

## FACTORS OF SMALLHOLDERS COFFEE FARMERS' IMPLEMENTATION IN DIVERSIFICATION POSTHARVEST IN JEMBER REGENCY

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### Abstract

Agricultural development aims to develop system of sustainable agriculture. Coffee agribusiness development must be full supported with post-harvest sectors. The aims of the research were (1) to identify the implementation of diversification post-harvest technology by smallholders coffee farmers (2) to analyze the factors of smallholders coffee farmers' Capability of implementation diversification post-harvest. The research method used descriptive-correlation. The analysis of the data was performed by using the correlation test of Tau b Kendall. The method of the research used was a survey using 100 respondents from all of center smallholders coffee farmers in Jember Regency. The result showed that; (1) Capability level of smallholders coffee farmers were average level, (2) the factors of smallholders coffee farmers' Capability of implementation diversification post-harvest were internal factors of farmer's characteristics and external factors of farmer's characteristics.

*Keywords: Coffee bean, Capability, postharvest technology, smallholders Robusta coffee farmers.*

### Introduction

The agriculture sector including plantation has many good and profitable agribusiness development potential. Development potential of plantation commodities in Indonesia is very large such as the development of coffee, cocoa, rubber, tobacco and palm oil and other commodities. But in its development, there are some problems related to strategy and institutional development. The Government should establish an indirect policy to create an enabling concept, especially policies that directly promote the development of agribusiness in the aspects of the partnership, finance, marketing and information technology (Rachbini, 1997).

Coffee agribusiness development in Jember Regency need to be supported fully by the readiness of farmers in providing facilities and processing suitable methods for the farmers' condition, so they have a Capability in producing coffee beans and its diversification with the quality as required by the National Standards of Indonesia. The existence of a certain quality assurance, followed by avail capability in sufficient quantity and timely supply and sustain capability is a prerequisite for coffee beans and its processed products can be marketed at a favorable price.

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To support agro-industries in the future era, it is time for the improvement of coffee bean quality by integrates with secondary industrial development. According to the Coffee and Cocoa Research Center, in Mulato and Widyotomo Indonesia (2002), the total of national coffee production reached more than 600,000 tons per year, but it is only 20 percents are processed and marketed in the secondary forms such as roasted coffee, coffee powder, fast drink coffee and some other derivative products. This happens because coffee farmers have not been fully able and motivated to do the primary and secondary processing of products by agribusiness approach. Though the secondary coffee product development can provide greater added value, opening a good market opportunities and creates employments in rural areas.

It is time to direct an improvement quality effort of coffee beans through agribusiness approach. With this scheme, farmers are no longer seen as individuals with skills in limited production. The concept of agribusiness based on the empowerment of farmers to have the motivation and qualified Capability in coffee farming, both individually and groups. Therefore, the strategic effort of the coffee agribusiness development is improving the Capability of the adoption of technological diversification of primary and secondary processing by agribusiness approach or its harvest and post-harvest, so farmers are able to produce competitive products and high efficiency. The purpose of this study were: (1) to identify the farmers' Capability in the diversification of primary and secondary processing of coffee by agribusiness approach, (2) to identify important factors that relate to the farmers' Capability in the diversification of primary and secondary processing of coffee.

### **Theory Framework**

One important focus in agricultural development is the development of human resources. The embodiment of human resources development can be focused on improving individual skills and it can be started from the groups. Based on Marliati research (2008), the farmers' abilities were all owned by farmers (knowledge, skills and positive attitudes) to be able to independently run a farm or agribusiness. Farmers who had the capacity were expected becoming independent farmers. Independent farmers were the farmers who were not only able to do what is the best for himself and his family, but also were able to utilize all the potential they had optimally for their welfare. According to Gibson et al. (1996), the farmers' Capability could be seen and could be done in an institution or group that

embodied community development. The roles of the group helped members to develop their potential they already had so they were able to be creative and independent in fulfilling their life. Puspadi (2002) also argued that competence was the Capability to carry out tasks effectively and competence was a reflection of the performance. The Capability to work should be owned by the group leader and group members. Actualization of the Capability of the members could be seen from the members' Capability when they did the program carried out by groups or from the application of technology they accepted. The Capability of group members could be seen from the activities of groups such as the application of technological innovation, utilization of farm tools, and the Capability to harvest, postharvest and marketing.

The decision to adopt or implement the innovation did not come just because consideration of the relative advantages. There were other considerations that must be performed by the adopter, the harmony or compatibility. Compatibility was the degree of harmony between the innovations that would integrate with values, past experiences and needs of potential adopters. An idea that had the consistency would reduce the uncertainty for the prospective adopter so there was no doubt to adopt. An innovation must have harmony with (1) the system of social values and beliefs of the local culture, (2) the ideas introduced earlier, and (3) the need for innovation adopter (Hubeis 2007). Innovation decision process was a gradually individual or organization activity, however, the limits of each phase was not so clear. In this decision process, Rogers (2003) proposed a model of innovation decision process which was conceptualized in five stages, namely (1) stage of knowledge, (2) stages of persuasion, (3) stages of the decision, (4) stages of implementation and (5) confirmation phase.

### **Research Methods**

This research had been conducted in 2011. The study was designed as a descriptive correlation study with a survey method. The research area was determined intentionally (purposively method) in 5 (five) districts with the widest area and highest production of coffee in Jember Regency and they have potential coffee farmers in processing coffee by primary and secondary. The respondents were drawn by Simple Random sampling techniques as much as 100. The data were analyzed descriptively and *Tau b\_Kendall* correlation.

**Results and Discussion**

**A. Diversified Development of Primary and Secondary Coffee Processing**

As a driver of regional economy, coffee plantations in Jember Regency needs a breakthrough in efforts to diversify coffee products. Based on the survey in Jember, most of people still sold dry beans coffee. It was very few people did wet process (primary diversification process) and processing became powder coffee and other ready consumable products (secondary diversification). In addition, the exist constraints not only the capital to purchase processing facilities and infrastructure which was quite expensive but there were also constraints in the form of marketing. The coffee farmers owned the limit area and capital and they have no willingness to take investment risks for processing if it was not certain refined products accepted by the market. It could be seen from the percentage ownership of facilities and infrastructure of primary and secondary processing of coffee that most people (57.75%) belong to the group or the common property, (32.75%) said none at all, and they who claimed to have only (9, 48%).

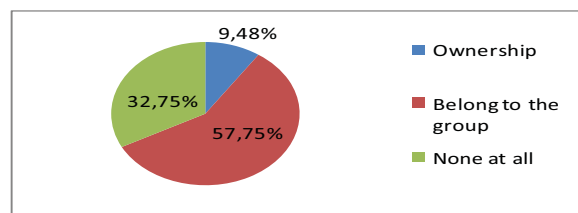


Figure 1. Ownership percentage of facilities and infrastructure of primary and secondary processing coffee

Based on research data, almost coffee farmers in Jember Regency had no complete equipment in wet processing. Owning group was (71.55%), and they who claimed not to have both individuals and group was (28.45%). This means that the wet processing tools were hard to get and it was conducted by farmers individually. In addition, the wet processing required abundant water facilities so it was necessary to build an adequate storage water facility supply system.

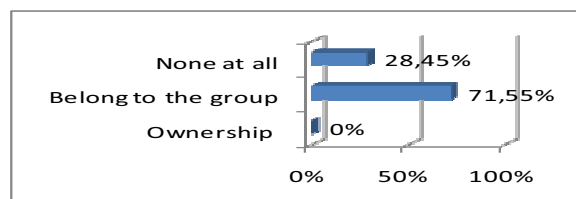


Figure 2. Ownership percentage of wet coffee processing equipment

Generally, coffee growers could make the coffee powder, but with a simple manual equipment or rollers with a very limited production capacity. So the secondary processed products were only to fulfill their own and their families needs, not sold to the market. Based on information obtained from the area, it was rare a coffee merchant who requested product in powder form. Those market limitation access that hold ups farmers to process the coffee in secondary processing. Based on existing data, (46.55%) of coffee farmers in Jember Regency already had a secondary processing tool but as a group, (4.31%) had individually and (49.13%) had no tool both individually or in groups.

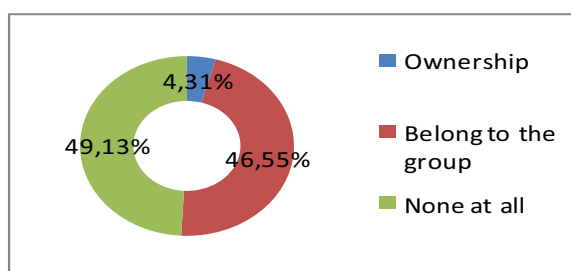


Figure 3. Ownership percentage of coffee secondary processing equipment

## B. Farmers' Capability in the Diversification of Primary and Secondary Coffee Processing

Plantation development was aimed to develop a sustainable plantation system and improved the quality of human resources as a support system. Quality improvement of human resources could be done by improving the farmers' competence in farming along with the development of science and technology. Primary and secondary processing Capability were limited by harvesting and post harvesting capabilities in the coffee farm. Members' Capability in the technique of harvesting was measured by four indicators. These were: (1) capability of coffee harvesting in accordance with the level of harvesting time (beginning, middle, finishing), (2) capability of coffee harvesting when it was really ripe and red, (3) capability of coffee harvesting orderly, one by one and clean, and (4) always prepare harvesting equipment such as ladder, baskets and other quotes. Members' capability of post-harvest techniques is measured by five indicators. These indicators were: (1) capable to apply (the drainage process, stripping, and so on) coffee as soon as possible after harvest was complete; (2) skilled and capable of doing good coffee processing in wet or dry techniques; (3) always keep the quality of coffee with curing ( drying over, cleaning, and hulling) in accordance to the procedures, (4) capable of storing the processed coffee in

warehouses in accordance to the standards and (5) capable of sorting and understood the standards of coffee's quality. Based on the analysis result of coffee's farmer capability level in the processing of primary and secondary products were: medium (66.97%), much lower category (2.59%) and high categories (28.45%). For knowing more detail it could be seen in the chart below:

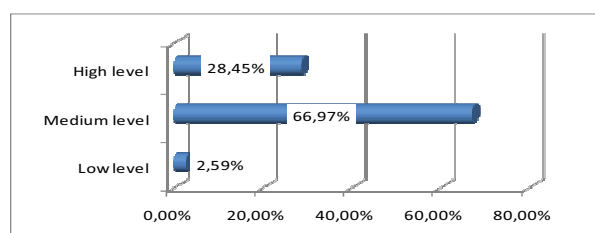


Figure 4. Capability level of coffee farmers in the primary and secondary processing products.

### **C. The Relations between Internal and External Factors to the Farmer's Capability in the Diversification of Implementation of Primary and Secondary Coffee Processing.**

Internal factors related to positive and significant or very significant to the farmers' Capability by diversify application of primary and secondary coffee processing were non-formal education, coffee's farming experiences, the acreage and access of innovation and information. Non-formal education positively and highly significant related to the farmers' capability. This meant that the more intensive and better quality of non-formal education for farmers such as courses, coffee farming education and training, seminars and other it would enhance the Capability of farmers to diversify the application of primary and secondary coffee processing. Farmers' experiences in farming were highly significant and had a positive relation to the farmers' Capability. It means more and better for the farmer has many farming experiences would enhance the farmers' Capability to apply a diversification in primary and secondary coffee processing. Farmers' land area positively and highly significant related to the farmers' Capability means more widespread the coffee crop managed by the farmers, it would increase the farmers' Capability to diversify apply the primary and secondary coffee processing. This because the vastland will further enhance the production, which means increased revenue and efficiency in farming. Easy access of farmers in fulfill the farming's innovation-information had a positive and very significant relation to the farmer's Capability meant more and better innovation-

information farming to farmers will increase farmers' Capability to apply a diversification of primary and secondary coffee processing.

External factors related to positive and significant or very significant to the farmers' Capability in diversify application of primary and secondary coffee processing were the infrastructure and the nature of innovation. Avail capability of farming infrastructure related to positive and significant or very significant to the farmer's capability meant better avail capability of infrastructure, especially for primary and secondary processing for farmers will increase the farmer's capability to diversify application of primary and secondary coffee processing. Many farmers were reluctant to do primary and secondary processing due to lack of avail capability of existing infrastructure, because it was difficult to get and expensive for them. There were five innovations that related each other empirically but different conceptually. The fifth of these innovations were (1) relative advantage, (2) consistency or compatibility, (3) the complexity, (4) experimentation and (5) visibility. Relative advantage was a degree which new ideas were considered as a better thing than the old idea that had been adopted or already existed before. Level of profits here could be measured by economic and other benefits such as social status, prestige and so on. The tendency of innovation was very significant and positively related to the farmer's Capability meant more profitable, easy, in harmony with the norms and customs, the results could be tried and can be seen so it will enhance farmers' Capability to diversify application of primary and secondary coffee processing.

Table 1. Internal And External Factors Relate To Farmer's Capcapability In The Implementation Of Diversify Primary And Secondary Coffee Processing.

Internal Factors	Capabilities	Eksternal Factors	Capabilities
Age	0.018	Infrastructure	0.176*
Formal Education	0.126	Capital	0.159
Non-formal Education	0.531**	Extension	0.091
Experiences	0.732**	Market	0.042
Number of Families	-0.134	Nature of Innovation	0.212**
Land	0.184*		
Access to information innovations	0.553**		

*Descriptions:*

\* *Correlation is significant at the 0.05 level (2-tailed): Kendall's tau\_b Analysis*

\*\* *Correlation is significant at the 0:01 level (2-tailed): Kendall's tau\_b Analysis*

## Conclusions

The Capability of coffee farmers in Jember Regency in doing the processing of primary and secondary products belong to medium category so it needed to be improved and should get a more intensive coaching. Internal factors related to positive and significant or very significant to the farmers' Capability in diversify the application of primary and secondary coffee processing were non-formal education, experience coffee farming, the acreage of land and innovation- information access. External factors related to positive and significant or very significant to the farmers' Capability in diversify the application of primary and secondary coffee processing were the infrastructure and the innovation.

## Acknowledgment

This research and paper supported by IMHERE Project (IBRD Loan No 4789-IND & IDA Loan No 4077-IND).

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