

## **The Analysis of Tobacco Market Structure, Conduct, and Performance in Indonesia: A Case Study of Tobacco Market in Jember Regency, Indonesia.**

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**Abstract-** The study examined the structure, conduct and performance (S-C-P) of tobacco marketing in Jember Regency, East Java, Indonesia. The primary data were collected using structured questionnaire administered to 122 tobacco farmers, 6 middleman, 3 wholesalers, and 5 cigarette manufactures. S-C-P is one of the most influential approaches among various theories of industrial organization model that also can be used to examine the market system. This approach highlights the competitive conditions of a market by examining the structure of the players in relation to behavior (conduct) and performance of each player. This study seeks to investigate the tobacco market condition by analyzing their market structure, conduct and performance. The data were analyzed using Market share, Herfindhl Hirschman Index (IHH), Concentration Ratio (CR4), Marketing Margin, and Share price. The result indicated that the tobacco market tent to be oligopoly competition market which it also can be qualified as moderate concentration market. Furthermore, the higher concentration tents to be inefficient in the price allocation and probable of collusion among the market player. The study further revealed in the top market player had high market power to driving the tobacco price. The study recommends that Indonesian government should try to manage to reduce the monopoly power and increase competitive levels among the tobacco buyers. There are should be a policy which controlling the market power in order to protect small tobacco farmers from unfair market practices.

**Keywords:** Market Structure, Market Conduct, Market Performance, Market share, Herfindhl Hirschman Index, Concentration Ratio (CR4), Marketing Margin, Share Price.

## **INTRODUCTION**

Tobacco are one of the most strategic and commercial plant in Indonesia. It is proven to play an important role in foreign exchange earnings and excise. Based on the Regulation of the Minister of Finance (PMK) No. 198 / PMK.010 / 2015 dated November 6, 2015, the income from tobacco itself reached to Rp 139.82 trillion. East Java is major province that produces most of the tobacco in Indonesia. Its tobacco production from year to year both the planting areas and productions are always the first rank, followed by Central Java and the third place is occupied by West Nusa Tenggara (Indonesian Plantation Statistics for Tobacco Commodities, 2015). Based on the type of tobacco, there are two kinds such as first is tobacco Na-Ogst (NA) is type of tobacco that used for cigar and second is tobacco Voor-Ogst (VO) is a type of tobacco used to produce cigarettes in the form of Machine Kretek (SKM), Hand Kretek Cigarettes (SKT) and Machine White Cigarettes (SPM). In addition, VO tobacco is a type of tobacco that is mostly produced by smallholder farmers. The most VO tobacco producers in East Java are limitedly distributed only in a number of cities such as Madura, Jember and Bojonegoro. East Java shows the rapid development of tobacco production, especially in Jember regency. Therefore this study will focus of Jember as case study area.

In marketing case of tobacco there is a special case. We always consider that tobacco leafs just has single consumer which is the cigarette producers. Farmers can only sell their product except to the cigarette manufacture. Meanwhile, if we compare the numbers of tobacco leafs producers (farmers) and final consumer (cigarette manufacture) there will be big different. In Indonesia we have a bunch of stallholder farmers but just very small cigarette manufactures. Therefore, the declined in tobacco demand by cigarette producers will resulting in declining farmers' tobacco prices. Theoretically and as long as the market mechanism is running normally, if the demand is

declining and the production relatively stable, it will reduce price balance in the market. In the end, the declining of prices will have an impact on decreasing farmers' income.

Although the contribution of the cigarette industry to the whole economy is encouraging, the higher concentration tends to be inefficient in the allocation of resources especially in price setting and probable collusion among the larger cigarette producers and tobacco farmers. It is a well known fact that there are many major players in the tobacco market in Indonesia. In the marketing system, tobacco farmers have many obstacles to sell their tobacco products. Tobacco farmers do not have the power to determine prices for their own production. The bargaining position of tobacco farmers is very weak. Furthermore, most of the tobacco farmers in Indonesia is a smallholders farmers and their facing a big company of cigarette producers. Then we can say that the marketing system is poorly funded and characterized by imperfect competition. There has not been much research into this phenomenon; it is leaving room for some fact finding missions and further studies. Therefore, it is interesting examine how is the actual condition of tobacco market. One of the most influential approaches among various theories of marketing analysis is the Structure-Conduct-Performance (SCP) model [1], which highlights the competitive conditions in the market by examining the structure of the market related to the market players behavior and performance. Thus, the objective of the study was to investigate the structure, conduct and performance of the Indonesian tobacco market, with view to ascertaining its challenges and evolving strategies to improve upon its efficiency.

## EXPERIMENTAL SECTION/MATERIAL AND METHODS

### Study area and Data Collection

The study was conduct in Jember regency, Eat Java province, Indonesia. Data used for study were collected through a a multiple sampling for 3 moths spanning from October to December, 2017. The first stage was simple random sampling for choosing tobacco farmers by Slovin formula ( $\alpha=0.1$ ). The population of tobacco farmers in the area was around 44,167 farmers. Therefore our sample became:

$$n = \frac{N}{1+N(e)^2}$$
$$n = \frac{44167}{1+44167(0,1)^2} = 99.77 \approx 100$$

From the formula we got 100 farmers, however we collected 122 farmers. Then the second stage we used snowball sampling to choose the market players. We collected 6 middlemans, 3 wholesalers, and 5 cigarettes manufactures.

### Theoretical framework

Generally most of tobacco farmers are smallholder farmer with the planting area less than 0.5 ha. The market information, especially tobacco prices seems to be hidden from the farmer. There is emotional attachment between farmers and traders that happen from generation to generation. Farmers tend to sell their tobacco only to certain people who always become their loyal customers without comparing the real price in the market. They unable to sell it freely and in some cased this conditions make the tobacco prices that farmer received is easily to be tricked my getting lower than market price. Therefore, it is needed to examine how the marketing system actually occurs in tobacco commodities. In order to capture the whole and complete tobacco marketing system in the study area, the S-C-P approach (Structure, Conduct, Performance) were used. All three components are interrelated, market structure influences market behavior (conduct) and market appearance (level of market performance) in order to achieving market efficiency.

The SCP model is considered a pillar of industrial organization theory, and it has been used since its conception for analyzing markets and industries, not only in economics, but also in the fields of agricultural businesses and management [2]. Furthermore, theoretically it is stated that SCP can describe the competitive conditions that occur in the marketing system, it means that the conditions of competition among market players will affect their behavior, and how the economic impact of individual and collective behavior. The market structure consists of three aspects such as; supply concentration measures the number and market shares of suppliers in a market; product differentiation measures the homogeneity of the products that are being traded; and barriers to entry

and exit measure how likely new suppliers enter and exit a market and thus how stable the supply structure in a market is [3, 4]. Generally we could explain our analytical tools like in the Figure 1 below:

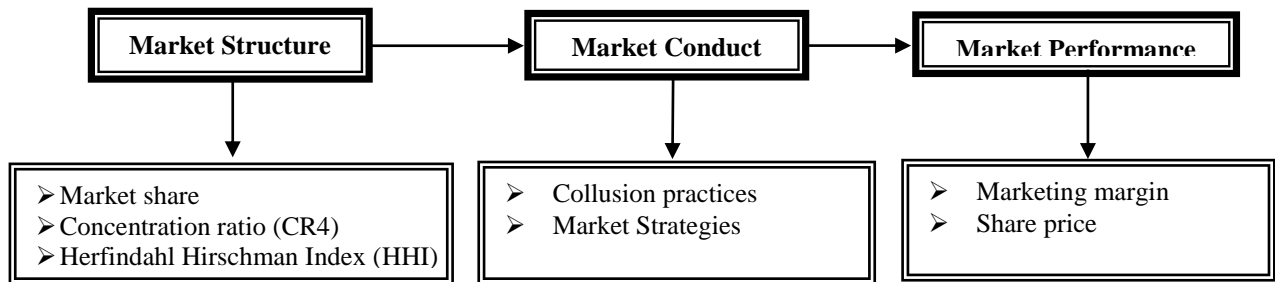


Figure 1. The analytical model of structure, conduct and performance

In this research market structure is a form and character of market relation among market players in tobacco industry. It includes relation and character in quantity, scale, share and benefit allocation among farmers, buyers, farmers and buyers, and those who may be planning to go into the market to determine competition form. It was measured using market share (MS), concentration ratio (CR4) and the Herfindahl Hirschman Index (HHI) [2, 5-8]. Market conduct, on the other hand, is the actual behavior of buyers and sellers in a market [6, 9]. It includes pricing determination, activities to raise entry barriers and rent seeking activities to establish regulation to limit competition. Market behavior also can be in the form of the practice of determining the price of commodity, price competitions, and the changes of market share. In order to understand the marketing behavior we could examine; (1) the possibilities of collusion practices in order to determined the price among the market players, (2) The strategies behavior carried out by producers in order to faced of existing competitors or newcomers appear in the market. The market performance is the outcome of market conduct, the interactive strategic behavior of competing among market players [7]. In market performance analysis we used marketing margin and share price.

### Data Analysis

The data were analyzed using both descriptive and inferential statistics. Basically based on the survey in this research there are three categories of market players in tobacco industry, such as:

1. Middleman (blandang) is a small buyer of tobacco who usually buy the tobacco directly from a farmers in small amount, then they will sell it again to the wholesaler or cigarette company.
2. Wholesaler (pengepul) is a big buyer of tobacco who bought it from farmers or middle-man and sells it again to cigarette company.
3. Cigarette company is the final consumers of tobacco leaf before process it to cigarette.

Apart from descriptive statistics, other analytical tools used were;

#### A. Market Share

Market share is the share of market players-i in the time period-t. The proportion of the market that the market players is able to capture will indicate the market player's performance relative to other competitors [6]. This proportion is referred to as the market players' market share. Market share is often associated with profitability and thus, many players seek to increase their sales relative to those of competitors. Market share is estimated by dividing the number of tobacco been bought (in ton) of an individual market player's with the total amount that has been bought in each market players category level. Market share criteria are:

1. Monopoly if there is one player with 100% market share.
2. Oligopoly if there is a player who had market share between 60%-100%.
3. Monopolistic competition if each players just had the market share less than 10%

4. Perfect competitions if more than 50% of the competitors have a very small amount of market share.

#### B. Concentration Ratio (CR4)

The concentration ratio for the  $n$  largest players in tobacco market industry was calculated by adding the market shares of these  $n$  market players divided by the total amount of tobacco across the market. This can be represented as  $CR_n = S_1 + S_2 + S_3 + \dots + S_n$ , where  $S_i$  is the market share of the  $i^{\text{th}}$  market player. A very commonly used concentration ratio is the four-biggest player concentration ratio or  $CR_4$  [6]. The  $CR_4$  is the total market share held by the top four market player in each category of tobacco market and it is calculated as  $CR_4 = S_1 + S_2 + S_3 + S_4$ . The percentage of  $CR_4$  was measured in four classifications in table 1 below:

Table 1. Classifying Market Players with the  $CR_4$  in Percentage

$CR_4$	Interpretation of Market Structure
$CR_4 = 0$	<b>Perfect Competition</b> → Competitive system in which a large number of firms produce a homogenous product for a large number of buyers
$0 < CR_4 < 60$	<b>Monopolistic Competition</b> → Many sellers each of whom produces similar but slightly differentiated products; each producer can set its price and quantity without affecting the marketplace as a whole
$60 \leq CR_4 \leq 99.99$	<b>Oligopoly</b> → A market condition in which sellers are so few that the actions of any one of them will materially affect price and have a measurable impact on competitors
$CR_4 = 100$	<b>Monopoly</b> → A situation in which a single company or group owns all or nearly all of the market for a given type of product or service, often leading to high prices and inferior products

Source: A Guide for Industry Study and the Analysis of Firms and Competitive Strategy, 2001 (modified)

#### C. Herfindahl Hirschman Index (HHI)

This index is used to measure and compare market concentration within market players. The HHI is calculated by summing the squares of the individual market shares of all the market players in tobacco industry. By conducting this we could capture how the bargaining position of tobacco farmers. The formula is expressed as:

$$HHI = (S_1)^2 + (S_2)^2 + \dots + (S_n)^2$$

Where:

- HHI = Herfindahl Hirschman Index (HHI)
- $n$  = potential number of market players
- $S_i$  = market shares of the  $i^{\text{th}}$  market players; ( $i=1,2,3,\dots,n$ )

Criteria:

- HHI = 1; is a monopolistic market competition
- HHI = 0; is a perfect market competition

#### D. Marketing Margin

Marketing margin in the difference between the selling and buying prices expressed in absolute terms [5]. In this research the marketing margin of tobacco market is the differences price that receiving by the tobacco farmers and the price that paid by the final consumer' which is a cigarette company. The formula expressed as:

$$MM = P_p - P_c$$

- where :  $MP$  = Marketing margin
- $P_p$  = producer price (farmer price)
- $P_c$  = consumer price (cigarette company price)

## E. Share Price

Share price in farmers level is a producer/farmer price divided by consumers price times 100%. Mostly, if the farmers choosing the difference marketing channel the share price will be difference. The formula expressed as:

$$SP_f = \frac{Pf}{Pr} \times 100\%$$

Dimana :  $SP_f$  = share price in farmers level  
 $Pf$  = farmer price  
 $Pr$  = consumer price (cigarette company)

## RESULTS AND DISCUSSION

### Analysis of Tobacco Market Structure

The market structure analysis tent to reveal how is the actual market competition of tobacco in study area. It were analyzed using several formulas, such as market share, concentration ratio ( $CR_4$ ), and Herfindahl Hirschman Index (HHI). The first calculation were based on market share computation which showed in Table 2 revealed that the biggest market share in middleman was 39% of the total market share with the total transaction 118.1 quintal. While in the wholesaler class the highest market share was 37.72% with the total amount of tobacco 168 quintal and last in the cigarette company was 44.34% with 459.03 quintal.

Table 2. Market share of tobacco market

Category	Code	The number of transaction (quintal)	Market share	Concentration ratio (%)
Middleman	B1	15	0.0499	4.99
	B2	59.2	0.1969	19.69
	B3	50.1	0.1667	16.67
	B4	50	0.1663	16.63
	B5	118.1	0.3929	39.29
	B6	8.2	0.0273	2.73
	Total	300.6	1	100
Wholesaler	P1	164.6	0.37	36.76
	P2	114.23	0.26	25.51
	P3	168.9	0.38	37.72
	Total	447.73	1	100
Cigarette company	GP1	459.03	0.44	44.34
	GP2	103.8	0.10	10.03
	GP3	213.9	0.21	20.66
	GP4	192.2	0.19	18.57
	GP5	66.3	0.06	6.40
	Total	1035.23	1	100

Source: primary data, 2017

The concentration ratio ( $CR_4$ ) shows that the four largest traders in each category in the tobacco market are classified as Oligopoly competition. However in the wholesaler because the amount less than 4 biggest market players is became monopoly. It means the farmers facing a moderate concentrated market in middleman and Cigarette Company, while it was highly concentrated market of wholesaler. The higher concentration of the market has a dominant market power [6]. The market power declined as  $CR_4$  decreased.

Table 3. CR4 of Tobacco Market

Categories	The biggest 4 code	The number of transaction (quintal)	$CR_4$	Market structure classification
Middleman	B2	59.2	0.9228	Oligopoly
	B3	50.1		
	B4	50		
	B5	118.1		
The total number across the market		300.6		
Wholesaler	P1	164.6	1.0000	Monopoly
	P2	114.23		
	P3	168.9		
The total number across the market		447.73		
Cigarette Company	GP1	459.03	0.9360	Oligopoly
	GP2	103.8		
	GP3	213.9		
	GP4	192.2		
The total number across the market		1035.23		

Source : Primary data, 2017

Further analysis of the market structure presented in Table 4 using the Herfindahl Index, revealed an HHI value of middleman was 0.2518, wholesaler was 0.3426, while the cigarette company was 0.2879. All the categories of market players showed that the tobacco market classified as oligopolistic competition across the markets. This indicated a higher market concentration in the selected markets implying that rice trade is in the hands of relatively few traders.

Table 4. Herfindahl Hirschman Index of Tobacco Market

Categories	Amount	Market share (S)	(S) <sup>2</sup>	HHI	Market structure classification
Middleman	6	0.0499	0.0025	0.2518	Oligopolistic
		0.1969	0.0388		
		0.1667	0.0278		
		0.1663	0.0277		
		0.3929	0.1544		
		0.0273	0.0007		
Wholesaler	3	0.3676	0.1352	0.3426	Oligopolistic
		0.2551	0.0651		
		0.3772	0.1423		
Cigarette Company	5	0.4434	0.1966	0.2879	Oligopolistic
		0.1003	0.0101		
		0.2066	0.0427		
		0.1857	0.0345		
		0.0640	0.0041		

Source : Primary data, 2017

### Analysis of Tobacco Market Conduct

The tobacco marketing system in the study area was still unfair where the conditions of tobacco farmers have absolutely no power in terms of determining the tobacco prices. Farmers can only accept whatever price given by trader and the existence of tobacco farmers is only limited as a price taker rather than price maker. This means

that farmers do not have a bargaining position at all. It was very difficult for tobacco farmers to predicting how much the profit will be obtained from their own tobacco farming. They always thought that there was only one thing that they might do in order to increase the profitability of their farming business, which is to produce as much tobacco as possible.

The tobacco market structure in Jember was Oligopoly or we can said that moderately concentrated, which giving many opportunities for market players to be dominant and driven up the prices that might cause farmers to be in disadvantaged position, including 1) Collusion among the market players to determine the quality and price of tobacco, 2) The predators price action to the new players in order to enhance barriers to entry, it will cause the strength of the current players to be stronger in determining the tobacco prices. Therefore, the oligopoly marketing system in all market players level (middleman, wholesaler, and cigarette company) might harm tobacco farmers as producers. In other words, tobacco market players with a higher power than farmers be able to easily doing a collusion and predatory as their strategy to driven the market price.

### Analysis of Tobacco Market Performance

In the study area we reveal that there are four marketing channels. From 122 farmers respondent, the biggest percentage were choosing the fourth channel. They sell their tobacco leaf directly to the final consumer which is the cigarette company. Mostly in the fourth channel isa big farmers which has a bigger farm and higher production capacity. The detail about marketing channel (MC) showed in table 5 below:

Table 5. The marketing channel distribution of tobacco market

Code	Marketing channel	Farmers	%
MC1	Farmer – Middleman – Cigarette company	14	11.48%
MC2	Farmer - Farmer - Wholesaler - Cigarette company	27	22.13%
MC3	Farmer - Wholesaler - Cigarette company	34	27.87%
MC4	Farmer - Cigarette company	47	38.52%
Total		122	100%

Source: primary data, 2017

Based on each marketing channel we revealed that the highest marketing margin (Figure 2) was the MC1 which was 1.6 million rupiah per quintal followed by MC2, then MC3. In addition, for MC4 the marketing margin was 0, because it is a direct market where the farmers directly sell their product to the cigarette company as the final consumers of tobacco leaf. Meanwhile the share of price in the farm level in Figure 3 showed that, farmers in the forth marketing channel (MC4) received the highest share compare to the other channel.

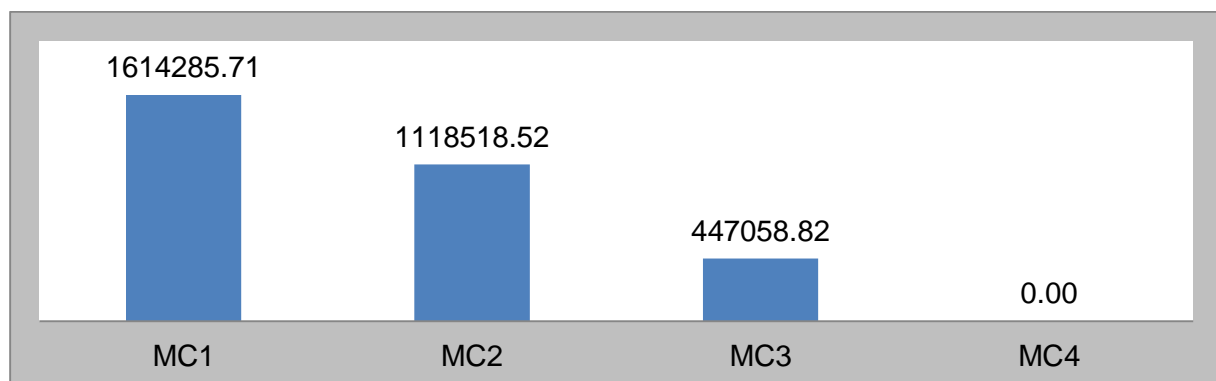


Figure 2. Marketing Margin of each Marketing Channel of Tobacco Market (rupiah per quintal)

Source : Primary data, 2017

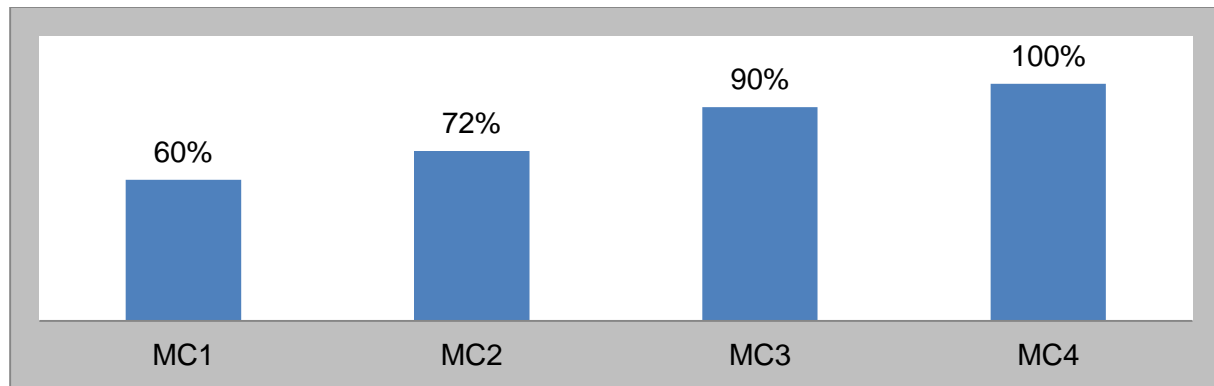


Figure 3. Share of price of each Marketing Channel of Tobacco Market  
Source : Primary data, 2017

## CONCLUSIONS

The analysis of tobacco marketing system by market structure, conduct and performance revealed that the tobacco market were dynamic and have oligopolistic competition. Farmers tend to face the big and small amount of buyers. These conditions make tobacco farmers are unfavorable condition. Since the market is moderately concentrated, there are a signs of collusion or merger among the top buyers. The collusion that happened in buyers side, make the easily driven the price and tobacco qualities. The barriers to entry also limited because there are predatory of the price that made new buyers difficult to join the market system. Farmers tend to be only price takers and had no bargaining position compared to other marketing players.

The Indonesian government should try to manage to reduce the monopoly power and to increase competitive levels among the tobacco buyers. There are should be a policy which controlling the market power in order to protect small tobacco farmers from unfair market practices.

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