

## PEANUT SUPPLY CHAIN ANALYSIS IN WEST ACEH REGENCY

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### Abstract

Peanuts in West Aceh District peanuts are one of the leading commodities of peanut farmers' income. With a harvest area of 240.00 hectares and production of 527.00 tons per year. The aim of this research is to analyze the supply chain of peanuts for consumption in West Aceh District. The results of the research using the Food Supply Chain Network (FSCN) approach, it can be concluded that the supply chain for peanuts for consumption already has clear targets, the relationship between actors is structured, but has not been managed properly in terms of business processes that have not been integrated in the long term. In peanuts, the seeds of collaboration between actors have been well established in terms of information disclosure, cooperation and integration between supply chain actors. Besides that, business processes run structured with good management. The results of supply chain performance analysis through the farmer's share received by farmers in each channel where the value of the farmer's share in peanuts for channel 1 is 46.88 percent, channel 2 is 45.45 percent and channel 3 is 50.00 percent. Based on these results, it can be concluded that the peanut supply chain for channel 3 is more efficient than the peanut supply chain for channels 1 and channel 2.

Keywords: *Peanut, Margin Marketing, farmer's share*

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### 1. INTRODUCTION

Indonesian peanut production from 2018 has increased from the previous year of 13.33 quintals/hectare, up 0.98%. In 2019 to 2022 productivity will also increase by an average of 0.92% per year. The increase in productivity figures for the peanut commodity so as to be able to increase peanut production figures in the national office. However, the projection results show an increase in production will only occur in 2018, an estimated increase of 14.50% or 550,032 thousand tonnes. On the other hand, in 2019 production is expected to decrease to 517.95 thousand tonnes or a decrease of 5.83%. Likewise, in 2020 to 2022 there will be a decrease in production by an average of 7.01% per year (Ministry of Agriculture 2022).

Aceh Province is one of the peanut producing areas. This leguminous commodity has a big role to play in boosting the economy, especially in West Aceh District, which is one of the areas that produce peanuts with a harvested area of 240.00 hectares and a production of 527.00 tons (Distan Hor Kab. Aceh Barat 2022). This peanut commodity has a large capacity to be cultivated, especially in West Aceh District where peanuts are one of the leading commodities of peanut farmers' income. Based on the results of data from the Agriculture and Horticulture Office of West Aceh Regency, it can be said that there are often significant spikes in the price of peanut commodities, this is due to frequent gaps between supply and demand. The rise and fall of a peanut commodity price does not only occur for consumers, but also for farmers as producers. However, price imbalances at the level of producers and consumers tend to be large. The price growth at the producer level tends to be stable and at the consumer level it has increased rapidly as shown in

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Along with the increasing use of peanuts as a raw material for the food industry and home industry, it is necessary to obtain an effective and efficient supply chain management system in order to integrate existing resources and reduce logistics costs, the concept of Supply Chain Management is used. Not much different from other agricultural commodities, the management of the supply chain for peanut commodities is quite complex where the peanut logistics system has certain characteristics that are influenced by the production system, bulky, perishable and continuous changes in quality while the demand for peanut commodities occurs all the time. Consumer demand for peanuts must always be met so that the benefits of supply chain actors can be achieved. Therefore, efforts to improve the performance of the peanut supply chain are indispensable. So from the above problems it is necessary to do research on the peanut supply chain in West Aceh Regency.

## 2. LITERATURE REVIEW

### 2.1. Supply Chain in Agricultural Products

Supply chain is concerned with the integration of network organizations consisting of suppliers, manufacturers, logistics providers, wholesalers/distributors, and retailers. The aim of the supply chain is to collaborate and manage the flow of products, services, finances and information from suppliers to customers to achieve customer satisfaction, profit, added value and to create efficiency and effectiveness. According to (Prayudi, 2020), the supply chain for fishery products is the same as the supply chain for other commodities in general with the actors involved working together in delivering goods/services to consumers.

Nyoman's research (2015), shows that the challenges that must be faced in supply chain activities are the need for adequate supply chain management to prevent inefficiencies as well as losses and waste due to improper post-harvest handling. This loss can be avoided by providing facilities appropriate cold chains, such as cold storage, processing facilities and refrigerated transportation systems for farmers in local or regional markets and by attracting a large number of private agribusiness players to set up such infrastructure facilities. Therefore, the role of the government and private organizations is needed in efforts to improve infrastructure to reduce waste levels and increase flow efficiency in the supply chain.

### 2.2. Food Supply Chain Network (FSCN)

*Food Supply Chain Network* (FSCN) or what is often referred to as the food supply network is a set of activities for a product and in taking policies related to the distribution of a product or goods with good quality. In this sense, the supply network is a set of activities that connect product lines, information lines and money lines that cover the boundaries between companies (Rasoki, 2021).

The supply network is not only limited to the manufacture of a product and customers its suppliers but also includes transportation companies, warehouses, retailers, service companies and consumers. Analysis of a complex supply network in the food network, called the Food Supply Chain Network (FSCN). The Food Supply Chain Network (FSCN) is divided into three elements, including creating, analyzing and expanding the FSCN specifically. In an assessment of the food supply network in its development, it should consider the food supply network that is very suitable for its special characteristics. The nature of a food supply network is very different from a food supply network in general. Where in a food supply network, a food supply network has a food supply network assessment technique that is very compatible with its characteristics. As for the implementation and activities of the peanut farming business, it is very exclusive which has several food supply networks that are collected from various implementers such as farmers, selling seeds or seeds, middlemen, agents, retailers and customers, together with different conditions (Vandervorst, 2006).

### 2.3. Marketing channel

Marketing channels or *marketing channel* are the people, organizations and activities necessary to transfer ownership of goods from the point of production to the point of consumption. It is the way for the product to reach the end user, the consumer and is also known as a distribution channel. The marketing channel measures include: Functions of Marketing, Efficiency of Marketing, Margin on Marketing, Share of Farmers (Farmer Share) and Ratio on Cost Profit of Marketing (Kotler, 2017).

## 3. RESEARCH METHOD

### 3.1. Research Time and Place

The place of this research is in West Aceh District, Aceh Province. Where West Aceh District is the center of peanut production, especially in Aceh Province. Peanut cultivation is carried out after the rice harvest season. The research was conducted for one month using data from the 2021 harvest season.

### 3.2. Research Design

The research design conducted was descriptive research (*descriptive research*) namely research that seeks to describe the current problem solving systematically and factually based on data. So this research includes the process of collecting, presenting and processing data, as well as analysis and interpretation of data. The data used in this study is divided into two, namely primary and secondary data. Primary data were obtained from farmers, traders, and all units involved in the supply chain following the peanut marketing commodity network with interviews with respondents on market activities and the home industry processing peanuts to be made into peanut brittle snacks. This aims to obtain an overview of peanut marketing performance starting from the producer level to the consumer level.

### 3.3. Determination of Population and Sample

#### Population Determination

The sampling method in this study namely where direct observation is carried out by interviewing respondents. The number of samples in this study were 30 farmers who were considered capable of representing the entire population in gathering the required information. In determining the sample, the method used was purposive sampling in which 20 peanut farmers actually sold it for consumption.

#### Sampling

The research sample, namely supply chain actors, was carried out by the method snowball sampling, namely by observing the flow of the peanut supply chain according to the research limitations, so that the total respondents to traders in this study were 15 people. Details of traders for the supply chain for peanut consumption, namely collector traders 5 people, wholesalers who are domiciled outside West Aceh Regency (non-local wholesalers) 2 people and retail traders who are domiciled in West Aceh Regency (local retailers) 2 people and retailers who are domiciled outside Aceh Barat district (non-local retailer) 2 people. While the respondents for peanut traders for seeds, namely seed breeders domiciled in Pante Ceureumen, Bubon and Woyla Timur Districts, West Aceh Regency, were 4 people, so that the total sample was 45 people.

### 3.4. Data Analysis Technique

In this study, the method to be used is qualitative and quantitative data analysis. Diaman qualitative analysis is used for analyzing the supply chain of the peanut commodity with the Food Supply approach *Chain Network (FSCN)* Meanwhile, in measuring supply chain performance, quantitative analysis is used with the marketing efficiency approach of peanuts.

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**4. RESULTS AND DISCUSSION**

**4.1. Characteristics of Respondents**

Respondents in this study were peanut farmers who sold for consumption and peanut farmers sold for seeds in West Aceh District. The number of respondents to peanut farmers for sale to the peanut industry to be processed into food was 10 people and 20 farmers who sold peanuts to traders or middlemen. The number of respondents for farmers is 30 respondents who have different characteristics. The characteristics that distinguish peanut respondents in West Aceh District are based on gender, age, education, farming experience, and land area owned by the respondent. The distribution of characteristics of peanut farmers in West Aceh District is presented in Table 2. below:

Table 2. Characteristics of Respondents of Peanut Farmers in West Aceh District in 2022

Characteristics	Peanut Farmers for the Food Processing Industry		Peanut Farmers are sold to middlemen	
	Number of people)	Percentage (%)	Number of people)	Percentage (%)
<b>Gender</b>				
a. Man	8	80.00	11	55.00
b. Woman	2	20.00	9	45.00
<b>Age</b>				
a. 25 - 34 Years	2	20.00	9	45.00
b. 35 - 44 Years	5	50.00	7	35.00
c. 45 - 55 Years	3	30.00	4	20.00
d. > 55 Years	0	0.00	0	0.00
<b>Education</b>				
a. 0 - 6 Years (SD)	4	40.00	7	35.00
b. 7 - 9 Years (Junior High School)	0	0.00	2	10.00
c. 10 - 12 Years (High School)	6	60.00	11	55.00
d. > 12 Years (S1-S3)	0	0.00	0.00	0.00
<b>Farming Experience</b>				
a. ≤ 10 Years	2	20.00	5	25.00
b. 11 - 20 Years	5	50.00	8	40.00
c. 21 - 30 Years	3	30.00	7	35.00
<b>Land area</b>				
a. 1-5 Hectares	5	50.00	11	55.00
b. 6-10 Hectares	3	30.00	6	30.00
c. > 11 Hectares	2	20.00	3	15.00

The trader respondents in this study amounted to 11 traders, where the peanut supply chain respondents with the details are collector traders 5 people, wholesalers 2 people and retailers 4 people. The characteristics of traders based on gender, age, education level and trading experience can be seen clearly in Table 2. below:

Table 2. Characteristics of Respondents of Peanut Traders in West Aceh District

Characteristics	Collector Traders		Wholesaler Outside Region		Retail Traders	
	Amount (person)	Percentage (%)	Amount (person)	Percentage (%)	Number of people	Percentage (%)
<b>Gender</b>						
a. Man	4	80.00	0	0.00	1	25.00
b. Woman	1	20.00	2	100.00	3	75.00
<b>Age</b>						
a. 25-34 Years	0	0.00	0	0.00	1	25.00
b. 35-44 Years	3	60.00	0	0.00	1	25.00
c. 45-55 Years	2	40.00	2	100.00	2	50.00
d. > 55 Years	0	0.00	0	0.00	0	0.00
<b>Education</b>						
a. 0-6 Years (SD)	1	20.00	0	0.00	1	25.00
b. 7-9 Years (Junior High School)	0	0.00	0	0.00	1	25.00
c. 10-12 Years (High School)	4	80.00	2	100.00	2	50.00
d. > 12 Years	0	0.00	0	0.00	0.00	0.00
<b>Experience</b>						
a. ≤ 10 Years	2	40.00	0	0.00	3	75.00
b. 11-20 Years	3	60.00	2	100.00	1	25.00
c. 21-30 Years	0	30.00	0	0.00	0	0.00

#### 4.2. Peanut Supply Chain in West Aceh District

Chain The supply of peanuts in West Aceh District can be analyzed using the Food Supply Chain Network (FSCN) framework approach where the performance of the peanut supply chain for consumption (processed food) and for seeds in West Aceh District is measured through a marketing operational efficiency approach. The analytical tools used to describe supply chain efficiency are marketing margin analysis and farmer's share.

##### Marketing Margin Analysis

Peanut marketing institutions for consumption consist of peanut farmers, collector traders, wholesalers outside West Aceh District, and retailers and retailers outside West Aceh District. There are three marketing channel patterns for peanuts for consumption, namely:

Channel Pattern 1: Farmers → Collector Traders → Wholesalers outside West Aceh District → Retailers outside West Aceh District → Consumers outside West Aceh District.

Pattern of Channel 2: Farmers → Collectors → Wholesalers outside West Aceh District → Retailers outside West Aceh District → Consumers outside West Aceh District.

Channel Pattern 3: Farmers → Collectors → Retailers → Consumers.

As for the calculation of share at the farmer level as follows:

$$\text{Farmer's Share} = \frac{15.000}{32.000} \times 100\% = 46,88\%$$

Based on the calculation of the farmer's share at the farmer level, for a more detailed overall calculation, such as selling prices, costs and profits, then the calculation of the marketing margin and the price received by farmers (share) in each marketing channel and institution is

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carried out in Table 3 below:

Table 3. Marketing Margin of Peanuts for Consumption in West Aceh District

Description	Channel 1 (Rp/Kg)	Share(%)	Channel 2 (Rp/Kg)	Share (%)	Channel 3 (Rp/Kg)	Share (%)
<b>Farmer</b>						
Selling price	15,000	46,88	15,000	45,45	15,000	50,00
<b>Collector trader</b>						
1. Margins						
a. Cost	7,500	23,44	9000	27,27	8000	26,67
b. Profit	10,000	31,25	9,500	30,30	9,000	33,33
2. Selling price	25,000	78,13	25000	75,76	25000	83,33
<b>Wholesalers Outside West Aceh District</b>						
1. Margins						
a. Cost	1500	4.69	1000	3.03	-	-
b. Profit	3000	9,38	2500	7.58	-	-
2. Selling price	28000	87.50	27500	83,33	-	-
<b>Retailers Outside West Aceh District</b>						
1. margins						
a. Cost	1000	3,13	2000	6,061	-	-
b. Profit	5000	15,63	4500	13.64	-	-
2. Selling price	32000	100.00	33000	100.00	-	-
<b>Retail Traders</b>						
1. Margins						
a. Cost	-	-	-	-	1500	5.00
b. Profit	-	-	-	-	5000	16,67
2. Selling price	-	-	-	-	30000	100.00

Based on Table 3, it is known that the selling price of peanuts at the farmer level is the same in channel 1, channel 2 and channel 3 of Rp. 15,000 per kilogram. While the selling price at the retailer level or the highest consumer purchase price is on channel 2, which is Rp. 32,000 per kilogram followed by channel 1 which is Rp. 32,000 per kilogram and the lowest price at the retail level on channel 3, which is Rp. 30,000 per kilogram. Furthermore, it can be seen that the highest price received by farmers (share) of the price paid by consumers is in channel 3, which is 50.00 percent.

As previously explained, the marketing margin component consists of marketing costs and profits. The results showed that the marketing of peanuts from farmers to channel 1 collectors obtained a margin of Rp. 17,500 per kilogram, channel 2 is Rp. 19,000 per kilogram, and channel 3 Rp. 18,000 per kilogram. Meanwhile, through analysis of marketing margins at the marketing agency level for each channel, it is known that the highest marketing margins on channel 1 are at the collector level, on channel 2 at the collector level and on channel 3 at the collector level. This is because the collecting traders also bear the highest marketing costs. Even so, the amount of costs borne by the collecting traders is also directly proportional to the profits earned by the collecting traders.

The largest total marketing margin as a whole is in channel 2, which is Rp. 29,000 per kilogram. The total marketing margin generated by other channels, namely channel 1, is Rp. 28,000 per kilogram and channel three of Rp.24,500 per kilogram. The highest total marketing costs for peanuts in West Aceh District are in channel 2, which is Rp. 12,000 per kilogram and the smallest

marketing costs incurred are on channel 3, which is Rp. 9,500 per kilogram. Furthermore, in terms of profit, the highest total profit is in channel 1, which is Rp. 18,000 per kilogram. The amount of costs incurred by the marketing agency, the profits and margins for each peanut marketing channel for each type have various values. One indicator of marketing efficiency is seen from the high and low margins on each channel. The higher the margin earned, the more inefficient marketing. Based on the marketing margin analysis in this study, it is known that the total marketing margin for each type of peanut and each channel is as presented in Table 4 below:

Table 4. Total Margins of Each Type in Each Peanut Marketing Channel in West Aceh District

Type and Channel Marketing	Total cost (Rp/Kg)	Total Profit (Rp/Kg)	Total Margins (Rp/Kg)
<b>For consumption/ processing</b>			
Channel 1	10,000	18,000	28,000
Channel 2	12,000	17,000	29,000
Channel 3	9,500	15,000	24,500

Based on Table 4, the largest total margin is found in the marketing of peanuts for consumption. The largest total margin is in channel 2, which is Rp. 12,000 per kilogram and the smallest margin for consumption on channel 3 is Rp.9,500 per kilogram. For peanuts for the 3rd marketing channel, the total margin obtained is the smallest compared to the marketing margins for peanuts for the 1st and 2nd marketing channels. So that in terms of the size of the margin obtained, it can be concluded that the peanut supply chain for the 3rd marketing channel is more efficient compared to the peanut supply chain channels 1 and 2.

#### Farmer's Share analysis

*Farmer's share* can be used as an indicator of marketing efficiency which is the second after marketing margins. Farmer's share measures the proportion that peanut farmers receive to the price of peanut products at the end consumer level. The farmer's share value is the percentage of the selling price received by the farmer against the selling price of peanuts paid by the end consumer. Farmer's share received by peanut farmers in each peanut marketing channel for consumption and for seeds in West Aceh District can be seen in Table 5. below:

Table 5. Farmer's share in Marketing Channels for Peanut Consumption in West Aceh District

Type and Channel Marketing	Prices in Levels Farmers (Rp/Kg)	Prices in Levels Consumers (Rp/Kg)	Farmer's Share(%)
<b>For Consumption</b>			
Channel 1	15,000	32,000	46,88
Channel 2	15,000	33,000	45,45
Channel 3	15,000	30 000	50.00

Based on the results of the farmer's share on the marketing channel for peanut consumption in Table 5, it shows that the farmer's share received by farmers on each channel where the value of the farmer's share on peanuts for channel 1 is 46.88 percent, channel 2 is 45.45 percent and channel 3 by 50.00 percent. The highest farmer's share value of the three marketing channels is found on channel 3 which is equal to 50.00 percent. Farmer's share of 50.00 percent means that the share received by farmers is 50.00 percent of the price paid by the final consumer. The pattern of channel 3 is higher than the other channels for peanut consumption because it has the shortest marketing channel in terms of the number of marketing agencies involved and the destination market. In line with research by Sukayana et al. (2013) that the shorter the marketing channel, the greater the price contribution enjoyed by farmers. Based on the three marketing channels, it can be

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concluded that the most profitable marketing for farmers is peanuts on channel 3 because it has the largest farmer's share value. In general, marketing channel 3 is more profitable because the value of the farmer's share in the peanut supply chain is greater than marketing channels 1 and 2. Measuring the performance of the peanut supply chain in West Aceh District through marketing margin analysis and farmer's share shows results that illustrate that the supply chain the supply of peanuts in channel 3 is more efficient than marketing channels 1 and 2. it can be concluded that the most profitable marketing for farmers is peanuts on channel 3 because it has the largest farmer's share value. In general, marketing channel 3 is more profitable because the value of the farmer's share in the peanut supply chain is greater than marketing channels 1 and 2. Measuring the performance of the peanut supply chain in West Aceh District through marketing margin analysis and farmer's share shows results that illustrate that the supply chain the supply of peanuts in channel 3 is more efficient than marketing channels 1 and 2. it can be concluded that the most profitable marketing for farmers is peanuts on channel 3 because it has the largest farmer's share value. In general, marketing channel 3 is more profitable because the value of the farmer's share in the peanut supply chain is greater than marketing channels 1 and 2. Measuring the performance of the peanut supply chain in West Aceh District through marketing margin analysis and farmer's share shows results that illustrate that the supply chain the supply of peanuts in channel 3 is more efficient than marketing channels 1 and 2.

## 5. CONCLUSIONS AND SUGGESTIONS

### 5.1. CONCLUSION

Based on the results of the research conducted, the following conclusions are obtained:

1. The supply chain for peanuts for consumption already has clear targets, relationships between actors that are structured, but not yet well managed in terms of business processes that have not been integrated in the long term. In peanuts, the seeds of collaboration between actors have been well established in terms of information disclosure, cooperation and integration between supply chain actors.
2. The results of supply chain performance analysis through the farmer's share received by farmers in each channel where the value of the farmer's share in peanuts for channel 1 is 46.88 percent, channel 2 is 45.45 percent and channel 3 is 50.00 percent. Based on these results, it can be concluded that the peanut supply chain for channel 3 is more efficient than the peanut supply chain for channels 1 and channel 2.

### 5.2. SUGGESTIONS

Based on the results of the conclusions described, the suggestions that can be conveyed are as follows:

1. For Peanut Farmers

The need for supply chain improvement through the FSCN approach to peanuts for consumption, namely the formation and strengthening of the role of groups in establishing cooperation and information disclosure in the supply chain network. Meanwhile, in the supply chain of peanuts for seeds, guidance and development of the number of certified farmers and seed breeders. This can be pursued by improving peanut supply chain management policies that are oriented towards providing quality/certified seeds at affordable prices.

3. To the Regional Government of West Aceh District

It is hoped that more attention will be paid to home, small and medium industries. The government is expected to pay more attention to price policy and is expected to be able to provide assistance such as providing equipment or machinery to be used in business, providing business capital loans and training related to peanut processing business, one of which is becoming a project.



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