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An Empirical Study of Supply Chain and Intensification Program on Madura Tobacco Industry in East Java

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ABSTRACT

East Java is the largest producer of tobacco in Indonesia by Madura Island as the main area. In the recent time, Madura tobacco demand has increases because of its specific quality and the strong trend low-nicotine of lighter cigarettes consume. The objectives of this study were to assess the supply chain circumstances and implementation of the intensification programs on the native Madura tobacco agribusiness. The case study locations were selected based on criteria of central production sites, agro-ecological setting and Tobacco Intensification Program sites during 2009. Primary data collection was conducted by doing surveys directly to the growers and the tobacco entrepreneurs while secondary data was collected from plantation office and other related agencies in Sumenep and Pamekasan. The study has shown that Madura tobacco is a local specific product, which has premier quality and should be maintained in order to provide optimal benefits for farmers and local economy. Therefore, Madura tobacco supply chain approach should be considered the equilibrium of market demand, quality required and quota policy that agreed by local governments, farmers' representatives and cigarette companies. It is needed to improve the relationships between market players within the supply chain and develop the professionalism of farmers' management through the Intensification program, to maintain the sustainability of the tobacco agribusiness. The program proved has been successful to increase the productivity and income of tobacco farmers in the studied areas.

Key words: Madura tobacco, supply chain, intensification program, tobacco industry, East Java

INTRODUCTION

East Java is the main region of tobacco producer in Indonesia during the last decade with an average contribution from the national total are about 46% of production and 53% of planting area (Sarah *et al.*, 2008; Anonymous, 2008b), In this province, Madura Island is the central producing area and its region produced high quality of tobacco product. Madura tobacco is one type of native tobacco for cut tobacco leaves which is used as raw materials of clove cigarettes (Abdul-Rahman and Mahfud, 1998). In Indonesia, due to the strong trend toward lighter smoking of clove cigarettes consume, caused the demand of Madura tobacco been increased. On the other hand, the tobacco's price received by Madura farmers is varying and it tends to declining (Santoso, 2001). In the market, the tobacco pricing is a result of the combination factors of the quality, type of tobacco, length of marketing chain and stock position (Sudaryanto *et al.*, 2007).

Yet, cropping acreage of tobacco in Madura showed fluctuate and tend to increase, moreover, many growers are expanding farming to the wet land and ignoring the quality of tobacco leaves produced. It yielded to the excess supply in the commodity market, furthermore its prices down at the farm level (Keyser and Juita, 2005, Anonymous, 2008a). Actually, it has been apply more than two decades, where the provincial government sets the projection areas of tobacco plantation in each seasons, by issued the East Java Governor Decree. It is concerning the operational and guidance for The Intensification Program of Virginia Tobacco and the Native's Tobacco (Anonymous, 2008b). The decree is designed to meet the needs of tobacco leaves by cigarette manufacturers with the supply product by planned the total cropping acreage of tobacco in the central producing regions. By this, it is expected that the ideal equilibrium between tobacco leaves needs and the amount of this commodity produce will be realized (Haryono, 2007; Rachman, 2007).

On other sides, there is a national government policy concerning The Tobacco Intensification Programs that fund from the tobacco's excise tax program which had been conducted since 2008 and allocated for the growers in central producing regions. The purposes of this program are including to increased productivity and income of tobacco growers (Anonymous, 2009). Therefore, to measure the success and impacts of this program is by performing calculation of the farming productivity and income that gained from tobacco farming in the field.

The objectives of this study were to assess the supply chain circumstances and implementation of the intensification programs on the native Madura tobacco agribusiness. The subjects of study were focused on (a) analysis on the characteristics of tobacco farming (b) identification the equilibrium of Madura Tobacco supply and market capacity, (c) identification the market structure and players of Madura Tobacco, (d) analysis on mechanisms of intensification programs and its benefits for the growers, (e) Provide recommendations for Madura tobacco's agribusiness development.

MATERIALS AND METHODS

Scopes of the study are on the agribusiness players including growers, tobacco's industrials and traders in two main producing regencies in Madura that are Sumenep and Pamekasan. Inside those regencies, it was taken single sub-regency (kecamatan) and inside sub-regency was taken two villages (desa). Regarding Abdul-Rahman and Mahfud (1998), Madura tobacco is grouped into three types based on its agro-ecology, namely tobacco: (1) upland, (2) dry land and (3) wet land. The locations of case study were selected based on some criteria such as a central production area of Madura tobacco, represent agro-ecological type and the locations were Tobacco Intensification Program sites during 2009 (Table 1).

The collected information consisted of secondary and primary data. Secondary data collection was conducted during April to May 2009 from Plantation Office and other related agencies in Sumenep and Pamekasan, while primary data collection was conducted by doing surveys directly to the farmers and the tobacco entrepreneurs during August to September 2009. Farmer respondents were divided into two groups, namely; participated farmers and non-participated farmers of The Tobacco Intensification Programs and both group were taken in one village. The numbers of sample growers both participants and non-participant were 15 farmers, that means in total there were 30 sampled farmers within one selected village.

Table 1: The selected locations of case study

Regency	Sub regency	Village	Agro-ecological type
Sumenep	Gulug-Gulug	Gulug-Gulug	Dry land
		Pordapur	Upland
Pamekasan	Pamekasan	Kangenan	Wet land
		Teja Barat	Dry land

CHARACTERISTICS OF MADURA TOBACCO FARMING

Based on its planting and harvesting time, Indonesian tobacco could be classified into two categories, which are Voor-Oogst that planted at the end of the rainy season and harvested during dry season and Na-Oogst that planted at the end of the dry season and harvested during rainy season (Abdul-Rahman and Mahfud, 1998). In East Java, about 90 to 95% of total tobacco farming is Voor-Oogst including Madura tobacco and the rest of it is the Na Oogst (Anonymous, 2008b).

According to its usages, tobacco in Indonesia consists of: (a) cigar tobacco, (b) Virginia tobacco and (c) native tobacco (Rachman, 2007). Native tobacco is cultivated on extensive areas in this country and has various types as well as specific characteristic for each region. Cigar tobacco is for the general usages, particularly for export mainly to Europe market, whereas Virginia tobacco is common for domestic white cigarette manufacturers. Native tobacco generally chopped for traditionally use for shag or rolling tobacco by local people. However, there are particular native tobaccos, which use specific for raw materials of cut tobacco that required by cigarette manufacturers, such as Kedu tobacco in Central Java, Kasturi tobacco in Jember and Madura tobacco (Keyser and Juita, 2005; Sarah *et al.*, 2008). Madura Tobacco is commonly grown in the uplands area at the Northern part of Madura Island, reach from Pamekasan to Sumenep area. It has characteristics of medium nicotine levels, high sugar contain specific aromatic flavor, so that it is used for the mixture of clove cigarettes to give it the aroma and taste (Murdiyati *et al.*, 2004).

The average age of tobacco farmers in Sumenep and Pamekasan were relatively young at around 40 years old. While, the numbers of household members who engage in farming activities were about three people within a family (Table 2). The above condition illustrates that in general tobacco farming quite is attractive to agrarian society in the region. Based on the education level, the respondent mostly completed less than junior high school grade (9 years) and the average of tobacco farming acreage were classified as narrow that was less than 0.40 ha per farm (Table 2). According to Soekartawi *et al.* (1984), level of education and farm size managed will have positive correlation to the response of farmers into adoption of agricultural technology.

Madura tobacco is usually planted in the second planting season (during dry season) in the dry land, the upland and the wet land by adjusting the cropping patterns according to its region's ago-ecological type (Murdiyati *et al.*, 2004). Madura tobacco is commonly grown in monoculture pattern, while its varieties which commonly developed are Cangkrang variety in Sumenep, as well as Prancak 95 variety in Pamekasan. Both varieties have had a long time adaptation in each location. Due to water constraint, the tobacco-planting season in the Sumenep's upland area generally grown earlier compared to in the dry land, which grown is in the first week of May, while, for the dry land grown in the third week of May. In Pamekasan, planting season in wet land area is start at the early of June, while for dry land area is at the third week of May (Fig. 1). According to agricultural office information, majority of farmers (about 75%) had not prepared nursery by their own since the impractical reason, whereas, usually they obtain seedlings from local dealers

Table 2: Characteristic of Madura tobacco farmers (in average)

Descriptions	Age (years)	Formal education (years)	Household members who engaged farming (people)	Tobacco farming acreage in 2009 (ha)
Sumenep				
Dry land				
Participant farmer	42	6	3	0.35
Non participant	43	6	3	0.33
Upland				
Participant farmer	43	6	3	0.25
Non participant	43	5	3	0.20
Pamekasan				
Wet land				
Participant farmer	43	8	3	0.27
Non participant	44	8	3	0.25
Dry land				
Participant farmer	43	7	3	0.35
Non participant	45	7	3	0.30

Source: Field survey, 2009

Descriptions	General planting pattern		
	First planting season /rain season I (January-April)	Second planting season /dry season (May-August)	Third planting season /rain season II (Sept-December)
1. Sumenep region			
a. Dry land	Corn	Tobacco	Paddy/Corn
b. Upland	Soybean/Corn	Tobacco	Corn
2. Pamekasan region			
a. Wet land	Corn	Tobacco	Paddy
b. Dry land	Corn	Tobacco	Paddy

Fig. 1: Planting pattern on studied locations. Source: Field survey, 2009

or commercial nurseryman. Participant farmers of The Intensification Program obtained seedling from local government assistance through nurseries program activity in *kecamatan* (sub-regency) level.

DISCUSSION ON MARKET CAPACITY AND SUPPLY CHAIN

More than 35% of East Java's tobacco was supplied from Pamekasan and Sumenep Regency (Anonymous, 2008a). Nevertheless, mixing of product from other areas or ago-ecology regions yielded decreasing the Madura tobacco quality. From cigarette manufacturer point of view, tobaccos from outside of Madura Island are having a lower class compared to Madura tobacco (Santoso, 2001). To anticipate decreasing of Madura tobacco quality caused by mixing of product from other

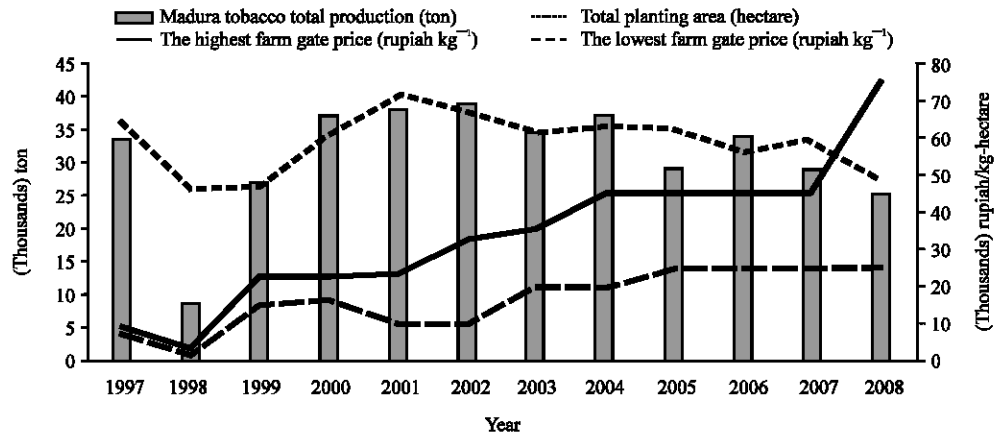


Fig. 2: Total planting area, production and farm gate price of Madura tobacco. Source: Anonymous (2009)

Table 3: Amount of tobacco required and buying period of tobacco storehouses located in Madura Island at 2009

Tobacco storehouse	Quota of dried cut tobacco (ton)	Storehouse opening date of buying period*
Noroyono	2,000	10 August 2009
Gudang Garam	5,000	15 August 2009
Sampurna	5,000	19 August 2009
Sukun	2,000	9 August 2009
Djarum	3,800	19 August
Other small factories	7, 200	End of August
Total	25,000	

*Buying period of tobacco storehouses would be closed after the quota fulfilled that normally about 2 months after the opening. Source: Madura Tobacco Growers Association (primary data)

areas, local government of Pamekasan and Sumenep since 2002 had been issued a regulation to prevent native tobacco from interference of outside products. This regulation is intended to protect native Madura tobacco through maintaining the quality and govern the better marketing circumstances.

The equilibrium between total planting area, total production and the farm gate price of Madura tobacco during 1997 to 2008 can be seen in Fig. 2. From this figure, it could be grasped that the optimal planting area for Madura tobacco, was about 40 to 50 thousand hectare per annum. It is assumed that by this total planting area, it will be able to obtain the ideal amount of production of 25 thousand tons of standard quality of cut tobacco leaves by average productivity of 0.5-0.6 tons ha⁻¹. In this optimum supply position, the price also would be on the optimal level which was varying between Rp. 30,000,-to 60,000,kg⁻¹ at the farm gate level (Fig. 2). Whereas, the price variation of product actually was determined by the standards of tobacco quality offered by farmers.

Actually, optimal position in the supply of 25 thousand ton of dried cut tobacco was based on the required of raw materials by tobacco warehouses (owned by the tobacco companies) on the island (Table 3). Where the needs of dried cut tobacco leaves per annum for each of the existing tobacco storehouses located in Madura were as follows: Gudang Garam and Sampurna storehouse needed 5000 tons, Djarum needed 3800 tons, whereas Noroyono, Sukun and other small factories storehouses need around 2000 tons, 2000 tons and 8 to 10 tons, of dried cut tobacco, respectively.

Table 4: Planning and realization of Madura tobacco farming during 2004 to 2008*

Year	Planning		Realization	
	Cultivation land area (ha)	Production (ton)	Cultivated Land Area (ha)	Total Production (ton)
2004	41.960	31.470	62.838	37.055
2005	32.134	24.100	61.763	29.072
2006	31.615	20.550	55.893	33.888
2007	39.667	23.800	56.040	28.674
2008	43.416	26.050	47.915	25.277

*Note: Data of producing area in Madura Island were include regency of sumenep, pamekasan and sampang. Source: Anonymous, (2009)

Buying period of each tobacco storehouses in the island were varied, but generally would begin in each mid of August and would be closed about 2 months after (Table 3).

However, the realization of the tobacco planting area in Madura during the last five years (2004 to 2008), were always exceed the quota that had been planned together by local governments, farmers representatives (farmer association) and the cigarette companies (Table 4). It was usually resulted on surplus of production in each year, which caused tobacco prices down, thus farmers complain. Based on East Java Provincial Plantation Office Report, Pamekasan's case for instance, in 2007 as had been set out in East Java Governor Decree, the tobacco areal quota designed for this Regency was 27,917 ha. Yet, the planting realization reached larger than 31,000 ha. Meanwhile for Sumenep in the same year planned for of 11,750 ha, but it attained larger than 19,000 ha, over the quota. During 2009, Sumenep only targeted tobacco planting area of 7583 ha and 22,083 ha for Pamekasan, but it was indicated that the investments had exceed the quota, where in Sumenep larger than 12 thousand hectares, whereas in Pamekasan attained more than 37 thousand hectares (Anonymous, 2009).

The tobacco produced by Madura Island growers were majority supplied to the cigarettes company's channel and only a small portion of its went out of this channel (Santoso, 2001). There were two main market for Madura tobacco, that was as the local supply (local markets), otherwise regional market (for large cigarette companies such as Gudang Garam, Sampurna, Djarum, etc.). From the study it was found that about 75% of the share of tobacco in this area flows into the large cigarette companies, which controls the prices and demand formation for the product (Fig. 3). Due to monopsony and closed trade system, producers or farmers were on weak bargaining position in this market mechanism, when dealing with the companies as a major player. Cigarette companies were dominant in determining the quality issue, the amount of supply needs, the purchase price and distribution channels (Suwarso, 2007). Traders and small cigarette manufacturers were also facing the same problems when they would enter the market, where they had difficulty to determine the price, quantity and quality required.

In this island it was identified that there were two scheme on tobacco trading, namely pasaran (market) trading system and the juragan-bandol (brokers) trading system (Fig. 3). Since, monopsony and closed trading system, caused the parties who understand this intricacies and had privileged from trading system would take an advantage. So that renowned the term as known as the ties between juragan (broker) and bandol (broker subordinate small suppliers). It was dominated tobacco trading in this island and in this market mechanism it is commonly called broker trading system. Whereas, there were two kinds of tobacco badol in this system, which were attached-bandol and unattached-bandol. In acquiring tobacco from farmers, an attached-bandol would receive cash money from the *juragan* as an asset to buy tobacco from farmers. While,

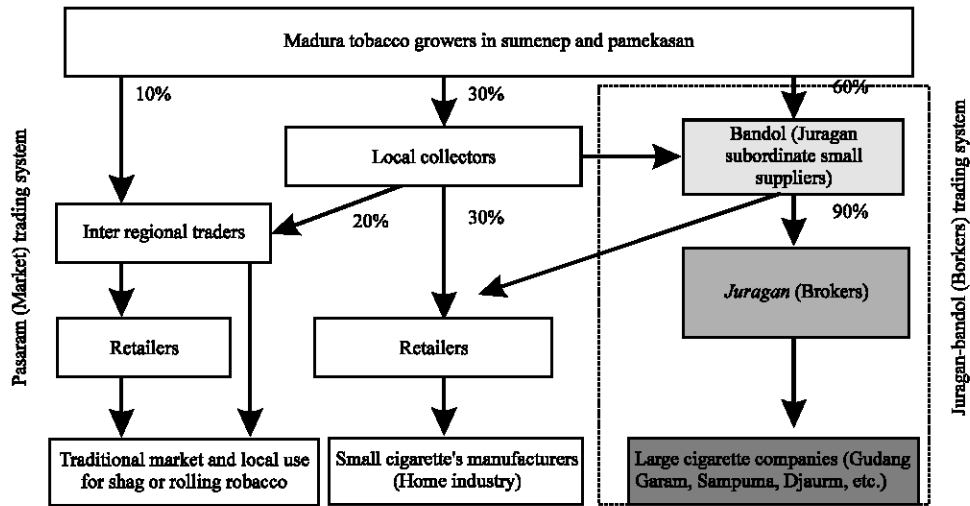


Fig. 3: Madura tobacco trading system (channels, players and market shares). Source: Field survey, 2009

unattached-bandol would use their own capital to buy tobacco from farmers. Government efforts to establish the Village Cooperative Unit or KUD in its Indonesian acronym, had not been able to substitute the juragan and bandol position as the major players in the scheme of tobacco marketing. In the matter of pricing, time management and tobacco trading, Village Cooperative still less competitive than the position of juragan and bandol (Santoso, 2001).

NATIVE TOBACCO INTENSIFICATION PROGRAM

In Sumenep, The Intensification Program had been directed to dry land and upland regions in the form of agricultural equipment assistance, financial support, extension activities and the empowerment of tobacco farmer groups. While, in Pamekasan intensification program conducted through extension activities and Sub-District Tobacco Nursery Management Program or KBTK Program in its Indonesian acronym, both in the wet land area and dry land. KBTP Program provided 2 kg subsidized tobacco seed for each 0.1 ha farmland through farmers group involved in the program as well as fertilizer and pesticides.

The extension activities were only found at farmer groups of intensification program participants, whereas for non-participant farmer group had not been done. The approach of extension in the two regencies were almost the same, that were farmer group meetings and farming technique training. The activities had been conducted regularly once a week and directed by the extension staff from agriculture and plantation office. The subject matters learned in a group sessions were include technique of: (1) land preparation and planting methods for tobacco, (2) application of good fertilization and proper water management practices, (3) tobacco pests and disease control methods and (4) harvest and post harvest Good Handling Practices (GHP) for tobacco commodity.

The increasing of farming productivity, income and efficiency is closely related to production costs (Soekartawi *et al.*, 1984). In this case study, total production costs of tobacco farming of intensification program participants were generally higher than non-participants. For in stance, in Sumenep case production cost per hectare on upland of participated farmers was Rp.6,701,750,-

whereas, for non was only Rp. 6,210,000,-, as well as on dryland farming, production cost per hectare of participated farmer was Rp. 7,134,750,- it was higher compared to Rp. 6,830,500,- for non. It was also occurred in Pamekasan that production cost per hectare on wet land tobacco farming was Rp. 8,365,750,- for participated farmer, whereas for non was only Rp. 7,361,500,-, as well as, on dryland farming, production cost of participated farmer was Rp. 7,401,500,-, which was higher compared to Rp. 6,416,700,- for non. This could be happen because the differences of inputs usage, especially farming equipments and labor employed. However, the additional cost of participated farmers had a significant impact in improving their productivity and income from tobacco farming (Table 5).

The results from Table 5 shown that the intensification program could increase income from tobacco farming in the studied areas. In Sumenep, net profit of tobacco farming for intensification participants in the upland area were about 26% higher than non-participants (Rp. 2,148,250,- for

Table 5: Productivity and financial analysis of participated and non-participated intensification program during the last 1 year (in average)

Descriptions	Participated farmers	Non-participated farmers	Increasing (%)
Sumenep			
Upland			
Productivity (kw/ha)			
Cut tobacco leaves (rajangan)	425	380	12
Dark sun cured (krosok)	70	64	9
Financial (Rp/ha)			
Total production cost	6,701,750	6,210,000	
Total revenue	8,850,000	7,915,000	
Net profit	2,148,250	1,705,000	26
Dry land			
Productivity (kw/ha)			
Cut tobacco leaves (rajangan)	525	450	17
Dark sun cured (krosok)	87	75	16
Financial (Rp/ha)			
Total production cost	7,134,750	6,830,500	
Total revenue	9,885,000	8,475,000	
Net profit	2,750,250	1,644,500	67
Pamekasan			
Wet land			
Productivity (kw/ha)			
Cut tobacco leaves (rajangan)	855	725	18
Dark sun cured (krosok)	420	360	17
Financial (Rp/ha)			
Total production cost	8,365,750	7,361,500	
Total revenue	12,360,000	10,570,000	
Net profit	3,994,250	3,208,500	24
Dry land			
Productivity (kw/ha)			
Cut tobacco leaves (rajangan)	550	480	15
Dark sun cured (krosok)	130	96	35
Financial (Rp/ha)			
Total production cost	7,401,500	6,416,700	
Total revenue		9,120,000	
Net profit	3,148,500	2,703,000	16

Source: Field survey, 2009

participants compared to Rp. 1,705,000,-for non), whereas in the dry land could increase around 67 percent (Rp. 2,750,250,- compared to Rp. 1,644,500,-), While in Pamekasan, net profit of participated farmers were 24% higher compared to non-participants (Rp. 3,994,250,- compared to Rp. 3,208,500,-), whereas in the dry land, intensification participants net profit were 16% higher than non-participants (Rp. 3,148,500,- compared to Rp. 2,703,000,-).

CONCLUSION

Madura tobacco is a local product which has a specific quality that should be maintained in order to provide optimal benefits for farmers who had selected as a farming commodity. Development of Madura tobacco's agribusiness must be controlled in order to maintain economic and social stability in rural areas and to meet the needs of the cigarette manufacturers and consumers. Therefore, Madura tobacco supply chain approach should considered the equilibrium of market demand, quality required and quota policy that agreed by local governments, farmers' representatives and cigarette companies.

In addition, to maintaining the farmers' prosperity and sustainability of the tobacco farming, it needs to strengthening communication and relationships among market players within the supply chain. It is also needs to continue in improving the professionalism of farmers' expertise through the tobacco intensification program. This program proved had been successful in increasing productivity and incomes of tobacco farmers in the studied areas.

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