

# The Influence of Traceability of Kerinci Coffee Agricultural Products on Agricultural Value Added in Jambi Province

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## ABSTRACT

**Purpose:** The purpose of this study is to determine the effect of the supply chain of Kerinci coffee agricultural products on the value added of the agricultural economy of Jambi Province.

**Design/methodology/approach:** To improve coffee supply chain performance, innovation is needed through a value added approach between business actors using a transparency approach and supply chain management.

**Findings:** The trend of coffee commodity demand continues to increase with an average value of coffee consumption needs per year of 1.2 kg per capita / year in 2019, even Indonesia is the 3rd largest coffee producer in the world.

**Research limitations/implications:** Along with the increase in people's income, the price factor is no longer the main thing to consider the decision to consume an item.

**Originality/value:** This paper is original

**Paper type:** Research Paper

**Keywords :** Traceability, value added, ekonomi pertanian Provinsi Jambi

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## I. INTRODUCTION

Some of the impacts of globalization in the agricultural economy, especially agribusiness, which have strategic value, especially in providing fulfillment of domestic and export needs. Kerinci coffee which has become an industry that has complete components from the upstream to downstream sectors is expected to be able to contribute to the gross domestic product (GDP) of the coffee sub-sector towards agriculture to the national GDP. However, like the commodity business in general, the actors in the supply chain mostly act relatively independently or are single players from one another. As a result, each actor acts based on the very limited information they have, which ultimately leads to distortion of information along the supply chain. This distortion of information causes the fulfillment of market demand and opportunities to be less effective and triggers very high price fluctuations. Therefore, to improve the performance of the coffee supply chain, innovation is needed through a value added approach between business actors using a transparency and supply chain management approach.

The trend of the need for coffee commodities which continues to increase with the value of the need for coffee consumption on average per year is 1.2 kg per capita / year in 2019, even Indonesia is the 3rd largest coffee producer in the world. Along with the increase in people's income, the price factor is no longer the main thing to consider the decision to consume an item. More than that, potential consumers pay attention to the source, value and quality of the goods they consume, including the transparency of their processing. In addition to the transparency of the processing process, potential consumers also need valid data that can be used as a reference for them to make decisions to consume these goods. Based on the description of the background above, the problems that will be discussed in this study are: How is the influence of the Kerinci coffee supply chain on the value added of the agricultural economy of Jambi Province? Based on the background and problem formulation that has been described.

## II. LITERATUR REVIEW

### A. Value Chain Analysis

Definition I according to Govindarajan & Shank (1992); Porter (2001), defines VCA, is a tool to understand the value chain that forms a product. This value chain is based on the activities carried out, from raw materials to the hands of consumers, including after-sales service. Porter (1985) explains that Value-chain Analysis is a strategic analysis tool used to better understand competitive advantage, to identify where customer value can be increased or cost reduced, and to better understand the company's relationship with suppliers/suppliers, customers, and other companies in the industry. Value Chain identifies and connects various strategic activities in the company (Hansen & Mowen, 2000). The nature of the value chain depends on the nature of the industry and varies for manufacturing companies, service companies and non-profit organizations.

Another definition from the literature Womack et al. (1990) defines value chain analysis (VCA) as follows: "...is a technique widely applied in the fields of operations management, process, engineering and supply chain process." management, for the analysis improvement of resource utilization and product flow within manufacturing process."

The purpose of value chain analysis is to identify the stages of the value chain where corporations can increase value for consumers or to increase transparency and even reduce costs. Reducing costs or increasing value added can make a company more competitive. The Low Cost strategy emphasizes selling prices that are lower than competitors to attract consumers. Consequently, the company must carry out strict cost control. Costs are minimized as optimally as possible so that products can be sold at lower prices than competitors. This will be an attraction and incentive for consumers to make a decision to buy the product. Low cost is a competitive advantage for the company. Each corporation develops one or more of the parts in the value chain, based on a strategic analysis of its competitive advantage. Value Chain analysis has three stages as follows:

#### 1. Identifying Value chain activities,

The company identifies value chain activities that must be carried out by the company in the process of design, manufacture, and service to customers. Several companies may be involved in a single activity or part of the total activity. Value chain development varies depending on the type of industry. For example, in an industrial company, the focus is on operations and advertising and promotion while on raw materials and manufacturing processes. Activities should be defined at a relatively detailed operating level, i.e. the level for a business or process that is large enough to be managed as a separate business activity (impact output of the process has a "market value"). For example, in the manufacture of a chip or computer is considered an activity (output that has a market), then the operation of packing a chip or computer board is not an activity in the manufacturing value chain analysis.

#### 2. Identifying the cost drivers for each value activity

The cost driver is a factor that changes the total cost, therefore the goal at this stage is to identify activities in which the company has both current and potential cost advantages. For example, an insurance agent may find that an important cost driver is registration fees by customer. Strategic cost driver information can lead the insurance agent to seek ways to reduce or eliminate these costs, perhaps by employing the services of another company engaged in computer services to handle data processing tasks, thereby reducing costs and maintaining or increasing competitive advantage.

#### 3. Develop competitive advantage by reducing costs or adding value

At this stage the company determines the nature of its potential and current competitive advantage by studying the value activities and cost drivers identified above. In doing so, the company must be able to do the following:

- a. Identifying competitive advantages Value activity analysis can help management to understand better about the strategic competitive advantages of the company and can find out the company's position more precisely in the overall industry value chain. For example, in a computer industry, certain companies focus on innovative designs, while others focus on low-cost, low-cost manufacturing.

- b. Identify opportunities for added value

Value activity analysis can help identify activities where a company can add significant value to customers. For example, there are now many factories that process food and packaging factories that are located close to their biggest customers so that they can make deliveries quickly and at low costs.

Identifying opportunities to reduce costs A study of value activities and cost drivers can help company management determine which parts of the value chain are not competitive for the company. For example, moving the location of a manufacturing plant closer to consumers, in order to save on transportation costs, and also shipping to consumers much faster. In short, value chain analysis provides a company with a strategic competitive advantage by helping to find opportunities to add value to customers by lowering the cost of products or services. Furthermore, value chain analysis can be used to determine at which points in the value chain can reduce costs or provide added value (value added) otherwise in the acquisition of raw materials.

In a complete product chain, suppliers, manufacturing and marketing as well as after-sales handling are carried out by different companies. They may even be independent of each other. However, the activities to be carried out by each stage must be viewed in a broad context. These activities are separate but they have a relationship, namely the formation of value for the resulting product. Therefore these activities are not independent but interdependent. Each party requires the value of the other party to maximize the value of the resulting product. The company must identify the company's position in the value chain, whether it is in the supplier, manufacturing, marketing or after-sales section. It is important to understand the characteristics of the industry and its existing competitors.

### **B. Value Added**

The concept of value chain must be distinguished from the concept of value added. The concept of value added is an analysis of added value starting from the purchase of raw materials to the finished product. The concept of value added emphasizes the addition of product value during the process within the company. All non-value added costs will be eliminated and the company will focus on things that have value in the product. This concept results in losses for the company because the analysis is too slow to start, the analysis starts when raw materials are purchased and does not pay attention to the time of value formation that occurs in the activities carried out by the raw material supplier, and is finished too quickly, the analysis ends when the product is finished processing and ignores the distribution process. product into the hands of the product and handling thereafter (Govindarajan & Shank, 1992).

This causes the company to lose the opportunity to explore its relationship with suppliers and consumers to establish its position in the market competition. A survey conducted on managers in New Zealand shows that their company has weaknesses in terms of: the quality of raw materials is not good, when the delivery of raw materials is uncertain, raw material management is still lacking and handling customer satisfaction is still lacking.

This weakness occurs because the company does not explore relationships with suppliers and consumers. Good relationships with suppliers can provide benefits for the company in terms of improving the quality of raw materials, timely delivery of raw materials and lower costs. While the relationship with consumers can provide benefits for the company in consumer loyalty to the company's products. On the other hand, value chain analysis is an analysis of activities that generate value, both from within and outside the company. The value chain concept provides a perspective of the company's location in the industrial value chain. The concept of value chain is broader than value added and it can be said that value added is part of the value chain.

### **C. Supply Chain Management (SCM)**

The emergence of SCM is motivated by main things, namely: The traditional adversarial logistics management practice in the modern era is no longer relevant, because it cannot create a competitive advantage. Changes in the business environment are getting faster with increasingly fierce competition. The development of a dynamic industrial environment in the current global era is a trigger for many corporate organizations to explore their potential, as well as identify key success factors to excel in increasingly competitive competition.

Technology that is also developing rapidly becomes a force to be applied in a competitive climate. Supply Chain Management (SCM) is actually not a new concept. According to Jebarus (2001) SCM is a further development of product distribution management to meet consumer needs. This concept emphasizes an integrated pattern that involves the process of product flow from suppliers, manufacturers, retailers to consumers. From here the activities of suppliers to final consumers are in one unit without large barriers, so that the information mechanism between the various elements takes place in a transparent manner. SCM is a concept concerning product distribution patterns that can replace distribution patterns, production schedules and logistics.

### **D. Big Picture Mapping**

Big Picture mapping is a tool adopted from Toyota's production system, it is a tool that can be used to describe a system as a whole and its value streams within the company. So that later an overview of the information flow and physical flow of the existing system will be obtained, identify where the waste occurs, and describe the required lead time based on each process characteristic that occurs. The steps in describing Big Picture Mapping are as follows:

1. Describe the overall customer needs containing the product requested by the customer, the number of products desired, how many products are shipped at a time, how often the delivery is made, the packaging is done,
2. Describe the flow of information from the customer to the supplier which contains, among other things: types of forecasting and supplier cancellation information by the customer, organization or department that

- provides information to the company, how long the information takes to appear until it is processed, what information is submitted to the supplier and the required orders,
3. Describe the physical flow, which can be in the form of: the main steps of the physical flow within the company, how long the physical flow is carried out, at which point the inventory is carried out, at which point the inspection process is carried out and what is the defect rate, rework cycle, cycle time of each point, how many products created and transferred at each point, the completion time of each operation, how many hours per day each work station works, the time to move at the work station, where inventory is held and how much, as well as bottleneck points that occur,
  4. Connect the information flow and physical flow with arrows that can provide information on the schedule used, work instructions generated, from and to what information and instructions are sent, when and where problems usually occur in the physical flow, and
  5. Complete the map or picture of the flow of information and physical flow by adding lead time and value adding time under the flow description made.

### III. RESEARCH METHOD

#### A. Value Added Analysis

According to Hayami et al (1987) in Sudiyono (2002), there are two ways to calculate added value, namely added value for processing and added value for marketing. The factors that affect the added value for processing can be categorized into two, namely technical factors and market factors. The influencing technical factors are production capacity, amount of raw materials, and labor. While the influencing market factors are output prices, labor wages, raw material prices and the value of other inputs.

According to Sudiyono (2002), the amount of added value due to the processing is obtained from reducing the cost of raw materials and other inputs to the value of the resulting product, excluding labor. In other words, added value describes the rewards for labor, capital and management which can be expressed mathematically as follows:

$$\text{Value Added} = f ( K, B, I, U, H, h, L )$$

Where :

K : Production Capacity (Kg)

B : Raw materials used (Kg)

Q : Labor used (HOK)

U : Labor wages (Rp)

H : Output price (Rp/Kg)

H : Price of raw materials (Rp)

L : Other input values

From the results of the calculations above, the following information can be obtained:

1. Estimated value added (Rp),
2. Value added ratio (%),
3. Benefits for labor (Rp), and
4. Return on capital and management (Rp)

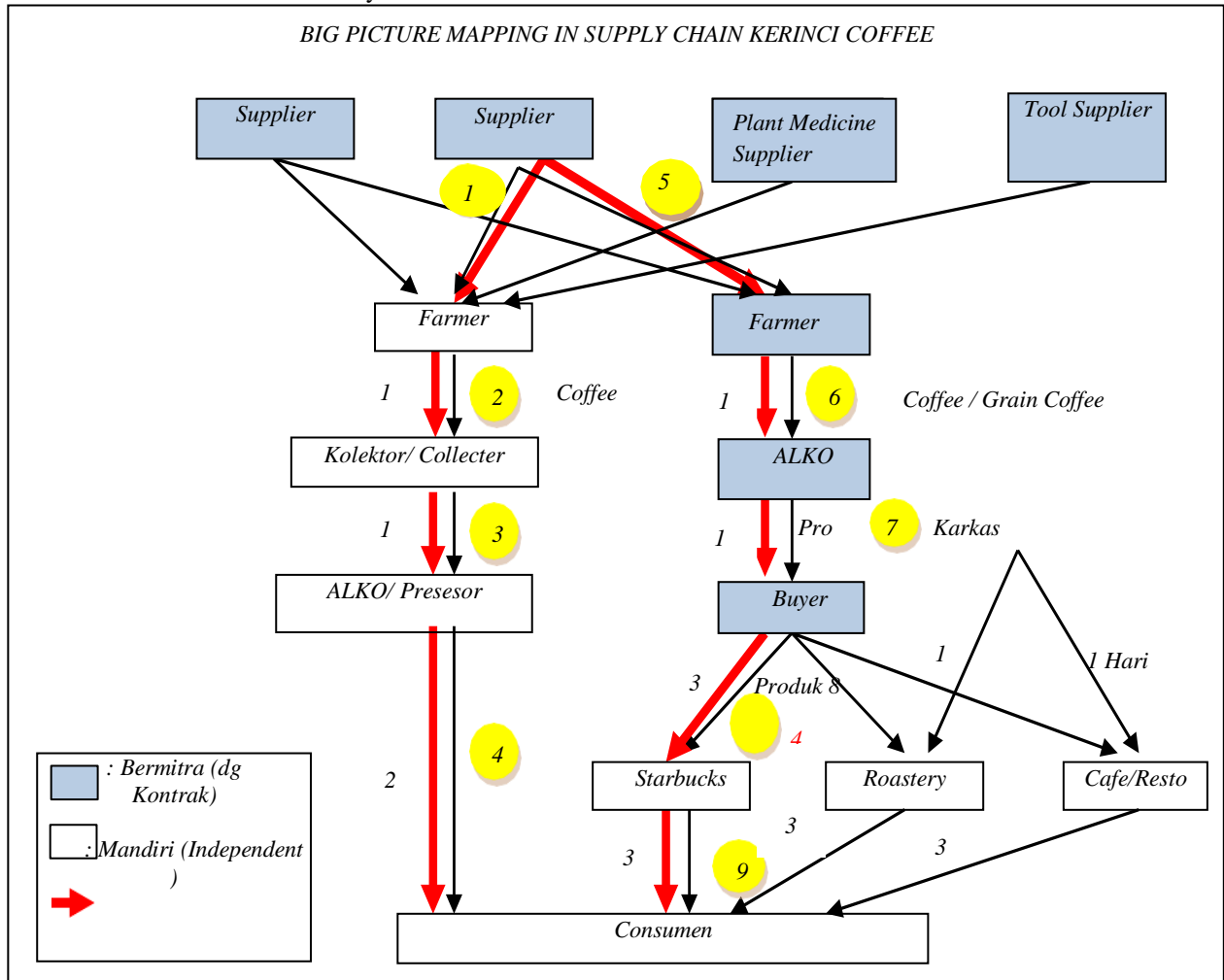
The advantages of the analysis using the Hayami method are:

5. It can be seen the amount of added value, output value, and productivity,
  6. It can be seen the amount of remuneration to the owners of the factors of production, and
  7. This principle can also be applied to processing subsystems, such as marketing activities.
- Of the several advantages of the Hayami method above, this method also has weaknesses, namely:
8. This approach is generally not appropriate if applied to a business unit that produces many products from one type of raw material,
  9. Unable to explain by-products, and
  10. It is difficult to determine a comparison that can be used to conclude whether the remuneration for the owner of the factors of production is appropriate.

In the Hayami method, the conversion factor shows the number of processed products produced from one kilogram of raw materials. The labor coefficient shows the amount of direct labor required to process one unit of input. The value of the product shows the value of the output produced from one unit of input. The value of other inputs includes the value of all sacrifices other than raw materials and direct labor used during production.

### IV. DISCUSSION

Based on the results of 2019 statistical data, the total population of coffee farmers in Kerinci Regency is 415 farmers who are members of the Arabica Farmer Cooperative. Ten farmer groups have been interviewed and surveyed directly in the field, in order to obtain information about the value chain of this coffee supply from upstream to downstream industries. The data is then mapped into the Big Picture mapping shown in Figure 3 and used as a basis for further analysis.



From the mapping results in the big picture mapping above, it is known the actors in the Kopi Kerinci supply chain. Including the following :

a. Upstream industry

Industries that play a role here are industries that play a role in supplying seeds, organic fertilizers, red cherries, coffee grain.

b. Coffee Farmer

Farmers here are divided into 2 types, namely independent farmers and partner farmers. Independent farmers are farmers who finance and manage all the needs needed during the fattening process. Meanwhile, partner farmers are breeders who have collaborated with the Arabica Tani Cooperative using CV ALKO Sumatra Coffee in national and export sales.

#### A. Value Added Calculation

Value added analysis is used to determine the amount of added value contained in coffee. From 6 partners and 4 independent farmers, the average cost calculation results were obtained. Can be seen in the following table:

*Table 1. Analysis of the added value of each member of the Kerinci coffee supply chain*

Variabel	Value			
	Independent Farmer	Partner Farmer	Collector	ALKO
<i>I. Output, Input, dan Price</i>				
1. Output ( Kg )	1000	1500	500	215
2. Input (Kg)	1000	1500	1500	500
3. Workforce (HOK)	4	6	2	1
4. Conversion Factors	1	1	0,3	0,7
5. Labor Coefficient (HOK)	250	250	250	215
6. Output Price (Rp/Kg)	6200	7500	22000	85000
7. Direct Labor Wages (Rp/HOK)	1500	1500	4000	3200
<i>II. Acceptance And Profit</i>				
8. Raw Material Price (Rp/Kg)	2500	2500	7500	22000
9. Other Input Donations (Rp/Kg)	1225	1225	500	8000
10. Output Value (Rp/Kg)	6200	7500	22000	85000
11. a. Added Value (Rp/Kg)	3700	5000	14000	32400
b. Value Added Ratio (%)	59,68	66,67	63,64	38,11
12. a. Direct Labor Income (Rp/Kg)	1500	1500	4000	3200
b. Share of Labor (%)	0,24	0,2	0,18	0,0376
13. a. Advantage (Rp/Kg)	3700	5000	14000	32400
b. Profit Rate (%)	40,32	66,67	63,64	38,11
<i>III. Reply to the Owner of Production Factors</i>				
14. Margin (Rp/Kg)	3700	5000	14000	32400

a. Direct Labor Income (%)	24,19	20	18	3,76
b. Other Input Donations (%)	19,75	16,33	18,18	3,76
c. Company Owner's Profits (%)	56,06	63,67	63,82	92,48

Source: primary data, results of field studies. 2021.

From the analysis of the added value of each member of the coffee supply chain, it can be seen that this business is quite profitable. This can be seen from the Profit Percentage Level for each member which is almost 56.06 – 92.48%. When viewed from the added value, independent farmers and partner farmers have added value that is not much different, namely 56.06% for independent farmers and 63.67% for partner farmers. Meanwhile, for Collectors/Collectors and ALKO/Processors, they can provide an added value of Rp. 32000/kg of raw materials while the collectors have an added value of Rp. 14,000/kg of raw materials.

In this coffee supply value chain, certain events that cause selling prices to fluctuate, for example near the main harvest, coffee prices are usually relatively low and stable. For feed prices still tend to be stable. Good harvest quality for farmers will affect the yield of green beans/green coffee beans (ready to sell). In the analysis of the Big Picture Mapping that has been made, it can be seen that the waiting time is quite long in the process from coffee grain to green beans.

## V. CLOSING

1. From the results of this study, it is possible to map the coffee agribusiness supply chain with a value chain analysis approach as evidenced by images from Big Picture Mapping,
2. From the results of the big picture mapping, it can be seen the members of the value chain. Among them are several industries as farmers, collectors / collectors, processors / ALKO, and
3. From the analysis of the added value of each supply chain member using the Hayami method, it is known that partner breeders have a profit percentage of 56.06%, Mandiri breeders have a profit percentage of 63.67%, collectors have a profit percentage of 63.83% and sausage processing processor has a profit percentage of 92.48%.

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