveness of East Java's processed cocoa, initially it is necessary to identify the development of cocoa commodities including the export value, volume, price, large areas of land and plantation production from 2006 to 2015. The details are described as follows:

1. Development of Processed Cocoa's Export Value in East Java and Indonesia

In this study, the development of cocoa export commodities covered the export values during 2006-2015 periods as shown by Table 2.

TABLE 2. The Development of the Export Values of Processed Cocoa in East Java

Year	The Development of the Export Values of Processed Cocoa in East Java (000, IDR)
2006	5.425.000
2007	7.748.548
2008	8.915.902
2009	9.684.711
2010	11.598.120
2011	13.794.055
2012	12.019.805
2013	13.998.420
2014	18.017.992
2015	22.047.503
Total	123.250.056

Table 2 shows the decreasing export values in 2012 by 12.019.805 (000, IDR). In 2013, the increase was 13.998.420 (000, IDR). The data were analyzed using trend analysis from the 2006-2015. Here are the results of the analysis.

TABLE 3. The Analysis of the Trend in the Processed Cocoa Export in East Java

Model	Coefficient of Determination	R Square	Equation
Linear	0.925	0.856	$y = 12.225.006 + 1.311.854x$
Quadratic	0.940	0.884	$y = 11.213.745 + 1.311.854x + 91.933x^2$

Table 3 formulates a trend line, $y = 11.213.745 + 1.311.854x + 91.933x^2$, meaning that every increase of export value of East Java processed cocoa is increased by 1.311.854 USD per year, with the average of 11.213.745 USD, and each year it tends to increase by 91.933 USD. The export value has an R-squared quadratic amounting to 0.884 USD per year, with adjusted R-squared of 0.851 USD per year from 2006 to 2015. The trend line below clarifies the increase in the export value of East Java's processed cocoa as follows.

2. The Development of the Export Value of East Java's Processed Cocoa

Statistically, as can be seen in Fig. 1, the trend line of export value of East Java's processed cocoa with R-squared quadratic of 0.884 USD per year, with adjusted R-squared of 0.851 USD per year and with equation of $y = 11.213.745 + 1.311.854x + 91.933x^2$. This indicates that the increase in the export value amounts to 1.311.854 USD per year.

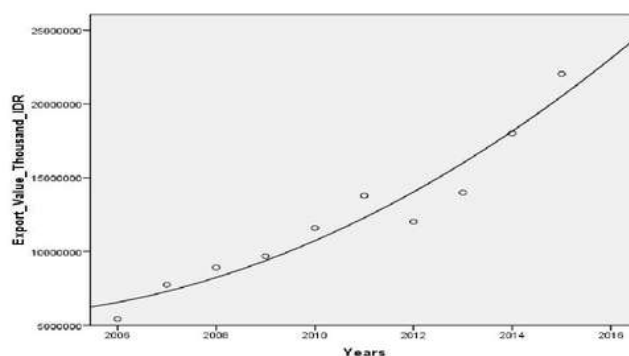


FIGURE 1. The Chart of Export Value of East Java's Processed Cocoa.

3. The Development of the Indonesian Export Value of Processed Cocoa

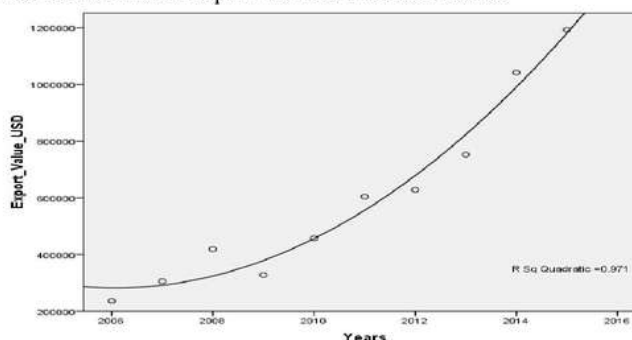


FIGURE 2. The Chart of the Indonesian Export Values of Processed Cocoa.

Statistically, as seen in Figure 2, the trend line value of Indonesian processed cocoa exports formulate the equation $y = 492.449.682 + 86.137.445x + 9.470.965x^2$. This means that the increase in the export value amounts to 86.137.445 USD per year.

4. The Development of Large Areas of Land in East Java Cocoa Plantation
The development of the area with R-squared quadratic equals to 0.885 ha/year with adjusted R-square of 0.853 ha per year. It formulates the equation of $y = 60.210 + 2.796x - 0.351x^2$. This indicates that there was an increase in these areas from 2006-2015.
5. The Development of Cocoa Plantation Areas in Indonesian
The development of Indonesian cocoa plantation areas since 2006-2015 generated the equation $y = 1.686.871 + 44.548.655x - 7.144.549x^2$. This trend line shows an increase in cocoa plantation areas of Indonesia of 44.548.655 ha/year.
6. The Development of East Java Cocoa Production
The development of East Java cocoa production from 2007-2012 generated the trend line $y = 24,132.266 + 1.080.136x - 218.039x^2$. This trend line shows an increase in the East Java cocoa production of 1.080.136 tons per year. However, in 2014 and 2015 there was a drastic reduction of cocoa production of 24.871 and 23.979 tons. This decrease is due to the high rainfall intensity and cocoa land conversion.
7. The Development of Indonesian Cocoa Production
Here are the results of calculating the development of Indonesian cocoa production by using SPSS 23. This produced the trend line $y = 77.791.297 - 9.267.445x - 1.557.263x^2$. This trend line shows the decline of

Indonesian cocoa production by 9.267.445 tons per year. In 2015, Indonesia's cocoa production dropped drastically by 699.243 tons. It is estimated that this decrease was due to the high intensity of rain, the conversion of cocoa land and the attack of a plant pest organism (PPO), namely the cocoa stem borer, based on the 2016 plantation statistics.⁹

8. The Development of the Export Value in East Java Agricultural Sector
The development of export value of the agriculture sector in East Java decreased during 2005-2015. This is due to the fact that Indonesia, especially East Java, experienced pressure from the decline in global market demand as a result of the economic crisis in several European countries. Seen in the picture, the descending trend line is $y = 213.012.239 - 106.201.391x - 13.549.255x^2$, indicating a decline in East Java agricultural export value of 106.201.391 USD per year.
9. The Development of the Export Value of Indonesian Agricultural Sector
An increase in the export value of the Indonesian agricultural sector resulted in the trend line equation $y = 5.170.793 + 211.679x - 32.838x^2$. This trend line shows an increase in the export value of the Indonesian agricultural sector, which equals 211.679 USD per year.
10. The Development of the Exported Cocoa in East Java
Economic export volume of processed Indonesia cocoa from East Java decreased during 2006-2015. This is due to the application of VAT to 10% cocoa, including cocoa purchased by domestic factories. Seen in the picture is the trend's descending line, $y = 3.483.648.935 - 346.484x + 113.687x^2$ from 2006 to 2015, decreasing by 346.484 USD per year.
11. The Development of the Export Price of Processed Cocoa in East Java
The development of the export price of processed cocoa in the area of East Java increased during 2006-2015. This is reflected in the decreasing trend line equation of $y = 3.494 + 0.137x - 0.004x^2$. Such a trending line shows an increase in export prices of 0.140 USD per year.

The Competitiveness of the East Java Processed Cocoa (RCA Method)

Revealed comparative advantage (RCA) can measure changes in comparative advantage. In theory, it provides an index measure of changes in comparative advantage. The RCA index compares the export of a given sector in a country with the export share of that sector in the world market. Competitiveness measured by RCA will denote as one or greater "underlying competitiveness", as measured by comparative advantage. Consequently, if a product is described as competitive, it means that it has a revealed comparative advantage (Muhammad and Yaacob, 2008). Table 4 shows the competitiveness for the East Java processed cocoa in years 2006-2015.

Information:

- a. RCA is the level of the competitiveness of processed cocoa of East Java year t
- b. RCA index is the export competitiveness of East Java's processed cocoa in year t-1

TABLE 4. The Competitiveness for the East Java Processed Cocoa Year 2006 – 2015

Year	Total Export of East Java Agriculture (FOB USD)	Export of Processed Cocoa East Java (FOB USD)	Indonesia Processed Cocoa Exports (FOB USD)	Total Agriculture Exports of Indonesia (FOB USD)	RCA	Index
2006	5.425.000	946.345.487	236.030	3.364.900	0.081	0.13
2007	7.748.548	865.568.460	305.999	3.657.789	0.010	0.13
2008	8.915.902	927.125.514	418.913	4.484.600	0.010	0.97
2009	9.684.711	501.916.739	328.177	4.352.799	0.025	2.42
2010	11.598.120	210.328.870	457.267	5.001.898	0.060	2.40
2011	13.794.055	42.820.110	604.425	5.165.700	0.027	0.45
2012	12.019.805	21.929.679	628.392	5.569.299	0.048	1.78
2013	13.998.420	32.174.894	752.476	5.613.001	0.324	0.67
2014	18.017.992	37.497.502	1.042.132	5.670.600	0.261	0.80
2015	22.247.503	34.836.198	1.192.492	5.215.299	0.276	1.05

As shown in Table 4, the results of RCA calculations for the processed cocoa commodities were < 1 , meaning that the competitiveness is low. The development of processed cocoa in East Java in 2009 was greatly increased from the previous years indicated by the very high total exports of agriculture in 2008 of 1,027,125,514 USD, which then dropped dramatically in 2009 to the amount of 101,916,739 USD. Since there is no power in the free trade, the value of processed cocoa commodities needs to be noticed to import from abroad. The development of agricultural competitiveness with processed cocoa commodities depends on the export value of the commodity, compared to the minimum of that of the export value. This is closely related to the production and quality of processed cocoa commodities, both in East Java and Indonesia.

Based on Table 4, it can be seen that the export performance of processed cocoa in East Java showed an increasing trend from 2006 to 2008. This is because of the increased demand for processed cocoa each year. In 2009, however, the performance of processed cocoa exports declined, but then increased once more in 2010 until 2015. The increase, and also the decrease, in export performance amounted to as much as 18,017,992 USD. The underlying reason is the competition in the national market causing the export value of processed cocoa in East Java to decrease in that year. The imposition of an export tax on Indonesian cocoa beans significantly affects the ability to increase export volume of Indonesian processed cocoa in the long-term.¹¹

SUMMARY

East Java cocoa bean production increases every year. Of the total national production, 20 percent is East Java's contribution, while the remaining 80 percent is cocoa from the central areas of Sulawesi, Sumatera, Aceh and Lampung. The potential analysis of East Java cocoa beans generates LQ values of 0.92-2.97 and the average LQ is 1.86 per year, indicating that East Java cocoa beans have high potential for the development of a cocoa processing industry. Processed cocoa products in East Java are not competitive in the national market. This is because of the low technology in cocoa processing. Furthermore, currently many processed cocoa companies in the area are incapable of producing due to the difficult supply of raw materials.

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