

ANALYSIS OF THE ADDED VALUE OF HONEY IN INDONESIA (CASE STUDY AT PT. KEMBANG JOYO SRIWIJAYA)

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ABSTRACT

The research was conducted to analyze the added value of agroindustry in the honey supply chain. Case study research method. Research respondents consisted of beekeepers, collectors, agroindustry, retailers, and consumers. Data analysis using quantitative descriptive and added value using the modified Hayami method. The results showed two supply chain lines of honey, namely channel I starting from breeders, collectors, agroindustry, retailers, and consumers, and channel II starting from farmers, agroindustry, retailers, and consumers. SI honey has better parameters than ipomoea honey and NTT forest honey when viewed from the efficiency of labor, added value, selling price, and conversion factor.

Keywords: Added Value, Agroindustry, Honey

INTRODUCTION

Honey is a natural liquid that generally has a sweet taste produced by *Apis mellifera* or *Apis dorsata* bees from plant flower extracts (floral nectar) or other parts of plants (different flora). Stingless bee honey is a natural liquid that generally has a sweet and sour taste produced by stingless bees (*Trigona*), both wild and cultivated from plant flower extracts (floral nectar) or other parts of plants (extrafloral). Honey is very good for health because it contains carbohydrates in the form of sugar fructose (about 38.5%), glucose (about 31.0%), maltose, sucrose, vitamins, minerals, and organic acids (Martos et al., 2000; Gheldof et al., 2002). Indonesia is one of the countries in the Asian continent with a significant potential for honey production due to various ecological and climatic conditions.

The forests in Indonesia have a wide variety of plant species that provide a surplus of nectar and pollen to foraging bees. Indonesia's forest area is 96.4 million hectares, or 51.53 percent of Indonesia's land area (BPS, 2020), so that the potential for honey development in Indonesia is quite significant. However, honey production in Indonesia has not been fully exploited. The Directorate General of Watershed Management and Social Forestry (2016) explained that Indonesia's honey production has only reached around 362,203.70 liters/year or equivalent to 507.1 tons/year. This figure is considered unable to keep up with the demand for honey on a national scale which is still very high. The National Development Planning Agency (2013) projection explains that the population of Indonesia in 2018 reached 265 million people, and the assumption of per capita honey consumption in Indonesia is 30 g/year, so 8,010 tons/year of honey are needed to meet national needs. The increase in domestic demand for honey that has

not been matched by the ability of the Indonesian beekeeping industry has created a wide-open market opportunity for the honeybee business.

PT Kembang Joyo Sriwijaya (PT. KJS) is a company engaged in beekeeping and production of honey, royal jelly, bee pollen, and propolis with a honey production capacity of 4,000 liters/month. As a growing honey processing company in East Java, product quality improvement is created through the company's activities. These activities provide value to the products produced to add value from raw materials to finished products. The existence of these activities can be seen from the value chain at PT KJS. The raw materials obtained from farmers have increased in value with further handling at PT KJS. Distribution of products into the hands of consumers is done through intermediaries, namely retail or directly by ordering online.

The honey processing industry is at the core because of the flow of material (honey) and the process of adding value. Processing honey products through agro-industry activities can create added-value. The magnitude of this added value is obtained from reducing the cost of raw materials and other inputs (excluding labor) to the value of the resulting product. Agroindustry is one of the subsystems that, together with other subsystems, form agribusiness. The agribusiness system consists of input subsystems (upstream agro-industry), farming (agriculture), output systems (downstream agro-industry), marketing, and support. Thus, agro-industry development will increase production and agricultural products' prices and can produce added value for agricultural products (Mokodongan et al., 2017). Agroindustry activities aim to add value to a commodity that can increase the usefulness of that commodity. Value added is the added-value of a commodity because it undergoes a processing, transportation or storage process in a production (Sihombing & Sumarauw, 2015).

One crucial element of business sustainability is establishing a supply chain management (SCM) system for the agribusiness from producers to consumers (Astuti et al., 2010). The supply chain is a network consisting of several business actors in which there is a flow of products, information, and finance (Sari, 2013). The implementation of various activities in the supply chain involves various parties, namely farmers, collectors, marketing institutions, value chains consisting of various activities in converting inputs into outputs. For example, members of the supply chain in marketing honey form a marketing system in which there is a marketing flow, where at each level, there will be a different added value. The research is expected to provide an overview for all market players involved in marketing honey. The business practices and policies carried out can provide added value for all parties involved in the honey supply process, from farmers to final consumers. Therefore, the aim of the researcher

LITERATURE REVIEW

Agribusiness

Agribusiness is an activity related to the handling of agricultural commodities which includes the production chain, processing inputs and outputs of production (agro-industry), marketing of agribusiness products, and supporting institutions for agribusiness activities (Mrówczyńska-Kamińska & Bajan, 2019). Agribusiness is seen as a driving force for agricultural development, therefore agribusiness is expected to play an important role in regional development activities and economic growth of a region (Brenes et al., 2020). The agribusiness system is a system that includes input, production and distribution components by itself, agribusiness becomes a system, namely as an organizational unit that carries out the production function. Companies that manage agribusiness commodities have competitive advantages that

can grow bigger, on the other hand, agribusiness companies that do not have competitive advantages cannot live long (Hinson et al., 2019). For this reason, in carrying out these agribusiness activities, it is necessary to carry out the concept of sustainability. Agribusiness can also be viewed as an agricultural system that has several sub-system components, namely the farming subsystem that produces raw materials, the agricultural product processing subsystem, and the agricultural product marketing subsystem (Carlucci et al., 2021).

Entrepreneurship

Entrepreneurship is an activity that generates added value to a product by creating a product (Miao et al., 2021). Entrepreneurship activities are carried out by implementing innovation and creativity in the process to create a product that has added value (Mir Shahid & Alarifi, 2021). People who carry out entrepreneurial activities are called entrepreneurs. One must be able to create new businesses by taking risks and uncertainties to achieve profit and growth by identifying opportunities and pooling the necessary resources (Soluk et al., 2021). Entrepreneurship in the field of agribusiness has the advantage that it can increase the added value of agribusiness products, can optimize profits through processing these agribusiness products and for entrepreneurs can get maximum benefits from their activities. The stages in carrying out entrepreneurial activities are planning a business, starting a business, maintaining a business, and developing a business (Patel & Shah, 2021).

Honey

Honey is a thick liquid produced by honey bees from various sources of nectar. Nectar is a nectarine compound in flowers and is in the form of a sugar solution with varying concentrations. Sucrose, fructose, and glucose are the main components of nectar, in addition to other substances in smaller concentrations. Besides that, there are also other substances in small amounts, namely amino acids, resins, proteins, salts, and minerals. This nectar is then processed into honey in the glands of the worker bees. Therefore, honey and different flower extracts will have different tastes, colors, aromas, and benefits (Nadhilla, 2014). Honey is a natural liquid that generally has a sweet taste produced by honey bees from plant flower extracts (floral nectar) or other parts of plants (extrafloral) (SNI 8664, 2018). The Food and Drug Administration (FDA) defines honey as a natural product produced by bees using flower nectar as the raw material (a complex compound produced by the nectar glands in flowers and in the form of a sugar solution) from plants that are sucked and collected by honey bees, then processed and stored in honeycomb to ripen. The form of honey is in the form of a thick liquid like syrup, the color is a pale yellow to yellowish-brown, and the taste is distinctively sweet with a delicious and fresh aroma.

Honey Supply Chain

The supply chain is every stage that involves consumers from the stage of ordering products from suppliers, manufacturers, transportation and warehouse services, retailers, to customers. Each function or process in the supply chain is supported by marketing, operational, distribution, financial, and service processes for customers. These processes must be delivered in the right quantity at the right time, and in the right location, as well as minimizing costs. Hidayat et al. (2017) stated that conceptually the supply chain is the whole process from raw materials

starting to be produced to becoming products that end their life, besides that the supply chain must be able to provide added value to customers and stakeholders. Golicic et al. (2002) in Tompodung et al. (2016) state that the supply chain must be able to explain the basic relationships between members in an organization from simple transactions to very complex transactions.

Value Added Concept

The concept of added value is highly dependent on existing demand and often changes according to the values in a product that consumers want. There are factors that encourage the creation of added value according to (Anderson & Hatt, 1991 in Ruaw, 2012):

1. Product quality is products and services produced in accordance with consumer demand or expectations.
2. Functions, products and services produced are following the functions requested by consumers or each actor.
3. Shape, the product that has been produced will be in accordance with the request.
4. Place, the product is produced according to the place.
5. Time, the product produced according to time.
6. Ease, the resulting product will be easy and affordable for consumers.

Value-added is the tangible value-added and the intangible services supplied. Added value is adding value to the product by changing the place, time and form to be more attractive to consumers in the market. Added value is related to the supply chain principle because by adding value to an agricultural product, the commodity will be more easily accepted by a broad market (Herdiansyah et al., 2015).

MATERIALS AND METHODS

The research was conducted at PT. KJS. The determination of the research location was carried out purposively with the consideration that PT. KJS is a honey processing industry in Indonesia. Data collection was carried out from October 2020 – February 2021. The samples used as respondents were beekeepers, collectors, agro-industry, retailers and consumers. Beekeepers and collectors come from the island of Java (East Java and Central Java) and in East Nusa Tenggara.

The number of samples of beekeepers as many as 144 people. The number of collectors is 7 people. The number of retailers is 47 people/outlet and the number of consumers who buy honey is 398 people. The Agoindustri sample came from PT KJS. Retailers consist of Carefour, Transmart and Freinchese spread across 21 provinces in Indonesia. The consumer sample is consumers who buy honey at PT KJS outlets located in Indonesia from the islands of Sumatra, Java, Kalimantan, Sulawesi and Nusa Tenggara and consumers who make purchases through the marketplace Shopee, Lazada, Tokopedia, Bukalapak, Web, and social media. The added value analysis uses the modified Hayami method (Hayami et al., 1987). The formulation model can be seen in Table 1. The calculation using the Hayami method aims to compare the value-added weight received by supply chain actors at PT KJS.

Table 1 CALCULATION OF VALUE-ADDED USING HAYAMI METHOD			
No	Variable	Unit	Value Supply Chain
I. Input, Output and Price			
1	Output	Bird/period	A
2	Raw Material	Bird/period	B
3	Direct Labor	person	C
4	Conversion Factor		$D = A/B$
5	Coefisian of Direct labor	Person/bird	$E = C/B$
6	Output price	IDR/bird	F
7	Labor Wage	IDR/period	G
II. Revenue and Profit			
8	Raw Materil Price	IDR/period	H
9	Other input Price	IDR/period	I
10	Output Value	IDR/period	$J= A \times F$
11	a. Value added	IDR/period	$K = J-H$
	b. Value added Ratio	%	$L= K/J \times 100$
12	c. Profit	IDR/period	$M = J-H-I-G$
	d. Profit Rate	%	$N = O/J \times 100$

RESULTS

The supply chain is a regulatory system concept related to distribution patterns that describes the three main components of the supply chain, namely product flow, financial flow and information flow. The existence of a product supply chain approach can provide an overview of product availability as a consideration for supply chain management for consumers and the processing industry and organizations can build cooperation through the creation of a coordinated network in the efficient supply of goods and services for consumers (Nurhasanah et al, 2019).

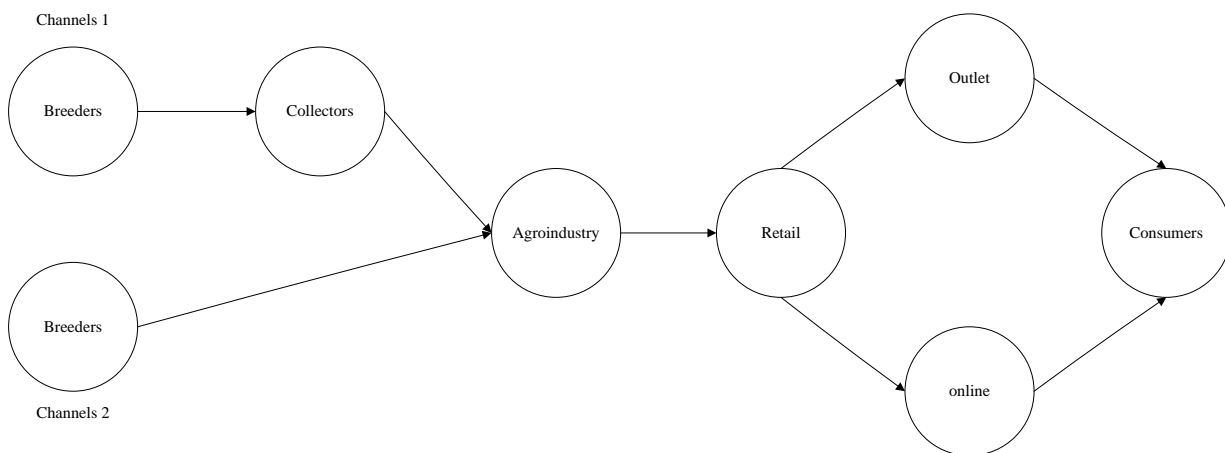


FIGURE 1
HONEY SUPPLY CHAIN ANALYSIS SCHEMATIC

Figure 1 shows that the supply chain at PT KJS has 2 distribution channels, namely 1. Breeders, collectors, agro-industry, retailers and consumers. 2. Breeders, agroindustry, retailers

and consumers. Breeders have an important role in the supply chain because the quality, quantity and sustainability of honey production are largely determined by the farmer's harvest method. The average beekeeper has a population that varies from 20-50 colonies, 51-160 colonies and >160 colonies. Collectors are traders who collect honey from the area or area around their residence. The task of the collectors is to control the quality of honey and temporary storage before it is distributed to the industry. Qashiratuttarafi et al. (2018) added that partner selection is the process of choosing colleagues to be able to work together in a business. The performance of partners chosen by supply chain members will determine a business and in order to achieve supply chain goals, namely meeting customer satisfaction, it is necessary to select partners according to the needs of supply chain members. Agroindustry is in charge of processing honey into products.

Honey that has been received by the agro-industry will be subjected to a process of organoleptic checking (smell, colour and taste), water content, total sugar and pH to meet consumer needs. After going through the packaging process, the honey agroindustry is marketed to all outlets in 21 provinces in Indonesia. Consumers can purchase honey directly to available outlets or through online shops that have collaborated with e-commerce. The characteristics of agricultural products are that they are easily damaged and are also seasonal or have large volumes but the value is relatively small (bulky) making farmers have to be able to think about how agricultural products can produce added value and more profits, by processing existing raw materials through various methods. Production process (Manueke et al., 2016).

Every supply chain actor has added value. Value-added is the added value that occurs because one commodity undergoes processing, transportation and storage in one production process (using/providing functional inputs). The added value is influenced by technical and non-technical factors. Information or output obtained from the analysis of value-added is the amount of added value, the ratio of added value, margin and remuneration received by the owner of the factors of production (Hayami et al., 1987). The following are the results of the calculation of added value using the Hayami method in the honey supply chain network.

Value-Added Honey

The business profile of the beekeepers who sell honey to PT KJS are partnership breeders and their own mentors. Breeders move locations in beekeeping according to the type of plants that are in bloom (releasing nectar). When the harvest season generally has 1 month of harvest time and a maximum of 3 times harvesting. Honey that has been harvested by farmers must meet the criteria, namely a maximum moisture content of 28% and a maximum delivery of seven tons. The number of livestock kept varies from 20-50 colonies, 51-160 colonies and >160 colonies with 5-10 years of business experience. The types of honey bees that are kept by farmers are *Apis mellifera* and *Apis dorsata*. The calculation of the added value of the honey agroindustry is carried out by looking at three types of honey, namely SI honey, NTT forest honey and Ipomoea honey show in Table 2.

Part I. Output, Input and Price

Table 2 shows that the production (output) is SI type honey, NTT forest honey and ipomoea honey produced by PT KJS respectively at 18,623 kg, 5,856 kg and 945 kg according to consumer demand. Input is the amount of raw materials used for one-time honey processing, which requires 20,485.3 kg for SI honey, 6,148.8 kg for forest honey and 963.9 kg for ipomoea

honey. The product price (output) is the selling price of honey. The results showed that the selling price of SI honey was 225.500 IDR, forest honey 145,000 IDR and Ipomoea honey 188,000 IDR

Table 2
ADDED VALUE OF HONEY

Variable		Unit	Honey SI	Forest Honey NTT	Honey Ipomoea
I	Output, Input, Harga				
	1. Output	Kg	18.623	5.856	945
	2. Input/raw material	Kg	20485,3	6148,8	963,9
	3. Labor	HOK	208	208	208
	4. Conversion Factor		0,90	0,95	0,98
	5. Coefisian of Direct labor	HOK/kg	0,01	0,03	0,21
	6. Output price	IDR	222.5	145	188
	7. Labor Wage	IDR/HOK	108.617	108.617	108.617
II	Revenue and Profit				
	8. Price Raw Material	IDR/Kg	68.75	55	58
	9. Another Input	IDR/Kg	8.924	6.124	3.856
	10. Output Value	IDR/Kg	202.273	138.095	184.314
	11. a. Value Added	IDR/Kg	124.599	76.971	122.458
	b. Value Added Ratio	%	62	56	66
	12. a. Labor Income	IDR/Kg	1.103	3.674	23.438
	b. Labor Shore	%	1	5	19
	13. a. Revenue	IDR/Kg	123.496	73.297	99.019
	b. Revenue Ratio	%	99	95	81
III	Reply to Production Factors				
	14. Margin	IDR/Kg	133.523	83.095	126.314
	a. Labor Income	%	1	4	19
	b. Another Input	%	7	7	3
	c. Company Advantage	%	92	88	78

The value of SI honey output and input is the highest value when compared to others. This is because at PT. KJS of raw materials collected as raw material for making SI honey derived from randu honey is mostly deposited by collectors and has better product quality, prices that are competitive with the market. This is in accordance with Nuscholifah (2014) that maximizing company profits can be obtained by considering the marketing mix of a product. First, the product as something produced by the company, created of course by having an advantage that can compete in the market. Second, the price of a product affects the number of products that will be sold. Third, the marketing channel is a function and network system of intermediaries (agents, traders, retailers) that are organized to carry out all the marketing activities needed to connect producers with consumers.

Labor is the quotient between labor and the amount of raw materials used in one honey production process. The workforce applied is 208 HOK for each type of honey produced. This is done because the workforce is owned by PT. KJS is a permanent employee so that in carrying

out the tasks the production process is involved for all types of honey. This makes it less efficient in utilizing labor because the types of NTT Forest honey and Ipomoea honey with lower productivity also utilize 208 HOK to work with a labor wage of 108.617 IDR/HOK, so that with these considerations PT. KJS can place the right number of workers for each type of honey.

The conversion factor is the number of output that can be produced in one unit of input, namely the number of products or types of products produced from one gram of honey (output). The conversion factor can be calculated based on the division between the value of the output produced and the raw materials used (input). The conversion factor for SI honey was 0.90, Forest NTT honey was 0.95 and ipomoea honey was 0.98 (Table 2). This shows that SI honey has a better conversion factor than other types of honey because the majority of raw materials for honey that enters PT KJS come from randu honey and SI honey has better product quality and competitive prices so that the company can achieve maximum profit.

The labor coefficient is the value of the division of the number of hours of labor used by the number of raw materials used in the production process. The labor coefficient shows the number of hours worked, or the labor required to process one unit of input. The labor coefficient on honey products is obtained from the division between labor time and the raw materials (inputs) used. The labor coefficient value for SI honey is 0.01 HOK/kg, forest honey is 0.03 HOK/kg and ipomea honey is 0.21 HOK/kg. The labor coefficient value of 0.01 indicates that one kg of honey takes 1 hour to process. This shows that SI honey has a better labor coefficient because SI honey has a faster processing and storage process compared to other types of honey.

Part II. Revenue and Profit

The price of raw material for SI honey is 68.750 IDR/kg, NTT Forest honey 55.000 IDR/kg and Ipomoea honey 58.000 IDR/kg. SI honey has the highest price because SI honey has the advantage of better quality when compared to other types of honey. The higher the quality of honey, the higher the price of raw materials. This is in accordance with the opinion of Shofiyana (2020) that product quality will affect purchasing decisions. The price of SI honey is more expensive than other honey because it is comparable to the quality of honey offered, so that consumers feel more satisfied.

The contribution of other inputs or supporting raw materials used in one honey processing process explains that the highest use of supporting materials for honey processing is SI honey of 8,924 IDR/kg, followed by NTT honey of 6.124 IDR/kg and Ipomoea honey 3.956 IDR/kg. SI honey has the value of other input contributions for several reasons, namely SI honey is international standard honey so that in addition to offering good benefits, good packaging is needed, so PT KJS allocates packaging that is more expensive than other types of honey. SI honey uses glass bottles with labels and specially printed cardboard, while NTT honey and Ipomoea honey have simpler packaging, namely labeled pail. Official et al., (2015) show that product packaging and price have a positive and significant effect on purchasing decisions. Price has a greater influence on purchasing decisions, compared to packaging. A total of 30.7% of purchasing decisions are influenced by packaging and price considerations.

The output value is the output value of the type of product produced in kg of honey. The output value is the product of the conversion factor and the price of the resulting product (output). The output value obtained by SI honey occupies the highest position, which is 202.273 IDR/kg, the next order is Ipomoea honey 184.314 IDR/kg, and the smallest output value is in NTT Forest honey, which is 138.095 IDR/kg. This is because PT KJS considers market segmentation for the three types of honey, SI honey is traded in the upper middle market share,

Ipomoea honey in the middle market share and NTT honey for the lower middle market share. The output values of the three types of honey have different segments, as well as PT KJS pays great attention to different segmentation. Honey has a broad and very prospective market share and is accompanied by increasing demand for honey due to the healthy lifestyle adopted by people with different purchasing abilities, so producers need to make different market share classifications to accommodate people's interests and different purchasing power (Sarah et al., 2018)

Added value is the difference between the output value of this type of product and the value of the main raw materials and other input contributions. The value-added ratio is the percentage of the workforce from the added value. The value-added ratio is the percentage between the added value and the output value. The added value and value-added ratio of SI honey is 124,599 IDR/kg and 62%, NTT honey is 76,971 IDR/kg or as much as 56% and Ipomoea honey of 122.456 IDR/kg or as much as 66%. The highest added value is in SI honey, this means PT. KJS succeeded in increasing the added value of SI honey so that a high value was obtained. SI honey is the best product from PT. KJS which has international standards and is in demand by people with good social class. According to Daryanto's opinion (2018), livestock development is directed to provide a discourse for increasing productivity, the quality of the results of a product, and the most important thing is to increase added value so that it can lead to increasing the competitiveness of livestock products.

The profit is value-added minus labor benefits. The profit rate is the percentage of profit to added value. The profit rate is the difference between value-added and labor, so it is considered as net added value received by the company. The highest profit and level of profit is on SI honey of 123,496 IDR/kg or as much as 99%, the second is Ipomoea honey of 99,019 IDR/kg or as much as 81% and the third is NTT honey of 73,297 IDR/kg or as much as 95%. The profit generated by SI honey is highest because SI honey has good product quality, besides that, through the best product handling through packaging and marketing strategies; SI honey has succeeded in contributing the highest profit. It is good for the company to have a superior product as the highest profit producer. Novandra and Widyana (2013) stated that honey is a superior product of non-timber forests and currently continues to develop with good management by honey producing companies. Honey can even be developed as a superior product to meet the export market.

Part III. Company Advantage

Margin is the difference between the output value and raw materials or the contribution of the owners of production factors other than the raw materials used in the production process. Calculation of remuneration for factors of production (margin) is obtained from the contribution of other inputs minus the price of raw material inputs. Calculation of remuneration for production factors (margin) from SI honey processing is 133,523 IDR/kg, forest honey 83.095 IDR/kg and ipomoea honey 126,314 IDR. Company profit is the percentage of profit to margin. The highest profit generated by the company was on SI honey with 92%, followed by NTT honey (88%) and Ipomoea honey (78%). Madu SI has the highest level of profit which can bring PT KJS to continue to grow with the profits it makes. The company's profits will also affect the development of investment in a company. One of the considerations that investors are willing to invest in a business is because they see good profits. According to Prasentyorini (2013), the company's profit is a picture of the value of a company that will be closely related to investor confidence.

CONCLUSIONS

There are 2 honey distribution channels, namely channel I starting from farmers, collectors, agro-industry, retailers and consumers and channel II starting from farmers, agro-industry, retailers and consumers. SI honey has better parameters than NTT Forest honey and Ipomoea honey when viewed from the efficiency of labor use, added value, selling price, and conversion factor.

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