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The Structure and Behavior of Cayenne Pepper Market

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Keywords:	**Abstract**
Cayenne Pepper, MES, Market Structure, Market Behavior	The sale of cayenne pepper from farmers/producers to consumers required a marketing process. The long chain of cayenne pepper marketing and market structure leading to an unfair competition and price determination were dominated by the collectors. The research objective was to determine the marketing channels, market structure and market behavior of cayenne pepper in Sekadau Regency. The determination of the sample in this research was using a non-probability sampling method by using the Slovin formula. Data were analyzed using the Herfindahl Index (IH) and Minimum Economies of Scale (MES). The results showed that the cayenne pepper marketing channels that available in Sekadau Regency were 2 marketing channels. In general, the market structure of cayenne pepper lead to an oligopoly market, market behavior showed that the highest profit and income ratio was obtained by wholesalers. The price determination process was influenced by the large traders, the existence of price discrimination practices at each level of the marketing channel, and the establishment of binding cooperation between collectors and farmers. Farmers were advised to form institutions to strengthen their bargaining position in dealing with collector traders as price determinants and not always being price takers, as happened in the marketing channel 1. Local governments were expected to create an Agribusiness Sub Terminal (STA) which can help to open the market access.

INTRODUCTION

The horticultural commodities were widely developed by people in Indonesia, one of them was chili. Chili was included in a non-substituted spice group. Cayenne pepper was a horticultural commodity that had promising business opportunities. Chili was a daily need for people, so the volume of chili availability in the market was very large. Chili production fluctuations were caused by the planting season and environmental factors. This fluctuation caused the selling price of chili in the market being unstable and made chili became the top three commodities that cause inflation in Indonesia (Miftahuddin et al., 2020).

Sekadau Regency was a chili producing area. The chili plant that produced was cayenne pepper, this plant was suitable to be developed in the Sekadau area. The production of cayenne pepper in Sekadau Regency in 2018 was 71.5 tons with a harvested area of 31.1 ha, previously in 2016 the production of cayenne pepper was only 7.6 tons with a harvested area of 7 ha. (BPS, 2020).

The quite large production in Sekadau Regency was not balanced with promising sales prices, so that the farmers' income was still low, this was due to the determination of the cayenne pepper price was non transparent by market players that involved in marketing cayenne pepper in Sekadau Regency. The cayenne pepper farmers in Sekadau Regency complained about the pepper fluctuations which continued to have an impact on farmers' income. Further research conducted by Hutabarat & Rahmanto (2004), until now the existing policies that focused on the current tender have not been effective in achieving the expected final goal, which was an increase in farmers' income and welfare.

The sale of cayenne pepper was performed by farmers through long marketing channels and the created market structure tended towards imperfect competition and price determinants were dominated by collectors. The market behavior tended to be unfavorable because the price determination process was less transparent. Due to the structure and behavior of the market, prices were uncertain and fluctuating, prices received by farmers and consumers tended to have far-reaching levels, and more profits were obtained by marketing institutions (Eliyatiningsih & Mayasari, 2017).

The market structure approach will explain the market share that owned by each market player, besides that market concentration will show the monopoly ability of the existing market structure, the barriers to entry in the market will describe the created competition. Market structure was the environment in which the economy was operate, market behavior was the way the market economy operates. Through the analysis that performed, it will provide a reference direction for industrial development (Jian et al., 2018).

The innovation of this research was the data analysis method that used only consisted of market structure and behavior, not analyzing market performance.

The previous research used an overall SCP analysis which analyzed market structure, market behavior and market performance.

The aims of this research, 1) to describe the marketing channel of cayenne pepper in Sekadau Regency, 2) to find out the market structure of cayenne pepper in Sekadau Regency, 3) to find out the market behavior from the market structure of cayenne pepper in Sekadau Regency. Through this research, it can describe the condition of the market structure faced by cayenne pepper farmers in Sekadau Regency, therefore it was expected that the research results will provide a solution to the problem that started from the low price of cayenne pepper at the farmer level, to the length of the existing marketing chain. The government was expected to be able to assist farmers in dealing with the market structure that created through the policies in marketing that will be made.

RESEARCH METHOD
Frameworks
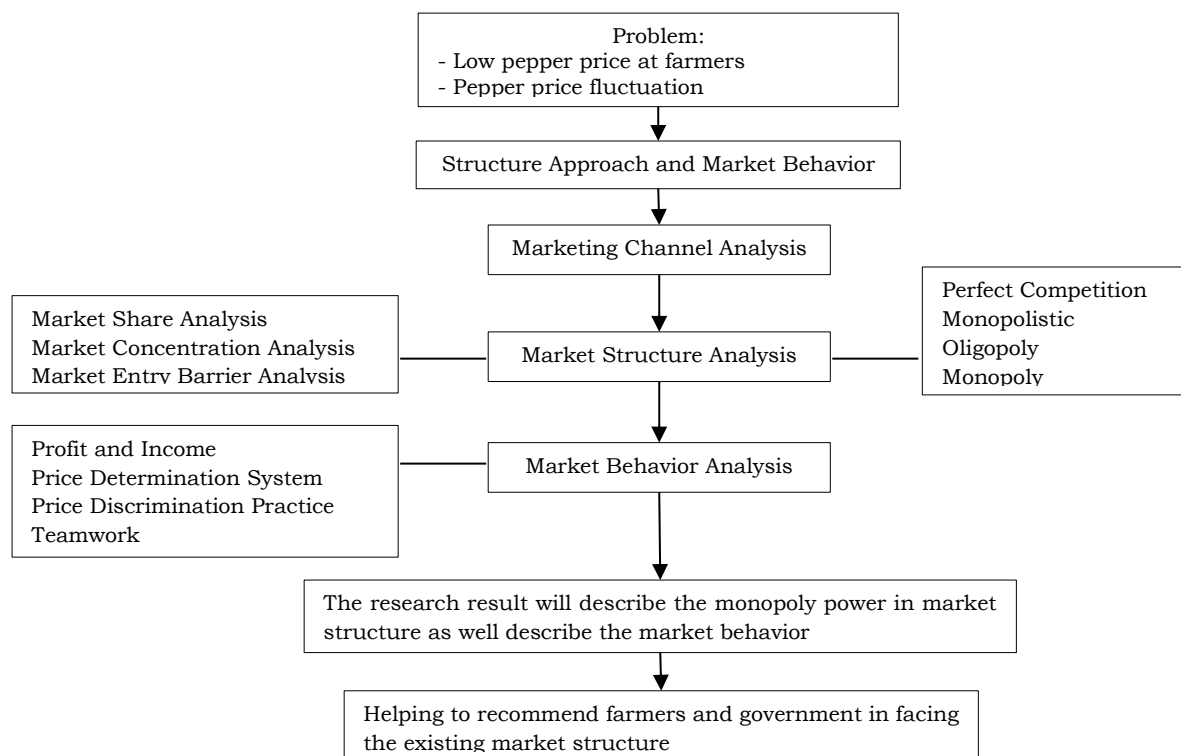
Picture 1. Framework

From the problems that occurred in Sekadau Regency, a market structure and behavior approach was performed in order to describe the relation between market structure in a market and market behavior. The search of market players was done by using an analysis of the marketing channels which has been passed by the farmers. Then, an analysis of the market structure and behavior that occurred in the marketing channel of cayenne pepper in Sekadau Regency was performed. The results of the research will describe market conditions and the monopoly power of the market structure that was created and tended to influence market behavior. The research results were expected to help farmers in dealing

with the market and the government as a policy maker to help farmers break the market monopoly power. The following was the framework of the research.

Research Location

The research was conducted in Sekadau Regency, in West Kalimantan Province. This was because the area was one of the largest cayenne pepper producing areas in West Kalimantan Province. The production of cayenne pepper in Sekadau Regency reached 71.5 tons in 2018, therefore, Sekadau Regency was chosen as the research location.

Population and Total Sample

The population of cayenne pepper farmers in Sekadau Regency was 104 people that spread over 2 Sub-districts, which were Nanga Taman Sub-district and Sekadau Hilir Sub-district. The cayenne pepper farmers who became sample in the research were 51 people out of 104. The population of marketing institutions that became sample in this research were 27 people consisted of 10 collectors traders, 5 wholesalers, 12 retailers that determined intentionally (purposively). Data was collected using a survey method by distributing questionnaires to respondents.

Data Analysis Method

The data analysis method used to answer the first aim was using marketing channel analysis, to describe existing marketing channels, to answer the second aim, by using market structure analysis by looking at market share, market concentration, and market entry barriers. To answer the third aim, it used an analysis of market behavior that was described and seen from profit and income, a pricing system, price discrimination practices as well as looking at the existing teamwork.

**RESULT AND DISCUSSION**

The Cayenne Pepper Marketing Channel

The marketing of agricultural products in Sekadau Regency included many functions were done by various different marketing agencies. Most of the agricultural products were marketed from farmers to consumers through marketing agencies. Based on observations, the existing marketing institutions consisted of collectors at the Sub-district level, wholesalers at the Regency level and retailers in several traditional markets. The marketing of cayenne pepper was observed in the last 6 months started in 2020 in January-June, the marketing channel of cayenne pepper in Sekadau Regency was divided into 2 channels. In line with research conducted by Eliyatiningsih & Mayasari (2017) which stated that in the marketing channel passed by farmers, there were collectors, wholesalers and retailers who played a role in the marketing process.

Marketing Channel 1

Farmers	→	Collectors	→	Wholesalers	→	Retailers	→	Consumers
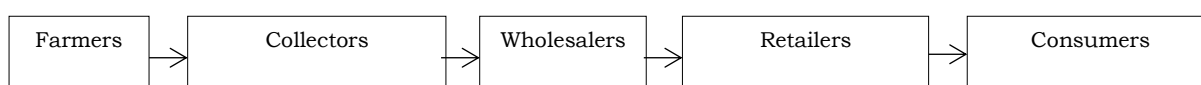
The marketing Channel 1 was a level 3 marketing channel, where there were 3 levels of sales intermediaries such as collectors, retailers and wholesalers. Descriptively, the marketing process of cayenne pepper from farmers was sold at 20,000 Rupiah to collectors, then the collectors resell to wholesalers for 27,000 Rupiah and wholesalers resell to retailers for 35,000 Rupiah and retailers sell to consumers in traditional markets with range of 40,000-50,000 Rupiah. The farmers got a very low price compared to the price received by consumers, with a price difference of 30,000 Rupiah/kg, this occurred due to the long marketing chain that farmers passed in marketing their products to final consumers.

Marketing Channel 2

| Farmers | → | Wholesalers | → | Retailers | → | Consumers |
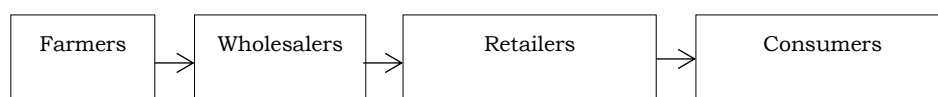
The marketing channel 2 was a level 2 marketing channel, where there were 2 levels of marketing intermediaries such as wholesalers and retailers, descriptively the marketing process of cayenne pepper from farmers was sold to wholesalers for 27,000 Rupiah/kg, then wholesalers sell back to retailers at 35,000 Rupiah/kg, from wholesalers then the cayenne pepper was sold back to retailers at 40,000 Rupiah/kg. Furthermore, retailers resell for 45,000-Rp.50,000 Rupiah/kg to consumers. The prices that applied to marketing channel 2 tended to be exactly the same because the marketing institutions (wholesalers and retailers) involved were the same traders, and the difference was only from the side of sales to farmers who did not go through traders. Marketing channel 2 was a marketing channel that more profitable for farmers in terms of the price received because farmers sell directly to wholesalers. The difference price from farmers and those paid by consumers was 23,000 Rupiah/kg.

Market Structure Analysis of Cayenne Pepper

The market structure of cayenne pepper in Sekadau Regency was analyzed by using market share analysis, market concentration analysis *(CR4 dan IH)*, and market entry barriers analysis *(MES)*.

Market Share Analysis

The market share described the sales percentage of each marketing institutions with sales of the total cayenne pepper marketing institutions in Sekadau Regency. The market share of a marketing institution was measured through sales, in the form of percentages ranging from 0% to 100%. The results of market share analysis at each level of marketing institutions in Sekadau Regency can be seen in the following table.

Table 1. Market Share at Each Marketing Institution Level

No	Cayenne Pepper Sales Rate (Kg/6 month)	Market Share (%)
	Collector	
1	9.600	10
2	7.200	7
3	6.000	6
4	4.800	5
5	8.400	9
6	3.000	3
7	38.400	39
8	7.200	7
9	7.680	8
10	5.760	6
Total	98.040	100
	Wholesalers	
1	15.000	14
2	24.000	23
3	27.000	26
4	21.000	20
5	18.000	17
Total	100.500	100
	Retailers	
1	9.000	9
2	10.800	11
3	6.000	6
4	7.200	8
5	8.400	9
6	6.000	6
7	7.200	8
8	7.800	8
9	4.800	5
10	7.200	8
11	12.000	13
12	9.000	9
Total	95.400	100

Source: Processed Primary Data, 2020

The largest market share at the level of collector had a value of 39%. The largest market share at the wholesalers' level had a value of 26%, while at the retailer level the market share value was 13%. The value of market share at the level of collectors, wholesalers, and retailers did not indicate a monopoly market structure, because the condition for a monopoly market to occur was to have all existing market shares, then seen from the dominance of one dominant market player, the value was 50-100%. The results of market share analysis showed that the market structure that occurred at each level of traders lead to an oligopoly market structure. This was in line with research conducted by Ningrum (2013), the

oligopoly market structure that seen from market share required more than one or several market players to reach a value of 60-100%.

Market Concentration Analysis

The market concentration analysis was a combination of market share from marketing institutions within a marketing channel level, where each marketing institution had a dependency. To analyze the market structure of cayenne pepper in Sekadau Regency was used market concentration. The measurements were made by looking at the total market share of the 4 largest marketing institutions and looking at the results value of the Herfindahl index analysis at marketing institutions.

Concentration Ratio (CR₄) Analysis

The market concentration can be calculated using CR4, a CR4 value of 40-60% indicated that the market structure lead to a loose oligopoly market, if a CR4 value of 60-90% indicated a loose oligopoly market structure (Jaya, 2001).

The analysis results of Concentration Ratio (CR4), obtained a value at the traders level of 66%. The wholesalers level obtained a value of 86%, the value of CR4 analysis showed that the competition of 4 collectors and wholesalers lead to a tight oligopoly market structure. The oligopoly market structure was seen from the results of the CR4 value which had a ratio between 60-90%. At the retailer level, a value of 42% was obtained. The obtained value showed that the competition of 4 retailers formed a loose oligopoly market structure. A market structure that had a CR4 ratio of 40-60% indicated that the market was leading to a loose oligopoly market structure. This was in line with a research conducted by Kusumah (2018), in tight and loose oligopoly markets, markets that were concentrated on traders/marketing institutions will create power in determining prices.

Herfindahl Index Analyis (IH)

The level of market concentration can also be found by looking at the results of the Herfindahl index analysis, where the results of this analysis will generally describe the strength of the bargaining position of farmers against buyers. The analysis results of the Herfindahl Index (IH) obtained a value at the traders' level of 0.1765. The wholesalers' level obtained a value of 0.8571, the retailer level was obtained a value of 0.0464. The obtained value showed that the competition of the 4 largest traders at each level lead to an oligopoly market structure. This was in line with a research conducted by Dewi et al. (2018) stated that the oligopoly market structure was seen from the results of the Herfindahl Index which had a ratio between 0 < IH < 1 leading to an oligopoly market structure.

Market Entry Barriers Analysis

The market entry barriers, all restrictions/barriers that may be faced by the immigrant companies that will have a number of consequences for existing market players, for example increased capacity, changes in market share. One of the analyses to see entry barriers was the Minimum Efficiency Scale (MES). MES was the largest percentage of the company's output to the total industry output. The value of the percentage of MES can be a limit/barrier for competitors to enter the market. MES >10% represented a high barrier to entry into the market. The MES

value was an illustration of market entry barriers in general when viewed from the sales/output (Jaya, 2001).

The results of the Minimum Efficiency Scale (MES) analysis obtained values at the collectors' level of 16%, wholesalers of 21%, retailers' of 11%. The MES value that exceeds 10% at each level of the cayenne pepper marketing channel in Sekadau Regency illustrated the high barriers to entry at each level of the market. This was because the 4 largest market players had quite a lot of market share, so that new competitors will certainly find that it was difficult to gain market share. In line with the research conducted by Wardhono et al. (2020) stated that the value of MES that exceeds 10% indicated a high barrier to entry, due to the limited capital owned by marketing institutions that will enter the market.

Market Behavior Analysis

The market behavior in this research, the treatment of marketing institution from market structure was formed. In this research, the market behavior was described objectively with what happened in the cayenne pepper marketing in Sekadau Regency. The profit and income can be seen in the following table.

Table 2. Profit and Income Average

No	Marketing Channel Level	Revenue/Profit	Income
1	Farmer/Producer	38.686.275 Rupiah	59.207.843 Rupiah
2	Collector	66.468.000 Rupiah	264.708.000 Rupiah
3	Wholesaler	159.000.000 Rupiah	735.000.000 Rupiah
4	Retailer	58.641.667 Rupiah	337.500.000 Rupiah

Source: Processed Primary Data, 2020.

Based on the table, wholesalers got the biggest profit compared to collectors and retailers. The smallest profit was obtained by farmers/producers. The market structure that occurred in the cayenne pepper market in Sekadau Regency, which lead to an oligopoly market structure which had one of the characteristics that market conditions were led by several dominant market players. An oligopoly market structure had a characteristic where actions that taken to gain profits by one market player will affect other market players. In contrast to the research conducted by Napasintuwong (2020) which stated that the accounting level of capital return, which was a representation of profitability, even small market forces will produce satisfactory profits. The level of profit was influenced by the application of science and technology owned.

The analysis of market behavior was continued by looking at 3 other market behaviors which were described descriptively. The analysis was performed at each marketing level, starting from farmers/producers, collectors (PP), wholesalers (PB), retailers (PP). The results of the descriptive analysis of market behavior can be seen in the following table.

Table 3. The Result of Market Behavior Descriptive Analysis

No	Market Behavior	Farmer		Collector		Wholesaler		Retailer	
		Yes	No	Yes	No	Yes	No	Yes	No
1	As Price Determinant:								
	Buy	0	0	10	0	5	0	0	12
	Sell	0	51	0	10	5	0	12	0
2	Price Discrimination								
	Practice:	0	0	6	4	5	0	5	7
	Buy	15	36	0	10	4	1	0	12
	Sell								
3	Teamwork:								
	Farmer -	0	51	0	10	0	5	0	12
	Farmer	20	31	1	9	0	5	0	12
	Farmer - LP	0	51	0	10	0	5	0	12
	LP – LP								

Source: Processed Primary Data, 2020.

Based on Table 3, the results obtained in the process of determining prices at the farmer level that farmers were not the price determinants, but prices were set by collectors and wholesalers. Basically, the price of cayenne pepper in Sekadau Regency was formed by the availability of cayenne pepper stocks and the entry of cayenne pepper stocks from outside the island. Cayenne pepper from outside the island of Kalimantan was cheaper than locally produced by farmers/producers. In contrast to the research conducted by Anggraeni & Baladina (2017), it was stated that the determination of prices at the farmer level was determined by collectors and wholesalers, while at the retailer level, price determination was done individually due to price competition that influenced each other.

Price Discrimination Practices occurred at every level of marketing because it can be an opportunity for traders to seek more profit, with a low purchase price can be marketed at the same price. This was in line with research conducted by Anggraeni & Baladina (2017), which stated that collusive practices such as price discrimination were done in order to increase profits.

The teamwork that exists at the farmer/producer level was 20 people collaborated with collectors. The teamwork that existed was in the form of bound to the provision of farming capital given to farmers/producers and the bound of selling crops by farmers to collectors. However, the selling price received by farmers was lower than the selling price that can be obtained by farmers who did not have cooperation. In contrast to the research conducted by Agnellia et al. (2016), teamwork only occurred between farmers and traders and the difference between the research results was the cooperation that existed because of the agreement, not because of the capital provision to farmers.

CONCLUSION

There were 2 marketing channels for cayenne pepper that available in Sekadau Regency. In general, the market structure of cayenne pepper in Sekadau

Regency led to an oligopoly market. The highest market behavior, profit and income ratio was obtained by wholesalers. The price determination process was influenced by wholesalers, the practice of price discrimination at each level of the marketing channel, the establishment of binding cooperation between collectors and farmers.

RECOMMENDATION

The marketing channel II can be used as an alternative choice by farmers, which was a more profitable marketing channel in terms of farmer-level prices when compared to marketing channel I. Farmers were advised to form institutions to strengthen their bargaining position to deal with collecting traders as price makers and not always be price takers, as happened in marketing channel 1. Local governments were expected to create Agribusiness Sub Terminals (STA) which can help to open market access. The suggestions for further similar research can be to analyze market performance in order to complement the structure and behavior of the market.

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