



Analysis of Nutmeg Market Structure in South Aceh District

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Abstract

Market structure can affect performance and behavior in a market. This research aim to analyze the nutmeg market structure in South Aceh District, Indonesia. By looking at the level of competition, market concentration and barriers to market entry. The results of a qualitative study of nutmeg market structure are classified as oligopoly markets while quantitatively by looking at market share, market concentration and market entry barriers from the results obtained by the market are highly concentrated so it is very difficult to enter to the nutmeg market by new traders.

Keywords: Nutmeg; Market Structure; South Aceh; Indonesia

Introduction

Nutmeg (*Myristica fragrans* Houtt) is one of Indonesia's superior commodities which is an important role in the growth of the Indonesian economy, because it is one of the agriculture commodities that contributes as a source of national income, employment absorption and enhancement of agricultural income. Until now, Indonesia was one of the biggest nutmeg exporting countries in the world. The destination countries for Indonesian nutmeg exports were Vietnam, the United States, the Netherlands, Germany and Italy. Indonesian Nutmeg was capable of supplying 60 - 75% of world market demand. The development of Indonesian nutmeg production from 2011 to 2016 could be seen in the graph below.

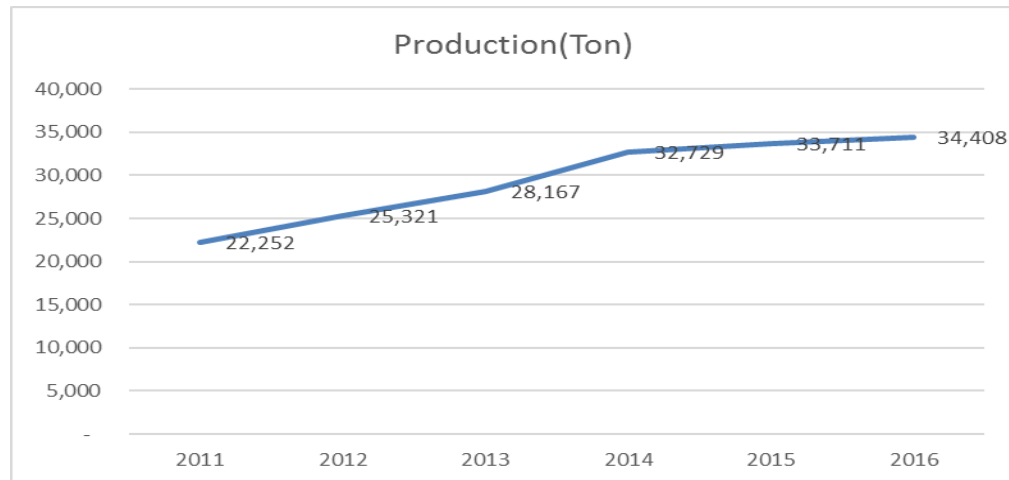


Figure 1. Development of Nutmeg Production in 2011-2016
Source: Dinas Perkebunan Aceh, 2017

Based on the graph above it can be illustrated that from 2011 to 2016 Indonesian nutmeg production has increased.

Aceh Province is one of regions in Indonesia which is a total planting area of 22.078 Ha or 77,62 percent of the Sumatra planting area and 11,55 percent of the national nutmeg planting area. While in terms of production in 2017 Aceh could produce 8.507 tons or 84 percent of Sumatran nutmeg production or 22 percent of national nutmeg production.

Nutmeg Aceh has its own characteristics which are distinctive aroma and high oil content. So that commodity from the South Aceh region has its own charm from other countries. South Aceh is one of the districts that has the largest area of nutmeg plantations in Aceh which is 15.821 Ha, with a total production of 7.713 tons / Ha, a productivity of 488 Kg / Ha and with an amount of 18.185 families and a total absorption of 6.328 people / Ha / Year.

Nutmeg has been known in the South Aceh District and cultivated for generations since the seventeenth century. This proves that the majority economic of the people in South Aceh is very dependent on nutmeg plantations. But the fundamental problem for nutmeg farmers in South Aceh District is in the process of determining prices, farmers are very weak in determining these prices, namely farmers act as price takers. From 2014 till 2018 the price of nutmeg in South Aceh District tended to decline. Therefore, in the marketing system of nutmeg in South Aceh, further analysis was needed, that is how the condition of the nutmeg market structure in South Aceh.

Research Methodology

This research was conducted in South Aceh District. The location was chosen purposively with the consideration that the District was the center of nutmeg production and its development.

Market structure analysis was carried out to found what market structure models occur in nutmeg marketing in South Aceh District, namely through:

a. Market Share Analysis

Market share could be calculated using sales revenue or production capacity. Analysis of the nutmeg market share in South Aceh District has done by calculating the market share of nutmeg companies (exporters), which is the ratio of purchases made by companies (exporters) to total oil purchases by all companies in Aceh South. The higher market share shows the market power for the company. This calculating market share aim to find out how much the scope of a company (exporters) to the total purchases of nutmeg oil in South Aceh District. According to Besanko et al (2010), market share could be calculated by sales revenue or from production capacity.

The formula for calculating market share for companies (exporters) is as follows.

$$MS_n = S_n / S_A \times 100\%$$

Where:

MS	Market Share	= 0-100 percent
Market Share	MS_n	= Corporate market share (exporters) "n" (percent)
S_n		= Sales or production capacity of nutmeg oil by the company (Exporter) "n" (kg / month)
S_A		= Total sales or production capacity of nutmeg oil by all companies (Kg / month)
n		= Number of companies (exporters) of nutmeg oil

b. Market Concentration

To calculate market concentration, Four Firm Concentration Ratio (CR4) analysis is used. If the CR4 value is close to 0, it is indicated that the market has many sellers, resulting in competition among sellers in buying nutmeg from farmers. However, if the CR4 value is close to 1, it is indicated that the market experiences less competition (concentrated market) between producers and consumers (Baye 2010). Hirschey (2009) added that if $CR4 \geq 0.8$ shows that the industry is highly concentrated, $0.5 < CR < 0.8$ the market is moderately concentrated and ≤ 0.5 the market is weakly concentrated. Analysis of the market structure using the CR4 approach was done by Asmara and Ardiani (2010).

$$CR4 = S_1 + S_2 + S_3 + S_4 / S_n$$

$$CR4 = w_1 + w_2 + w_3 + w_4$$

Where:

CR4		= Concentration ratio
w_i		= S_i / S_t , where $i = 1, 2, 3, 4$
S_1		= volume of nutmeg purchases by exporters 1 (kg / month)
S_2		= Volume of nutmeg purchases by exporters 2 (kg / month)
S_3		= volume of nutmeg purchases by exporters 3 (kg / month)
S_4		= volume of nutmeg purchases by exporters 4 (kg / month)
S_t		= Total purchase of all South Aceh nutmeg exports (kg / month)

c. Barriers to Market Entry

Barriers to market entry are used by using MES (Minimum Efficiency Scale). The calculation technique uses the purchases amount of nutmeg oil by the largest exporter of the total nutmeg oil production from South Aceh District.

Results and Discussion

Market structure analysis was carried out to see the level of competition occurred in the nutmeg oil market in South Aceh District.

a. Market share

Calculate the market share by looked at the percentage of nutmeg oil purchases by a company of the total nutmeg oil purchases by all nutmeg oil companies (exporters) involved with refinery entrepreneurs in South Aceh. The higher market share was showed the company has market power. The results of the calculate the market share could be seen in Table 1 below:

Table 1. Market Share of Nutmeg Oil Exporter Companies in South Aceh

Exporter company	Average purchase volume of oil head (Kg/Month)	Market share (%)	Market Concentration (%)
PT. A	3.260	0,3923	0,9999
PT. B	1.000	0,1203	
PT. C	1.600	0,1925	
PT. D	2.450	0,2948	
Amount	8.310	1,0000	

Based on the table above, the highest market share of the exporter company was PT. A, which was 39.23 percent. The meaning was the nutmeg oil market in South Aceh was dominated by PT. A it was illustrated that the company has market power. And the market structure at the exporter level was high concentration oligopoly.

b. Market Concentration

Meanwhile, to see the market concentration could be seen from the total of the four largest companies control 0.99% of the nutmeg oil market in South Aceh, which was very concentrated, it was in accordance with the statement of Baye (2010). If the CR4 value was close to 1 market, there was indicated very little competition among producers sold to consumers. It was because only four companies control the nutmeg oil market, caused market power exist at the company level (exporters). In this case, farmers were very weak in determining prices in South Aceh District.

c. Barriers to Market Entry

Barriers to market entry were calculated to see how many companies / or exporters were able to compete in capturing market share. Barriers to market entry could be seen by used MES (Minimum Efficiency Scale). The calculation technique used the amount of nutmeg oil purchases by the largest exporter of the nutmeg oil total production from South Aceh District. Based on data obtained in the study area, there were barriers to market entry for new companies. This could be seen from the value of EMAS obtained at 38.23%, which means that the difficulties of the export companies just entered the nutmeg market in South Aceh. This was also illustrated by the collection traders from Padang and around Aceh preferring the trade system channels found in South Aceh, there was selling nutmeg commodity to refiners found in South Aceh. This condition was also caused by an attachment between the collecting traders and the owner of a refinery in terms of capital loans and kinship ties between collectors, refinery owners and farmers.

Conclusion and Suggestion

a. Conclusion

Qualitatively the market structure that occurred tends to be oligopoly. Quantitatively by looked at market share, market concentration and barriers to market entry.

The nutmeg oil market was controlled by exporter company A. And the market structure at the exporter level was high concentration oligopoly. This shows that there was a high level of power in influencing market prices. (Farmers were weak in determining prices)

b. Suggestion

Looking at the nutmeg of South Aceh, export quality should be formed by an organization that is able to bridge farmers in the marketing process to the export market. In order to break the chain power of the exporter traders so that farmers have a bargaining position in determining prices.

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