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THE PERFORMANCE OF COCONUT SUPPLY CHAIN IN KUBU RAYA DISTRICT

KINERJA RANTAI PASOK KELAPA DALAM DI KABUPATEN KUBU RAYA

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ABSTRACT

The particular problem of coconut in Kubu Raya Regency is the ongoing partnership with suppliers to meet dynamic market changes that have not been well established. Supply chain management has become an important matter in the coconut industry in Kubu Raya Regency. Measurement of the performance of the coconut industry supply chain in order to optimize the performance of the coconut supply chain in Kubu Raya Regency, so that the realization of an efficient and effective coconut supply chain. Measurement of added value is done using the Hayami method and performance measurement is done by the SCOR method. The result of value added analysis shows that the added value of coconut in the farmer level is 758 rupiah / fruit. Analysis of supply performance using the SCOR method shows the performance of each member of the supply chain. Farmers have a 72.3% performance value included in the category below average. Traders and collectors obtained a performance value of 55.7% included in the Poor category.

Keywords: *coconut, supply chain, SCOR, performance, value added*

ABSTRAK

Permasalahan khusus kelapa dalam di Kabupaten Kubu Raya adalah tentang kemitraan secara berkesinambungan para pemasok untuk memenuhi perubahan pasar yang dinamis belum terjalin dengan baik. Manajemen rantai pasok (Supply Chain Management) menjadi hal penting dalam industri kelapa dalam di Kabupaten Kubu Raya. Pengukuran kinerja rantai pasok industri kelapa dalam bertujuan mengoptimalkan kinerja rantai pasok kelapa dalam di Kabupaten Kubu Raya, sehingga terwujudnya rantai pasok kelapa yang efisien dan efektif. Pengukuran nilai tambah dilakukan dengan menggunakan metode Hayami dan pengukuran kinerja dilakukan dengan metode SCOR. Hasil analisis nilai tambah menunjukkan bahwa nilai tambah kelapa dalam di tingkat petani adalah 758 rupiah/buah. Analisis kinerja rantai pasok menggunakan metode SCOR menunjukkan kinerja setiap anggota rantai pasok. Petani memiliki nilai kinerja 72,3% masuk dalam kategori Below average. Pedagang dan pengepul diperoleh memiliki nilai kinerja 55,7% masuk dalam kategori Poor.

Kata kunci: kelapa dalam, rantai pasok, SCOR, kinerja, nilai tambah

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INTRODUCTION

Indonesia is a developing country with the agricultural sector as a source of livelihood for the majority of its population (Deperiky et al., 2019). Agriculture is one of the key sectors of the Indonesian economy. The agricultural sector is not only a provider of food needs for the population, but also as a source of livelihood for most of Indonesia's population. Therefore, the agricultural sector needs to be the government's attention ((Aziz et al., 2015); (Kembauw et al., 2015); (Rompas et al., 2015)).

One of the agricultural commodities that can be developed in Indonesia as a tropical country is coconut (Cocos *nucifera* L). These commodities have a strategic role for the people of Indonesia, including social commodities, considering that their products are one of the nine staples of society. This strategic role can be seen from the total area of coconut plantations in Indonesia which reaches 3,712 million hectares (31.4%) and is the largest coconut plantation area in the world. Coconut production in Indonesia ranks second in the world, amounting to 12,915 billion grains (24.4% of world production) (Hasnun et al., 2015).

Coconut plants can improving income of farmer, decreasing unemployment, stimulating growth of economic, and developing downstream industries based on coconut oil in Indonesia. The main product of coconut at the farmer level is only used in the form of primary products in the form of coconut, copra and cooking oil that are processed traditionally. The potential of coconut has not been utilized due to various constraints, especially technology, capital and uneven market absorption (Nasir, 2018). West Kalimantan Province is a center of production that produces coconut fruit in large quantities (BPS, 2018). Coconut plants in West Kalimantan are scattered in all districts / cities. The largest coconut production in West Kalimantan is Kubu Raya Regency. Kuburaya coconut production in 2017 is 39,105 tons, meaning 48% of the total production of West Kalimantan (Statistic agency, 2018).

The specific problem with coconut in Kubu Raya Regency is about asymmetric information. Performance measurement in supply chain management involves internal processes and the expected performance of other supply chain member companies or suppliers (Akmal, 2018). Measurement of the supply chain performance of the coconut industry needs to be done with the aim of optimizing the performance of the deep coconut supply chain in Kubu Raya Regency, so that the realization of an efficient and effective coconut supply chain. The process-based reference model that is often used in measuring supply chain performance is the Supply Chain Operations Reference (SCOR) model (Liputra et al., 2018). Supply Chain Operations Reference (SCOR) is a model that can be used to measure a company's supply chain performance, improve its performance, and communicate to the parties involved ((Paul, 2014); (Parinduri, 2016)) . In addition, performance measurement in every aspect of the supply chain will be needed to evaluate and improve supply chain performance (Syahputra et al., 2020).

Measurement of Supply Chain Performance uses the Supply Chain Operation Reference (SCOR) model in which this method is introduced by Supply Chain Operation Reference which refers to a supply chain activity which is a type of measurement of supply chain capability that can be used in various industries (Daniel et al., 2020). The performance attribute is a single attribute cell that is used to assess the supply chain process from a variety of different perspectives. There are five main attributes of supply chain performance namely, Reliability (reliability), Responsiveness (speed in response), Flexibility (level of flexibility), Cost (cost) and Asset (assets) (Pratiwi & Mas'udi, 2018).

Supply chain performance is the result of various efforts made by each member of the supply chain to meet the ultimate goal of the supply chain, namely consumer satisfaction (Sari et al., 2014). The performance of a supply chain can be seen from the performance matrix in each of its performance attributes (Anindita et al., 2020). In this research, the verified performance matrix is adjusted to field conditions, namely responsiveness, reliability and financial measures.

Research related to supply chain performance assessment using the SCOR approach has been carried out by several researchers, including: (Shoffiyati et al., 2019); (Apriyani et al., 2018); (Bubun et al., 2018); (Rakhman et al., 2018) and (Septiana et al., 2017). The novelty of this research is using combination analysis tool are value added analysis and SCOR approach. Other novelty of this research is location of research, that is Kubu Raya Regency.

RESEARCH METHOD

The research was conducted in Punggur Kecil Village, Sungai Kakap District, Kubu Raya Regency which was chosen purposively. The research time was November 2019 - January 2020. The data sources used in this study were primary data and secondary data. Primary data were obtained from interviews with selected respondents. Secondary data were obtained from literature studies according to the field of research studies. Respondents in the research consisted of coconut farmers in farmer group members, collectors, and traditional market traders. The population of the research are 350 farmers and represent Kubu Raya District because Sungai Kakap District especially Punggur Kecil Village is a largest area of coconut plantation in Kubu Raya. Sample for this research is 35 respondents were selected as samples by purposive sampling. There were 4 respondents at the intermediary and retailer level, obtained using the snowball method.

The variables in the study were the value added analysis variable and the SCOR analysis variable. The value added analysis variable includes output with criteria in the form of total production, input with criteria in the form of coconut production resources and labor input with criteria in the form of working days. The SCOR variable is designed and approved by the Supply Chain Council in (Paul, 2014) which is adjusted to field conditions, namely responsiveness with criteria in the form of time cycle order fulfillment (days), reliability with criteria in the form of complete order fulfillment (%), and financial measures (cost) with criteria in the form of production costs and distribution costs.

Financial measure=production cost+distribution cost…….. (1)

The analysis used in this research is quantitative analysis. Quantitative analysis is applied to analyze added value and measure the performance of deep coconut supply chain management. The calculation of added value in supply chain members is analyzed using the Hayami method (Hayami et al., 1987). The SCOR analysis consists of two analyzes, namely the SCOR analysis for farmers and the SCOR for traders.

RESULT AND DISCUSSION

Respondent Characteristics

Respondents generally belong to the economically productive age group. The population belonging to the economically productive age group is the population aged 15-64 years (BPS, 2018). The education of the respondents was dominated by elementary

school education, while the key informants were senior high school. Education really determines the level of competence of farmers in planning activities to achieve targets.

The area of land cultivated by the respondent farmers is 1 hectare. The area of cultivated agricultural land will affect the scale of farming. The characteristics of the respondents in this study can be seen in Table 1.

Table 1. The characteristics of the respondents

No	Characteristics of farmers	Number of farmers (person)	percentage (%)
1.	**Farmer**		
	a. Age(years)		
	31 - 40	10	29
	41 - 50	12	34
	51 - 60	13	37
	Total	35	100
	b. Gender		
	Male	35	100
	c. Education		
	Primary School	35	100
	Plantation area (Ha)		
	1	35	100
2.	**Trader**		
	a. Age (year)		
	31 - 40	2	50
	41 – 50	2	50
	Total	4	100
	b. Gender		
	Male	4	100
	c. Education		
	Primary School	4	100
3.	**Market Traders**		
	a. Age (Year)		
	41 – 50	1	50
	51 - 60	1	50
	Total	2	100
	b. Gender		
	Male	2	100
	c. Education		
	Secondary school	2	100

Source: Data Analysis Results (2020)

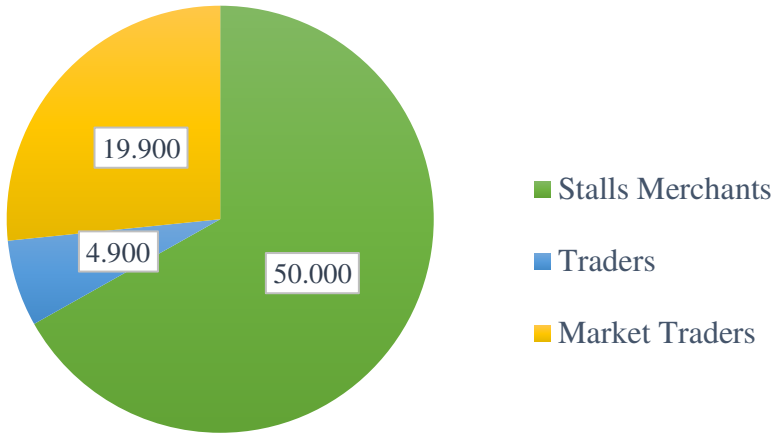
Supply Chain Management (SCM) of Coconut Fruit in Kubu Raya Regency

The Coconut Fruit Supply Chain Path in Punggur Kecil Village, Sungai Kakap District, Kubu Raya Regency are:

Table 1. Supply Chain of Farmer

Path	Explanation	Price of Coconut from farmer (unit)
Path 1 (Farmer - Farmer Group - Collector)	the farmers group leader collect coconut form member of group. After that, coconuts directly sell to collector. Collector collect coconut fruit from farmer'farming.	Rp. 1,200, -
Path 2 (Farmer - Collector)	Farmers as suppliers sell coconuts to collectors directly.	Rp. 1,000, -
Route 3 (Farmer - Merchant)	Farmers as suppliers sell to trader at tradisional market directly.	Rp 1.200,- until Rp 2.000,-

On average, farmer group members who supply coconut sell 6,500 to 10,000 grains per year. The following is coconut uptake received by various traders in Punggur Kecil Village, Sungai Kakap District, Kubu Raya Regency.



Source: Data Analysis Results (2020)

Figure 1. Coconut Uptake by Traders in Punggur Kecil Village in 2020

The most coconut fruit is absorbed by the stall traders, as many as 50,000 per day. Then market traders absorb 19,900 coconuts per year and collectors as many as 4,900 pieces per year.

Analysis of Value Added Coconut Supply Chain in Kubu Raya Regency

Analysis of the added value of coconut at the farmer level is carried out to determine the value added at the farmer and trader level in Kubu Raya Regency. The analysis of the added value of coconut at the farmer and trader level can be seen in Table 2 and Table 3.

The added value of coconuts at the farmer level obtained is 758 rupiah / fruit, meaning that for each coconut that is produced, the added value of coconut is IDR 758. To produce that much production, 122 seeds are needed at a price of IDR 365,000 and use HOK 17 people at a cost of IDR 3957714.28 / person.

Table 2. Analysis of Added Value of Coconut in Farmer Level, 35 Respondents in Kubu Raya Regency

Description	Value
Yield / Production (1x harvest / Tree) (Fruit)	7
Price of a Coconut (Fruit)	948
Transportation Costs	94
Advantage	853
Difference (Benefit - Transportation Cost)	758
Seed price X a lot of seeds	365.000
Number of coconuts sold this year (fruit/year)	4.965
Number working days	3.957.714

Source: Data analysis result (2020)

Table 3 shows that the average price of coconuts at the merchant level is IDR 1,675 / fruit, out of 18,700 coconuts purchased this year. The average quantity of coconuts sold is 7,425 pieces / year with the difference in applying grading/sorting worth Rp. 350 / fruit.

Table 3. Added Value of Coconut at Trader Level in Kubu Raya Regency

Description	Value
Gross Income (IDR / Year)	26.750.000
Number of Coconuts Purchased This Year (Fruit)	18.700
Average Coconut Price (IDR / Fruit)	1.675
Average Quantity of coconuts for sale (item / year)	7.425
Average Sales Price (IDR / Item)	1.500
Application of Grading / Sorting (Difference Rp)	350

Source: Data analysis result (2020)

Analysis of Coconut Supply Chain Performance in Kubu Raya Regency

Performance measurement is defined as a process of quantifying the effectiveness and efficiency of an activity. The measurement of the performance of the deep coconut supply chain in Kubu Raya Regency is carried out by looking at the performance indicators based on SCOR and adjusted to the conditions of farmers, traders and collectors, as well as coconut consumers in Kubu Raya Regency. The SCOR performance attributes include reliability, responsiveness, and cost. With the calculation results are presented in Table 4 and Table 5.

Table 4. Coconut supply chain performance at farmer level

Performance's attribute	Comparison			Performance Value (%)	Performance indicators
	Best	Actual	Worst		
Reliability					
Complete order fulfillment (PP)	100	72	35	57	*Unacceptable*
Responsiveness					
Order fulfillment cycle	1	1	3	100	*Excellent*
Cost					
Production cost (Rp)	2.760.000	3.847.778	5.460.000	60	*Poor*
		Final Performance		72,3	*Below average*

Source: Data Analysis Result (2020)

Based on the supply chain performance attribute assessment in table 3 shows that the performance of the reliability attribute with the performance matrix in the form of perfect order fulfillment at the farmer level is in the bad / unacceptable category. Whereas, the performance of the responsiveness attribute in the form of the order fulfillment cycle time at the farm level is in the very good / excellent category. Agility performance at the farm level cannot be measured, because farmers cannot estimate the production capacity if there is an increase or decrease in coconut demand. The cost attribute performance with a performance matrix in the form of production costs at the farmer level is in the very poor category. The poor reliability performance of farmers is due to low coconut production, so it cannot meet demand. The productivity of the coconut plants of farmers in Kubu Raya is 6-9 fruit / tree / harvest, which means that the productivity is below normal, which is 10-15 fruits / tree / harvest (Astuti et al., 2014). Coconut productivity is low due to poor cultivation techniques. The majority of farmers in Kubu Raya use village / local seeds and do not carry out plant maintenance, either fertilizing or controlling weeds, pests, and plant diseases.

The poor reliability performance of farmers is due to low coconut production, so it cannot meet demand. The productivity of the coconut plantations of farmers in Kubu Raya is 6-9 fruit / tree / harvest, which means that it is below the normal productivity of 10-15 fruits / tree / harvest (Ministry_of_Agriculture, 2014). The low coconut productivity is due to poor cultivation techniques. The majority of farmers in Kubu Raya use village / local seeds and do not carry out plant maintenance, either fertilizing or controlling weeds, pests and plant diseases.

The farmer's responsiveness performance is very good, it takes one day to fulfill coconut orders. The location of the farmers and traders and collectors is not far away, so it does not take much time to ship coconuts. All actors in the coconut supply chain are still in one Kubu Raya district.

Farmer's cost performance is low due to high production costs, especially land preparation costs. The land preparation costs spent by coconut farmers in Kubu Raya range from Rp. 1,500,000 - Rp. 3,000,000; per hectare. The majority of farmers pay for land preparation of Rp. 2,400,000; per hectare, meaning that most farmers have not reached the lowest cost in land preparation.

Table 5. Coconut supply chain performance at the traders and collectors' levels

Performance's attribute	**Comparison**			**Performance Value (%)**	**Performance indicators**
	Best	**Actual**	**Worst**		
Reliability					
Perfect order fulfillment (PP)	80	40	26	26	*unacceptable*
Responsiveness					
Order fulfillment cycle	1	1	3	100	*Excellent*
Cost					
Distribution costs	138.400	467.100	692.000	41	*Poor*
Final Performance				55,7	*Poor*

Source: Data Analysis Result (2020)

Indicator performance at trader and collector level is farmer ability to supply demand of collector and how long farmer can supply demand of collector. The indicator uses percentage index of actual ability with demand. Table 5 shows that the performance of the reliability attributes with the performance matrix in the form of perfect order fulfillment in the bad / unacceptable category. The performance of the responsiveness attribute with a performance matrix in the form of a cycle time for order fulfillment at the traders and collectors level is in the very good / excellent category. Agility performance at the trader and collectors level cannot be measured, because traders and collectors cannot estimate the capacity of coconuts to be sold if there is an increase or decrease in demand. Cost attribute performance with a performance matrix in the form of distribution costs at the traders and collectors level in the bad / unacceptable category.

The poor reliability performance of traders is due to the low supply of coconuts from farmers and unequal demand at the merchant level. The responsiveness of traders and collectors is very good, it takes one day to fulfill orders for deep coconut. The location of traders and collectors and consumers is not far away so it does not take much time to ship coconuts. All actors in the coconut supply chain are still in one Kubu Raya district. The cost performance at the traders and collectors level is poor due to the application of grading / sorting which affects the selling price of coconuts. The limited availability of coconuts also causes the distribution costs to be less than optimal.

CONCLUSION

Members of the coconut supply chain in Punggur Kecil Village, Sungai Kakap District, Kubu Raya Regency consist of farmers, traders, collectors, and consumers. There are four deep coconut supply chain lines, namely; Path 1 (Farmers - Farmer Groups - Collectors; Path 2 (Farmers - Collectors; Path 3 (Farmers - Traders), and Path4 (Traders - Consumers) The added value of coconuts at the farmer level is 758 rupiah / fruit. The performance of supply at the farmer level is below average category, then the performance of the supply chain at the level of traders and collectors is obtained in the poor category. Farmers need to apply good agricultural practices (GAP) to increase production, especially the use of certified seeds, carry out regular fertilization, control crop pests that need to be done. by applying GAP farmers can produce coconut efficiently, therefor can meet the relatively large market demand.

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