Value Change Analysis of Cashew (*Anacardium Occidentale* L.) In Wonogiri Regency, Central Java, Indonesia

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Abstract

This study aims to accelerate, improve, and increase the added value of cashew in Wonogiri. The research method is by a survey approach with the location purposively based on the center production of the cashew sub-district in the Wonogiri Regency. There are selected five center districts of cashew, of which is observed one village as the cashew center and ten farmers each are taken as the sample. The value chain channel is taken by snowball sampling along with the dominant channel of cashew with key person A-B-C-D by in-depth interviews. Quantitative Analysis Method is applied by using Excel application to calculate fixed costs (FC), variable costs (VC), revenue/income each farmer, efficiency, and margin analysis. The result is that the cashew farmers' revenue on average is Rp 18,216,000 annually with VC of Rp 3,564,000 and FC of Rp3,745,000. It economically indicates that cashew farming is profitable and still maintains an R/C ratio of 1.49, making cashew is efficiently cultivated and provides benefits. However, the margin analysis of cashew on average is 41-49% and the FTT level is 68.59% (which below 100%), meaning cashew farmers are not prosperous. This indication shows that cashew farming is starting to be abandoned by farmers because of no rejuvenation of plants, old cashew trees, and indicators of welfare that have not been met. As the added value of cashew has not been advantageous for farmers, it then needs to rejuvenate plants and increase the number of plants through the development of local superior varieties nurseries and processing variations that provide high value-added of cashew.

Keywords: economic analysis, cashew, acceleration, value-added, nursery

1. Introduction

Wonogiri Regency is a cashew plantation center in Central Java Province because it has an area of 65 percent of the entire area. The whole area of Wonogiri Regency is planted with cashew with details of 36% for 200-500 ha, 16% for 500-1000 ha, and 16% for > 1000-3000 ha and the rest <200 ha (Distanbun, 2016). With the existence of cashew plants, community activities have spread into cultivation, post-harvesting, and marketing, but the existing trees are old and damaged. However, there are new plantations and/or

immature plantations covering an area of 1495 ha. Despite limited, they become the main objective for the Wonogiri government, as well as the planting of seedlings by cashew farmers.

The use of Wonogiri cashew is mainly processed into raw and ripe cashews, while pseudo fruit is used as a mixture of animal feed, syrup, food, and peanut skin for cashew oil. Raw and ripe cashews are sold to domestic consumers and overseas buyers, but the demand for cashew nuts from abroad in the last two years has decreased.

Reducing the demand for cashews is likely because traders do not have a willingness to make contracts (Mariyono, 2019). This indicates that the supply of cashew nuts is reduced and if it is supplied from other planting areas, it is worried if the quality will be different, thereby reducing buyer confidence (Rego et al., 2015). Even though the fulfillment of export needs is reduced, production is still increasing and products are still absorbed by the market, even if prices continue to rise (Christy et al., 2018).

Cashew plants provide activities for people who do not have plants including harvest workers, sweepers, sorting, welding, frying, and sales. From these activities, cashew nuts become the primary source of income for cashew farmers and secondary for the surrounding community (Rego et al., 2015). Cashew farming needs to be assessed from an economic aspect from upstream to downstream (Dentoni et al., 2020). The upstream side of cashew farming requires input production, labor, harvesting, and sales transportation. The middle side requires the cost of handling post-harvest until it becomes raw material as well as storage. The upstream side requires the cost of processing raw materials, packaging, shipping, and storage. Upstream downstream are also influenced by the trading system and price of goods and service facilities needed to support these activities. The phasing of upstream-downstream activities determines the exchange rate and in turn the added value received by the farmers (Luhmann & Theuvsen, 2016).

Bukhori & Retnani, (2017) says that value-added depicts the various values of shipping, producing (output) of fewer costs for intermediate goods and requiring services with adjustments. Tarifa et al., (2019) define added value as the difference between the value of production output produced by a company and the input (intermediate costs) incurred. Suroso et al., (2016) state that the driving factor for the creation of added value is the quality of the products and services produced; the functions of the products and services requested from each actor; the form of the products produced by the shape desired by consumers; products produced according to by the place; the time of a product is produced; and the ease of the product produced is easy to reach by consumers. Hence, value change is the added value of a commodity because it undergoes processing, transportation, or storage in production. In the process of processing value-added is the difference between the value of the product with the value of the cost of raw materials and other inputs, excluding labor (Canevari-Luzardo, 2019). Finally, whether the benefits of cashew crops can be advantageous equally for the farmers or not, the links and institutions in the effective trade system or not, the exchange value of the product is feasible or not are the concerns for all the related parties (Deng et al., 2017).

2. Method

The study was conducted by a survey method in the area of cashew centers within the administration of the district, village, and farmer government. The sample is determined by multi-stage purposive random sampling, in which the determination of the

sample by dividing the population through several stages into sub-populations (groups) in layers (Gujarati, 1999).

There were then obtained 5 (five) sub-districts of cashew centers which are Jatisrono, Jatiroto, Ngadirojo, Ngutoronadi, and Manyaran Districts. Each sub-district is determined by one central village and determined purposely and each village is assigned 10 sample farmers so that the total sample of farmers is 50 samples. The respondents for sample marketing agencies were determined by the snowballing method. Primary data obtained by the interview uses a list of questions.

Quantitative analysis uses the Excel application and refers to ACIAR, (2012), which is calculating fixed costs, variable costs, income per farmers, efficiency, and margin analysis. Welfare analysis is determined by NTP (farmer exchange rate).

3. Results and Discussion
Profile of Wonogiri Regency

Administratively, Wonogiri Regency consists of 294 villages in 25 sub-districts. The sub-district with the largest area is Pracimantoro Sub-district, which is 14,214.32 Ha (7.7% of the area of Wonogiri Regency), while the smallest is Puhpelem Sub-district, which is 3,161,5400 Ha (1.7% of the area of Wonogiri Regency). Distribution of cashew plants in Wonogiri Regency is spread evenly in each district (Table 1).

Table 1. Area and Cashew Production in Wonogiri Regency in 2018

No	District	Area of Cashew (Ha)			Production (tons logs)
		Plants young/ Immature (TBM)	Plants Produce (TM)	Plants Not Produce (TTM)/ Crop Damage (TR)	
1	Pracimantoro	0	115	85	67.80
2	Paranggupito	1	165	39	79.82
3	Giritontro	5	87	118	91.70
4	Giriwoyo	0	120	130	61.00
5	Batuwarno	14	291	127	179.50
6	Karangtengah	3	42	66	29.95
7	Tirtomoyo	2	143	108	61.90
8	Nguntoronadi	16	222	105	157.40
9	Baturetno	8	360	98	209.75
10	Eromoko	43	347	61	178.80
11	Wuryantoro	66	168	87	95.40
12	Manyaran	62	335	65	199.50
13	Selogiri	0	313	80	122.00
14	Wonogiri	5	351	105	143.20
15	Ngadirojo	72	2730	636	1757.10
16	Sidoharjo	209	1549	645	971.10
17	Jatiroto	449	2315	1075	1877.40
18	Kismantoro	21	611	57	399.90
19	Purwantoro	180	486	216	284.81
20	Bulukerto	66	269	76	158.60
21	Puhpelem	37	185	55	93.72
22	Slogohimo	90	515	188	310.80
23	Jatisrono	138	1325	504	765.10
24	Jatipurno	10	472	79	298.40
25	Girimarto	4	742	72	391.30
	Jumlah	1495	14258	4877	8985.95

Source: Agriculture, Food, and Horticultural Service Office (2018).

Typology of Cashew Farmers

The average age of farmers is 55.7 years (> 50 years), which means that they are classified as old age. The number of family members 2 (<3 people) indicates the number of workers who participated as workers in small cashew farming activities. The maintenance of cashew plants is less intensive, indicating less optimal plant growth so that productivity is low.

The average number of cashew plantations is 133 trees/ha (maximum standard is 200 trees/ha) planted on farmlands, yards, and forests. Planting in the farmland is found in the form of monocultures and intercropping on dike plots and land ownership boundaries. Planting in the yard is as a hedge. Planting on forested land is generally at a boundary, but very rarely. Cashew harvest in one harvest season lasts 7-8 periods. The average productivity of each tree is 4-6 kg of cashew logs. Cashew nuts receive an average of 30-50 kg/tree, and if the price is Rp15,000/kg to Rp30,000/kg then obtained Rp450,000 to Rp1,500,000/tree.

Analysis of Production Costs, Revenue, Expenditures and Benefit/Cost ratio

The structure of production costs for cashew cultivation consists of fixed costs and variable costs. Since cashew is a perennial crop, the fixed costs (FC) are calculated from the initial costs of planting and land preparation carried out 10 years ago. Thereby the costs incurred are calculated using a discount factor at the interest rate applicable at the time of research (Rocha & De Britto, 2018), which is 12% per year (the standard interest rate of government banks that farmers often use). As a result, the FC obtained on average cost is Rp18,134,000/ha. The variable costs (VC) are the costs incurred during maintenance from the last harvest to the first harvest in the following year, including maintenance labor costs (weeding, fertilizing, pest and disease management, harvesting). Consequently, the analysis of the variable cost structure on average cost is Rp24,083,500/ha. Therefore, the total production cost (FC + VC) incurred in cashew cultivation per year is an average of Rp42,217,500/ha. After calculating using the 12% discount factor, the average income/year is Rp20,671,517/ha and the average expenditure/year is Rp16,257,145/ha. The calculation of B/C ratio is 1.25, meaning that every Rp1.00 of the cost at the beginning of cashew business activities provides 1.25 times the cost incurred.

Cashew Marketing Channel Analysis

The perpetrators of the cashew chain value in Wonogiri Regency are as shown in Figure 1. From this figure it can be seen that there are two products namely cashew nut and cashew nuts in the cashew value chain. Both of them are distributed in 6 (six) kinds of trading systems from cashew nuts to processed cashews as follows.

Channel I: farmers - village collector traders - big traders/cashew nut processing industries-cashew processed retailers

Channel II: farmers - village collecting traders - technical processors or sweeper - large traders/cashew nut processing industries - cashew processed retailers

Channel III: farmer - village collector - wholesaler/processing industry - district collector trader - retailer

Channel IV: large cashew traders outside the city - village collecting traders - big traders/cashew nut processing industries - sub-district trader - cashew nut retailers - cashew nut consumers

Channel V: cashew wholesaler outside the city - village collector trader - technical processor or sweeper - large trader/cashew nut processing industry - cashew processed retailer - consumer

Channel VI: cashew wholesalers outside the city - village collectors - large traders/processing industries - sub-district collectors - retailers – consumers
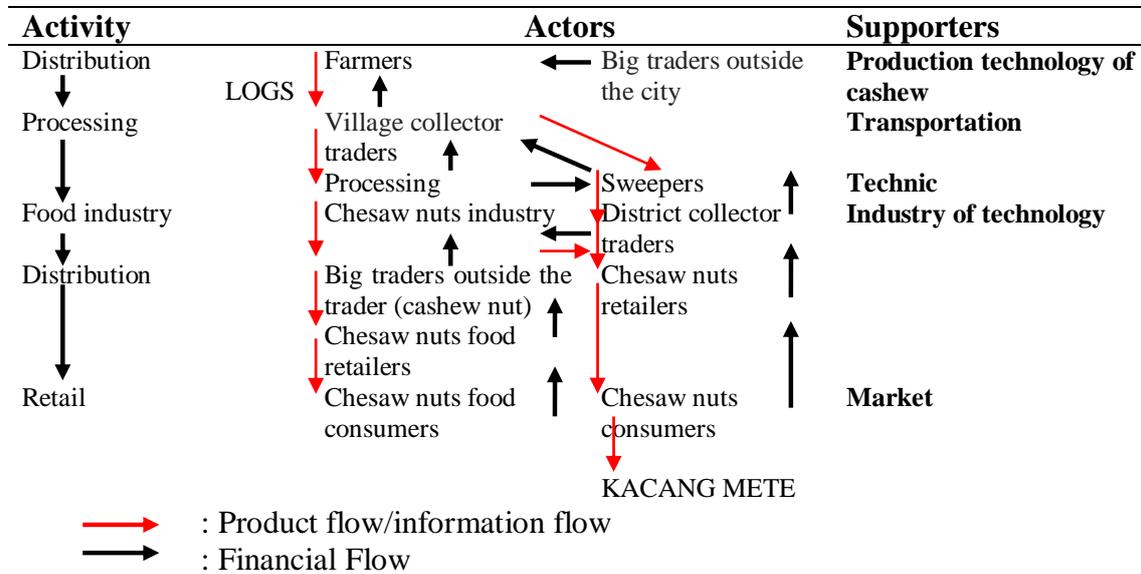

Figure 1: Cashew Value Chain in Wonogiri District

Value Change Analysis on Cashew Marketing Channels in Wonogiri Regency

Analysis of the added value of each cashew marketing channel is presented in the following table:

Table 1: Cashew Value Added Analysis on 5 Marketing Channels in Wonogiri Regency

No	Marketing channel	Average value added at the actor level								
		Famers	big traders outside the city	village collector traders	Processing industry	sweepers	Big traders outside the trader (cashew nut)	District collector traders	Processing traders	retailers
1	I	3000	-	5500	55700	3100	10300	-	-	-
2	II	3100	-	5400	40400	3000	-	8450	10300	4700
3	III	2900	-	5400	50200	3150	-	8600	11400	4900
4	IV	-	4000	5600	50600	2950	10500	-	-	-
5	V	-	4200	5500	45700	3000	-	-	10800	5800
6	VI	-	4000	5600	48300	3250	-	-	11200	6100

Table 1 explains that the marketing process and value-added benefits depend on the technical availability of each marketing agent and the amount of access to purchase raw materials/cashew nuts (Taridala et al., 2013). Raw materials for cashew nuts are obtained from two sources which are from farmers and from cashew traders outside the city who take cashew materials from outside the region, including from NTT, NTB, and

Sulawesi. From raw cashew seeds processed into cashews there is a decrease in weight due to the removal of hard shells. The weight loss of cashew nuts into cashew nuts by 33% (1000 g becomes 300-350 g).

The biggest added value that is obtained by farmers in marketing channel II is the farmers who do the sorting process on cashew nuts and then sold to village collectors. The added value obtained by farmers is Rp3,100 / kg and relatively high. The greatest added value obtained by village collectors is in marketing channel IV where village collectors directly sell cashew nut to the cashew nut processing industry, where the processing industry often acts as a partner for farmers or village collector traders. The biggest added value obtained by the cashew nut processing industry is in channel I, then channel IV respectively Rp. 55,700 / kg and Rp. 50,600 / kg. This much-added value is due to this direct selling channel to inter-city traders, where the processing industry sends cashew nuts to the destination city that has made an order, including traders in Bandung, Jakarta, Semarang, Cirebon. The biggest added value obtained by sweeper was in channel VI and channel I, amounting to Rp3,250 / kg and Rp3,100 / kg, respectively. Cashew nut processors have the greatest added value in channels I and channel VI because they process cashew nuts from raw to mature and in various flavors and packaging. Cashew nut traders outside Wonogiri Regency have the biggest added value in channel IV because the amount traded is higher and they carry out sorting, processing, and packaging activities. The added value obtained by the largest retailer in channel VI is Rp 6,100 / kg and is relatively high. The cashew nut processing industry has the greatest added value among marketing agents because the industry carries out a lot of activities and has a large frying technology and capacity by storing cashew herbs from harvesting to fried cashews.

An added value obtained by farmers is analyzed whether the added value has improved the welfare of cashew farmers. Suroso et al., (2016) stated that the level of welfare of farmers is often measured by the exchange rate of farmers (NTP), and the calculation of NTP is obtained from a comparison of the price index received by farmers against the price index paid by farmers (in percent). It is one indicator of the relative level of welfare of farmers, the higher the FTT relatively the more prosperous the level of life of farmers (Kusakina et al., 2020; Monce & Petzel, 1984; Oostendorp et al., 2019; Rusastra & Sudaryanto, 2001; Widayati et al., 2019). The results of interviews guided by the provided structured questionnaire showed that the largest expenditure was for the consumption of household needs 96.15%, then for taxes 1.62%, consumption of starchy foods 1.12%, consumption of side dishes 0.95%, and health 0.17%. Based on the FTT value which is the ratio between income and expenses per month, the FTT value is 68.59%. This value <100% means that cashew farmers are not prosperous.

4. Conclusion

The results of the study are indications that need to be observed, where new cashew income contributes 25.28% of the total cashew farmer income so that it is included in the category of still low. Therefore it is necessary to increase revenue from cashew plants to be able to make a high contribution in the future. For this reason the need for revitalization of cashew plants in Wonogiri Regency through cashew farming management and one of them is the need for rejuvenation of cashew plants and the provision of superior seeds with technological approaches, such as grafting technology.

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