

Increasing Pepper Exports, Strategies Based on Product Competitiveness and Geographic Segmentation

Eka Miftakhul Jannah¹, Aditya Arief Rachmadhan²

¹Balai Pengkajian Teknologi Pertanian Lampung, ²Program Studi Agribisnis, Sekolah Pascasarjana Institut Pertanian Bogor

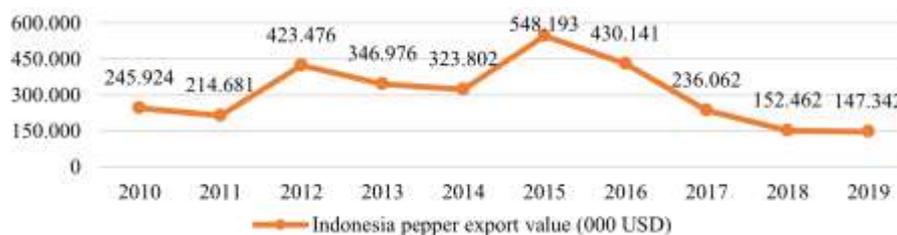
Email : eka_eg@yahoo.com

Abstract. Indonesia is the second-largest pepper exporter in the world. Indonesian pepper products are differentiated from black pepper and white pepper products; both as peppercorn and ground pepper. However, the pepper export value declined over the past five years. The decline of pepper export value is the major issue. In simple terms, Indonesia's pepper trade strategy is to determine what commodities and which export markets should be focused on increasing pepper export. This study used ISP and RCA methods to determine potential pepper products to be developed. Determining potential markets with two steps; first, analyzing the market position and market evaluation with the DRCA method; then, analyzing geographic segmentation based on market structure with market share analysis, MES, and CR4. The results showed that black pepper, neither crushed nor ground (HS 0904112000) is the most potential product to be developed; with France as the most potential export market for the product.

1. Introduction

Indonesia is the second-largest producer of pepper in the world, contributes 14.85 percent of world pepper production. Indonesia is also the second-largest exporter of pepper in the world, with 13.19 percent market share of the world market. The export value of Indonesian pepper is fluctuated but seems to decline over the past five years.

The decline of pepper export value is the major issue of the Indonesian pepper trade. Recorded during the last five years, the export value of pepper has decreased to 54.50 percent. It is due to the decrease in the export volume and price of pepper in the world market during the last five years [1,2,3]



Notes : Export value based on HS 090411 and 090411
Source : ITC [2]

Figure 1 Indonesia pepper export value in 2010 – 2019

An analysis to develop Indonesian pepper exports in international markets is a necessity and became the background of this research. Higher pepper export, a greater positive impact on the national economy. Pepper is still a potential export product to be developed [4,5]. Indonesian pepper export development is not limited to several countries as a major export destination. There are other potential countries to develop the Indonesian pepper market. In its development, Indonesian pepper products are also differentiated from black pepper and white pepper products; both as peppercorn and ground pepper [1,2,3].

The strategy of the Indonesian pepper trade should formulate questions about what commodities and which export destination markets should be focused on. Simply, the urgency and purpose of this research are to find potential pepper products and destination markets to develop. The novelty of this research lies in: (1) product differentiation based on Indonesian pepper products; (2) selected potential export markets based on export dynamics and market share in the export destination country, so that it does not depend on the major export destination country; (3) using the latest data (2010-2019).

2. Method

The first stage of this research is to find a potential product to be developed. A potential product is a product that has grown and competitive [6]. To analyzes the growth stages of Indonesian pepper products using the Trade Specialization Index (ISP) method, and to analyzes the competitiveness of Indonesian pepper using the Revealed Comparative Advantage (RCA) method against four Indonesian pepper products with the largest export value, there are (1) white pepper, neither crushed nor ground (HS 0904111000), (2) black pepper, neither crushed nor ground (HS 0904112000), (3) other pepper, neither crushed nor ground (HS 0904119000), and (4) white pepper, crushed or ground (HS 0904121000). This research used annual time series data for 2010 to 2019 period. Product with the highest ISP and RCA score are the most potential product to be developed.

ISP is the method used to identify the growth of the product in the international trade scope. ISP is a comparison between the net trade value and the total trade value of a country. The ISP index identifies the growth rate of a commodity in trade, which is divided into five stages (classified based on the criteria in Table 1). Mathematically, the ISP of Indonesian pepper products can be formulated as follows [7,8]:

$$ISP = \frac{(X_{ip} - M_{ip})}{(X_{ip} + M_{ip})} \dots\dots\dots (1)$$

Table 1 Product growth classification based on ISP

ISP	Product growth classification
-1,00 to -0,50	Introduction stage
-0,51 to 0,00	Import substitution stage
0,01 to 0,80	Growth stage
0,81 to 1,00	Matured stage (highest stage)
Back down between 1,00 to 0,00	Re-import stage

Source : Kemendag [8]

Revealed Comparative Advantage (RCA) is a method to measure the competitiveness of the traded product from a country. RCA also shows the export performance of a country's products. In general, if the RCA score is greater than one, Indonesian pepper has competitiveness in the international market. The RCA calculation for Indonesian pepper is shown in equation 2 [9,10].

$$RCA = \frac{X_{ip}/\Sigma X_{ia}}{X_{wp}/\Sigma X_{wa}} \dots\dots\dots (2)$$

The second stage is to determine the potential market to be developed. The first step is to analyze the market position and export evaluation of Indonesian pepper to determine the right market strategy. The Dynamic Revealed Comparative Advantage (DRCA) method is used to determine the market position and evaluate the export market for Indonesian pepper. DRCA analysis is the development of RCA analysis to analyze competitiveness over time, and show the dynamics of market position. DRCA is the result of the market share of Indonesian export minus the market share of the world export; it calculated in equation 3 and classified based on the criteria in Table 2 [11,12].

$$DRCA = \frac{\Delta RCA_{ip}}{RCA_{ip}} = \frac{\Delta [X_{ip}/\Sigma X_{ia}]}{X_{ip}/\Sigma X_{ia}} - \frac{\Delta [X_{wp}/\Sigma X_{wa}]}{X_{wp}/\Sigma X_{wa}} \dots\dots\dots (3)$$

Table 2 Market position and export evaluation classification based on DRCA

DRCA	Market share of Indonesian export	Market share of world export	Market position	Export evaluation
Increasing	↑	>	Rising star	Successful restructuring
	↑	>	Falling star	Poor restructuring
	↓	>	Lagging retreat	Poor restructuring
Decreasing	↓	<	Lost opportunity	Poor restructuring
	↓	<	Leading retreat	Successful restructuring
	↑	<	Lagging opportunity	Poor restructuring
	↑	<		

Source : Edwards & Schoer [11] dan Jannah et al. [3]

The second step is to determine the potential market to be developed. This step is based on geographic segmentation and the results of previous market positions and export evaluations. This step determines the potential markets based on market structure; with market share analysis, minimum efficiency scale (MES), and concentration ratio for the biggest four (CR4) methods against the ten largest destination markets for Indonesian pepper [13,14]; with the following calculations:

$$\text{Market share} = \frac{X_{ip}}{X_{wp}} 100\% \dots\dots\dots (4)$$

$$\text{MES} = \frac{X_{np}}{X_{wp}} 100\% \dots\dots\dots (5)$$

$$\text{CR4} = \frac{X_{ip} + X_{np1} + X_{np2} + X_{np3}}{X_{wp}} \dots\dots\dots (6)$$

where :

X_{ip} = Export value of pepper (p) based on HS code from Indonesia (i) (USD)

M_{ip} = Import value of pepper (p) based on HS code from Indonesia (i) (USD)

ΣX_{ia} = Export value of all product (a) from Indonesia (i) (USD)

X_{wp} = Export value of pepper (p) based on HS code from all country (w) (USD)

ΣX_{wa} = Export value of all product (a) from all country (w) (USD)

X_{np} = Export value of pepper (p) based on HS code from certain country (n) with biggest value (USD)

The analysis of market share shows the domination or share of the Indonesian pepper on the destination countries market. MES analysis is used to analyze the barriers to entry and exit the market. CR4 analysis is used to determine the market concentration and market structure in destination countries (based on the criteria in Table 2). Simply, the potential market is the country with the lowest market share, MES, and CR4 score (selected product) [15,16].

Table 3 Market structure classification based on CR4

CR4	Market structure
> 0,85	High concentration oligopoly
0,70 – 0,85	Moderate concentration oligopoly
0,45 – 0,69	Low concentration oligopoly
0,30 – 0,44	Low oligopoly
< 0,30	Poligopoly

Source : Wibowo [16]

3. The Results

a. Determining the potential pepper product

The first stage in this research is to determine the potential pepper product to be developed using the ISP and RCA methods. The results of analysis on big four Indonesian pepper products are shown in Table 2. Products with the highest ISP and RCA is the potential pepper product to be developed.

Table 4 Score of ISP and RCA for big four Indonesian pepper products

Year	HS 0904111000		HS 0904112000		HS 0904119000		HS 0904121000	
	ISP	RCA	ISP	RCA	ISP	RCA	ISP	RCA
2010	0,99	14,86	0,95	6,54	1,00	0,36	0,85	0,09
2011	0,92	6,09	0,91	5,26	0,79	0,19	0,99	0,54
2012	0,97	14,89	0,92	5,72	0,95	0,19	0,99	0,96
2013	0,96	9,24	1,00	7,18	0,99	0,36	0,98	1,25
2014	0,48	5,73	0,99	6,91	0,99	0,38	0,98	1,55
2015	0,92	10,89	0,99	7,92	1,00	0,36	0,98	1,35
2016	0,82	9,31	0,99	7,89	0,99	0,37	0,98	1,33
2017	0,93	4,37	0,99	6,70	0,99	0,38	0,97	0,78
2018	0,94	3,13	0,98	7,15	0,82	0,78	0,90	0,51
2019	0,95	3,87	0,99	7,87	0,96	0,99	0,95	0,73
Averages	0,89	8,24	0,97	6,91	0,95	0,43	0,96	0,91

Note : HS 0904111000 = white pepper, neither crushed nor ground
HS 0904119000 = other pepper, neither crushed nor ground

HS 0904112000 = black pepper, neither crushed nor ground
HS 0904121000 = white pepper, crushed or ground

The results show that black pepper, neither crushed nor ground (HS 0904112000) is the most potential product to be developed. Indonesia is the second-largest black pepper producer in the world [17]. Based on the results of ISP analysis, black pepper neither crushed nor ground is in the maturity stage (with an average ISP score of 0.97); and it is in the highest stage of a product. While the RCA score shows that Indonesian black pepper neither crushed nor ground is competitive in the international market (with an average RCA score of 6.91).

b. Determining the potential market

The second stage in this research is to determine the potential export market to be developed for black pepper neither crushed nor ground (HS 0904112000). This stage consist of two steps. The first step, determining the market position and market evaluation of the product through a DRCA analysis (shown in Table 3).

Table 5 The result of DRCA, market position and export evaluation for HS 0904112000

Year	DRCA	Market share of Indonesian export	Market share of world export	Market position	Export evaluation
2010-2019	-0,691	-0,757	-0,065	<i>Leading retreat</i>	<i>Successful restructuring</i>

The results of the DRCA show that the black pepper neither crushed nor ground is in the leading retreat market position; Market evaluation results indicate that the product requires a successful market restructuring. The market share of black pepper neither crushed nor ground in the international market declined in 2010 - 2019. However, the decline in Indonesia's market share was greater than the decline in world market share. This condition leads Indonesian black pepper neither crushed nor ground to be in the leading retreat position. This condition requires proper market restructuring.

Restructuring the market can be done by determining the appropriate market. Countries with an open market share for Indonesia are the potential countries for developing export. The next potential

market criteria are countries with low barriers to entry and exit the market; especially countries with low market concentration (no trade monopoly).

The second step is to determine the potential market to be developed, based on geographic segmentation. This step is based on market structure; with market share analysis, minimum efficiency scale (MES), and concentration ratio for the biggest four (CR4) methods (results are shown in Table 4). The potential market is the country with the lowest market share, MES, and CR4 score

Table 6 Score of market share analysis, MES and CR4 for HS 0904112000

Country	Market Share	MES	CR4
United States of America	14,975	49,688	95,718
Vietnam	43,291	62,477	89,711
India	15,089	43,844	95,994
Singapore	10,042	49,147	90,330
China	25,764	56,926	93,751
German	2,040	39,404	90,007
France	6,601	29,491	79,520
Netherderlands	5,593	40,033	80,554
Russian Federation	14,121	59,283	83,536
Japan	6,564	53,405	96,888

The results (market share, MES, and CR4) show that France is the most potential market for Indonesia black pepper neither crushed nor ground. Indonesia exported 6,601 percent of the entire French pepper import for HS 0904112000. This condition shows that Indonesia still has the opportunity to increase exports of black pepper neither crushed nor ground to France.

The opportunity to increase exports to France is also supported by the low barriers to entry and exit the market. France has the lowest MES score compared to other countries. Although the French market is classified as an oligopoly market with a moderate concentration (CR4 score of 79,52 percent), France has the lowest market concentration level compared to the top 10 export destination countries.

4. Conclusion and implication

The strategy for Indonesia's pepper trade is focused on increasing exports of black pepper neither crushed nor ground (HS 0904112000) to France. Black pepper neither crushed nor ground is the most potential pepper product to be developed. This product are competitive in the international market and it is in the maturity stage, even though this product is in a leading retreat market position. So it needed a proper market restructuring. France is a country with the lowest market barriers and the lowest market concentration compared to others. Thus, France is the most potential export destination country.

5. References

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