

Analysis of Marketing Chain of Vegetable Commodities in Around the Areas Affected by the Liquefaction Disaster

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Abstract: Many factors cause why farmers do not have the ability to maintain their socio-economic life, mainly because it is difficult to obtain fresh funds, unavailability of production facilities and supporting factors such as fertilizers, superior seeds, counseling, and the low attention of local and central governments. Explorative and developmental research, which focuses on exploratory activities in providing an overview in mapping the profile of farmers, including the supply chain of vegetables sold to the capital city of Palu, the capital city of Central Sulawesi Province as well as a trading center and government. The research was carried out around the areas affected by the Jono Oge and Sidondo Earthquake and Liquefaction of Sigi Regency to look at the marketing chain and Palu City to see the supply chain at the Masomba and Manonda traditional markets, while to see the perpetrators of the trade system were traced based on the location of the traders and suppliers domiciled. To find out the suppliers in the traditional market, a careful identification is carried out so that the percentage (share) of suppliers outside Jono Oge can be known. The data analysis used in this research is descriptive. The longer the marketing chain in the tomato and chili vegetable trading system in the research area around Jono Oge and Sidondo which was affected by the earthquake and liquefaction, the more inefficient it will be. Thus, marketing channel I for both tomatoes and chilies is the one that gives a higher Farmer's Share value and is more efficient than marketing channel II. All institutions involved in the marketing chain, from farmers, traders to retailers, carry out marketing functions, namely buying, selling, transportation, storage, processing, standardization and grading, financing, risk management, and market information. The margin share of producer farmers in each marketing channel for each tomato and chili is 84% and 89.74%, respectively.

I. INTRODUCTION

The helplessness of farmers to face market demand is caused by many factors, including low productivity and the presence of middlemen who easily manipulate prices. In a helpless condition, middlemen are free to carry out their role as collectors because they take advantage of the momentum of helplessness due to various factors faced by farmers. (Abebe et al., 2016; Demeulenaere & Piersante, 2020). On the other hand, the demand for commodities, especially vegetables,

continues to increase in line with the increase in population which is directly proportional to the level of public consumption. The increase in population has opened up market opportunities ranging from national, regional and local markets (Grillitsch & Sotarauta, 2020; Zeevat et al., 2021). So far, the increase in population has not been proportional to the availability of vegetable commodities, besides that, vegetable consumption per capita is also still relatively low so that the opportunities for the vegetable market are increasingly open. In areas affected by natural disasters in Indonesia, production is disrupted by various factors, such as the lack of availability of production facilities, traumatic conditions for farmers to rampant traders (middlemen) who give advance purchases to farmers.

In fact, the term appears that farmers only become farm laborers who work to pay off debts that have been taken from middlemen. The weak bargaining position of farmers in the eyes of middlemen is a great opportunity for middlemen to take advantage of farmers at will in determining the basic price of vegetable production. Market demand for vegetable commodities continues to increase from time to time, both nationally and locally (Mishra et al., 2020; Sun et al., 2021). Especially for farmers who are farming around land areas affected by the earthquake and liquefaction natural disaster, market demand also continues to increase as market opportunities for affected farmers around Jono Oge and Sidondo, Sigi Regency, Central Sulawesi. The earthquake and liquefaction that occurred in September 2018 in Palu City, Sigi Regency and Donggala Regency, Central Sulawesi Province, have destroyed various aspects of people's lives which greatly impacted the lives of farmers in Sigi Regency, especially those affected by the earthquake and liquefaction in Jono Oge's agricultural area. and surrounding.

The economic condition of farmers has deteriorated greatly, purchasing power has decreased, and agricultural land requires investment in production facilities to recover technically. Before the living conditions of farmers were restored, the Covid-19 pandemic disaster hit the world, including Indonesia. Jono Oge, Sigi Regency, is the area most

severely affected by natural disasters. This condition caused the productivity of agricultural land affected by the earthquake and liquefaction to drop drastically because technically there were no production facilities, no counseling, limited government assistance, access to price and market information, as well as the very massive Covid-19 information that had implications for farmers' psychosocial (List, 2020; Luciano, 2020). The productivity of damaged land is difficult to restore because it requires capital for land clearing, besides that the enthusiasm of farmers has also decreased due to the impact of natural disasters and the Covid-19 pandemic. The economic condition of the community experienced a drastic decline so that it also affected the purchasing power of farmers, who did not have enough money to send their children to higher education levels. The helplessness of farmers forced them to take the decision to stop continuing their children's education which led to an increase in children dropping out of school (Nurhadi et al., 2019; Ahsanuzzaman & Islam, 2020).

Many factors cause why farmers do not have the ability to maintain their socio-economic life, mainly because it is difficult to obtain fresh funds, unavailability of production facilities and supporting factors such as fertilizers, superior seeds, counseling, and the low attention of local and central governments. The government is still focused on providing temporary housing and permanent housing. In a slumped condition, the status of farmers' land ownership is also unclear due to a shift in boundaries after the liquefaction event. This problem requires the full involvement of the government so that farmers can obtain legal certainty. At a time when farmers were in a slump, poor, and lost their zest for life, the Covid-19 pandemic hit the whole world, including Indonesia. Central and local governments issued Lock Down policies. All people are prohibited from doing activities outside the home to prevent the transmission of Covid-19 (Liu et al., 2020; Wammes et al., 2020). This policy has added to the burden of living for farmers, which is getting worse because they have no other source of livelihood except only from farming activities on agricultural land affected by liquefaction. In the traumatic conditions caused by the earthquake and liquefaction, the information about the severity of Covid-19 as a deadly virus added to the fear of farmers and their families.

Reports containing the number of positive people for the corona virus, the number of deaths that continues to increase day by day on social media causes anxiety and fear of farmers (Ahmed, 2020; Kumar & Somani, 2020). In a panic situation, government assistance is the only way to save the lives of farmer households, which generally have 3 to 4 family members. The news of the Covid-19 pandemic that is endemic throughout the world is very scary for farmers in maintaining their farming which is the only source of life in meeting their daily needs. (Dupas et al., 2020; Su et al., 2020). Information on the Covid-19 pandemic is very broad and fast across all parts of the world, both information sourced from official media that can be accounted for and information that is false or hoax. (Rollett et al., 2020; Zhong et al., 2020). This bad

information directly affects the various activities of farming families who generally have a low level of education. Their work spirit plummeted, life was filled with suffering and uncertainty, and even a number of farmers had to accept the fact that some of their families were declared reactive after an initial examination was carried out if there were suspected symptoms of Covid-19.

People living in rural areas, especially farmers who were affected by the earthquake and Liquefaksi natural disasters around Jono Oge, Sigi Regency, experienced prolonged suffering. Vegetable commodity agricultural products have so far been channeled through intermediary traders to be sold to inner-city markets, which has also been hampered by government policies that have implemented a lock down to reduce human contact through the application of "Social Distancing". Two situations and conditions that affect the lives of farming families are traumatic due to the natural disaster in September 2018 and the very massive information on the Covid-19 Pandemic and the lack of assistance and facilities that can be accessed by farmers. The strength of the Covid-19 pandemic information is difficult to contain, especially issues related to the number of people who have been infected and died (Ulhaq & Soraya, 2020; Yanti et al., 2020).

The Sigi Regency Government, through its instruments, has helped raise horticultural farmers so that they are able to return to their activities. Horticultural agricultural products are gradually recovering after approximately two years of being affected by the earthquake and liquefaction. Vegetable production data in Sigi Regency for the last five years (BPS, 2021). Currently, there are several changes in the marketing channels of vegetables produced by farmers due to the shock of a very powerful natural disaster. The choices of vegetable producer farmers are starting to be able to sort and choose so that determining the right marketing channel is expected to have an impact on Farmer Share and also the more diverse Market Share. Paying attention to the condition of tomato and chili producer farmers, where helplessness is the main factor why prices are easy to play with. Based on this consideration, besides farmers should be given advice to broaden their horizons in marketing their harvests, it is also hoped that they can market directly to traditional markets and modern markets in Palu city so that the margins obtained are higher. That is the reason why this research was conducted in order to find the best soluli related to the market chain, especially the commodities of the four types of vegetables.

II. RESEARCH METHODS

Types of research

Explorative and developmental research, which focuses on exploratory activities in providing an overview in mapping the profile of farmers, including the supply chain of vegetables sold to the capital city of Palu, the capital city of Central Sulawesi Province as well as a trading center and government. In addition, an inventory of the pigs involved in productive activities related to the distribution of vegetables

was also carried out. Development research (Developmental research) uses a vegetable supply chain development model which is intended as an effort to increase the income of vegetable producing farmers around the Earthquake and Liquefaction Affected Area of Sigi Regency,

Location, Time and Source of Research Data

The research was carried out around the areas affected by the Jono Oge and Sidondo Earthquake and Liquefaction of Sigi Regency to look at the marketing chain and Palu City to see the supply chain at the Masomba and Manonda traditional markets, while to see the perpetrators of the trade system were traced based on the location of the traders and suppliers domiciled. To find out the suppliers in the traditional market, a careful identification is carried out so that the percentage (share) of suppliers outside Jono Oge can be known. This research was conducted for two months, starting from August to September 2021 (eight weeks). Data was collected through the main respondents, namely (i) producer farmers around the areas affected by the earthquake and liquefaction of Jono Oge and Sidondo, Sigi Regency; (ii) collector traders; (iii) retailers; (iv) sellers in the market; and (v) vegetable consumers in the traditional markets of Manonda and Masomba. Producer farmers and collectors are determined purposively, while consumers in traditional markets are determined according to what is found. Respondents in the trade system were traced from producer farmers to the perpetrators of the trade system.

Data Collection Methods And Data Analysis

The data collection method in this study is a census method that uses all the population. Population defines as farmers who grew both chili, tomato, mustard and onion farmers around the Jono Oge area affected by the liquefaction natural disaster in Sigi Regency. In addition, 3 collecting traders and 6 retailers will be interviewed in traditional markets, including consumers who were found shopping during data collection.

The data analysis used in this research is descriptive.

- Marketing margin is calculated using the formula(Mohammadi et al., 2020):

$$Mr = Pr - Pf$$

With the meaning of each symbol:

Mr = Marketing Margin

Pr = Price at merchant/retailer level

Pf = Price at farm level.

- Profit margin is calculated using the formula(Nariswari & Nugraha, 2020):

$$P = Mr - C$$

With the meaning of each symbol:

P = Profit

Mr = Marketing Margin

C = Marketing costs

- Farmer's Share

Farmer's share is an analytical tool that can be used to determine the efficiency of the trade system from the perspective of farmers' income.(Turland & Slade, 2020)defines farmer's share as the percentage of the price received by farmers as a reward for the farming activities they do in producing a commodity. Farmer's share is expressed in percentage (%).

$$Fs = \left\{ \frac{Pf}{Pr} \right\}$$

With the meaning of every symbol:

Fs = Farmer's Share (%)

Pf = Price at farm level (Rp)

Pr = Price at the consumer level (Rp)

- Market Share (Market Share)

Market share isa calculation in the form of a percentage of total sales of commodities traded to consumers(Paré et al., 2020). Market share in the marketing of chili, tomato, mustard and shallot vegetables is determined by the percentage of each vegetable commodity and where the market potential is the most dominant.

III. RESULTS AND DISCUSSION

Overview of Research Sites

This research was carried out around agricultural areas affected by the Earthquake and Liquefaction in Jono Oge, Sigi Biromaru District, Sigi Regency, with the outside the area is about 204 ha with a population of 568 people consisting of 290 men and the rest 278 women. Of the total area available, 30 ha is commercial landha farmer respondents. The sampling locations were not only in Jono Oge Village but also included other villages around the area affected by the Earthquake and Liquefaction, including some belonging to the Sidodndo I and Sidondo II areas. Food crops that are generally developed by farmers in the research area are vegetables and secondary crops, but this research focuses on vegetable crops, namely tomatoes and chilies.

The marketing channel as previously mentioned is that there are two patterns used by producer farmers in marketing vegetable commodities from farmers to final consumers, as presented in Figure 4.1 below.

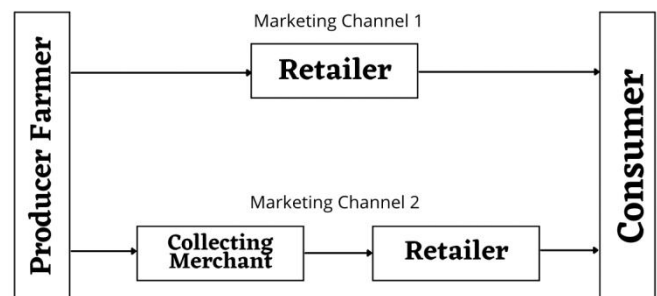


Figure 1. Forms of Marketing Channels around the Jono Oge area

Based on the two forms of marketing channels around Jono Oge, each marketing channel can be described as follows:

1. Marketing Channel Form 1

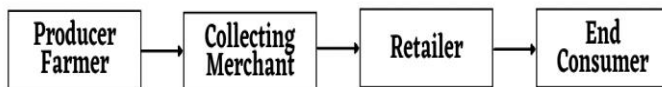
Marketing chain form 1 has a shorter market chain where from producer farmers directly sell to retailers, then retailers to final consumers with the following Figure 1:



If the marketing chain is shorter, marketing costs are more efficient, besides that producer farmers get a bigger margin because there is no price game. Before harvest time, farmers have informed retailers in Masomba and Manonda Traditional markets, so that when farmers deliver their harvests, retailers are ready to buy them. Need more information. In the study how many retailers contacted by one farmer? Do retailers agree to buy all the quantities offered by farmers? Based on the theory quantity supply to the market depends on the quantity demanded by purchases. Marketing demand and supply is not clear.

2. Marketing Channel Form 2

The form of marketing channel model 2 shows that farmers producing tomatoes, chilies, mustard greens and shallots around the area affected by the earthquake and liquefaction in Jono Oge, sell their crops to middle men. Producer farmers provide information to collecting traders to come to the location where the vegetables are harvested. Furthermore, transactions are carried out between producer farmers and collector traders. After the harvest has been purchased by the collectors, it is then forwarded to retailers who will sell them to final consumers, with the following channel pattern:



This marketing chain scheme is longer so that marketing costs are higher than with marketing channel 1. As a result, the margins obtained by the producer farmers are smaller.

Marketing Agency

Farmer

As a commodity producer of tomatoes, branches, mustard greens and shallots, farmers are those who carry out cultivation practices that produce commodities that are traded. Farmers are also the first parties to carry out marketing activities in the marketing channel system so that they are positioned as marketing institutions that are upstream. In carrying out the transaction function, farmers as producers make sales to collectors and retailers, considering that there

are only two marketing institutions involved before reaching the final consumer. In carrying out transactions, farmers receive cash funds from collectors at locations where vegetable commodities are produced. Meanwhile, if it is farmers who deliver directly to retailers, transactions are usually carried out at Masomba and Manonda markets after the agreed time for delivery of vegetables and payment. In determining the size of the transaction, sales volume is seen from the weight in kilograms and the calculation in the transaction is also calculated based on the number of kilograms traded, both tomatoes and chilies.

Collecting Merchant

The existence of collectors is one of the institutions in the marketing channel that makes purchases of vegetables to farmers who produce directly at the production site. Furthermore, the collecting traders resell to retailers in Masomba and Manonda markets, Palu city. Those who practice as middle man, as many as 3 people who have been customers of producer farmers around Jono Oge, the plantation area affected by the earthquake and liquefaction. The three middlemen have a relationship as colleagues in running a business in the same area. The price received by farmers from their respective collectors; Rp. 5,000 for tomatoes and Rp. 39,000 for chili. These prices are valid at the time of the interview during the study,

Retailer

The existence of retailers in the vegetable marketing chain is a marketing agency that is on the cutting edge considering that its existence interacts directly with final consumers, who are marketing actors who interact directly with consumers. Retailers also have a wide network because each retailer has customers with high loyalty. To maintain consumer loyalty, the price is really maintained so that consumers do not think there is a game. The key to the price at the retail level is the price paid to the collectors with the assumption that they do not have too large a margin at the producer farm level with at the retail level so that consumers do not feel disadvantaged. Existing prices at the retailer level from the collectors vary, respectively;

Marketing Function

Farmer Packing Functions

The marketing functions of farmers as producers of tomatoes, chilies, mustard greens, and shallots carry out the exchange function as part of the agroproduction subsystem in the agribusiness system, namely (i) the exchange function, which is intended to start from the procurement and purchase of seeds or seedlings to the sale of crops to collecting traders and/or retailers who come to locations where production farmers carry out cultivation practices as well as become locations for buying and selling commodities for tomatoes, chilies, mustard greens, and shallots, which in terms of payment during transactions generally use cash funds in the field. (ii) The physical function, a function at the research

location around Jono Oge, did not occur considering that the buyer, in this case the middleman who came to the location where the production was carried out, especially traders who are part of the marketing institutions involved in channel 2. Producer farmers who do not carry out physical functions, do not share all the risks arising from the distribution and transaction processes, but the risks are borne by the collecting traders who come around the area planting tomatoes, chilies, mustard greens, and fried onions in Jono Oge and its surroundings. (iii) Facility Function. The function of the facilities carried out by farmers is when sorting or separating the size and shape and appearance of each type of vegetable that will be purchased by collectors in accordance with agreements that have been culturally carried out for years. Although this sorting function is the responsibility of producer farmers.

Merchants' Marketing Functions

Collector as one of the institutions involved in the marketing chain has; (i) marketing function, a marketing function for tomatoes, chilies, mustard greens, and shallots purchased from producer farmers in an exchange function, namely the buying and selling function. In addition, traders also carry out (ii) physical functions, a transportation function and management functions in which there is packaging which makes it easier to transport from the Jono Oge area as a production area, played by producer farmers. In addition to these two functions, there is also (iii) a facility function, a function in which there are sorting activities, display improvement (grading), additional process financing, risk responsibility, and also related to information related to tomato vegetable products,

Merchant Retailer Marketing Functions

Retailers as institutions involved in the marketing chain of tomatoes, chilies, mustard greens, and shallots around the areas affected by the earthquake and liquefaction, have functions, among others; (i) Exchange function, a function performed by retailers as well as a function carried out by collecting traders, namely the buying and selling function. Buying from collectors or from producers and selling to final consumers. In this buying and selling function, retailers buy from institutions in the marketing chain, including buying directly from producer farmers, in addition to collecting traders. (ii) Physical Function, a function where retailers perform the functions of transportation and storage, both of which are carried out if vegetables are distributed to consumers, but if vegetables are tomatoes, chilies, mustard greens, and shallots are not sold out in one day, so proper storage is needed to prevent the vegetables from rotting. At least the quality expected by consumers has not changed so that it can still be sold the next day or the next. (iii) Facility function, a function performed by retailers, including sorting vegetables that change shape due to temperature or time, and the risks arising from this function are the responsibility of the retailer.

Marketing Margin

The marketing margin, which consists of costs and profits, can be determined by conducting an analysis of marketing institutions. The value of the marketing margin is determined by subtracting the selling price from the purchase price from each institution involved in the marketing chain, or in other words looking at the size of the price difference between the farmer and each involved institution until the price reaches the consumer level so that the price is detected at the producer level, which is commonly referred to as farmer share (Fs). This margin share is the percentage of the price spread to the consumer's purchase price. Price grouping is the purchase price and marketing costs according to the marketing functions carried out in the marketing chain.

It can be explained that in this study, information was obtained starting from the costs, benefits, and marketing margins of tomato vegetables in marketing channel 1, presented in Table 1 as follows:

Table 1 The amount of marketing costs and margins Tomato Marketing Channel 1

No	Description	Selling/buying price (Rp/kg)	Marketing costs (Rp/kg)	Share Margin (%)
1	Producer Farmer			
	Selling price	5,000		84.00
	Production cost		941.73	15.60
	Profit		4058.27	67.60
	Marketing Margin			
2	Retailer			
	Purchase price	5,000		
	Selling price	7,000		
	Marketing Fee		310	4.42
	*Packaging		120	1.70
	*Transportation		150	2.14
	*Marketing loss		40	0.57
	*Profit		1,690	24.14
	*Marketing Margin	2,000		
3	Consumer			
	*Purchase price	7,000		100

Source: Processed Primary Data Results (2021)

In marketing channel 1 as presented in Table 1 above, it can be seen that farmers sell their tomato crops for Rp. 5,000/Kg, or 84% of the final price received by consumers with production costs reaching Rp. 941.73/Kg so that farmers get a profit of Rp. 4,058.27/Kg. In general, retailers in marketing channel 1 buy tomatoes from farmers who are picked up directly at the land where the vegetables are harvested, namely around the land areas in Jono Oge and Sidondo that were affected by the earthquake and liquefaction. The average amount of sales reached 500 kg to 1000 Kg with the farmer's selling price of Rp. 5,000/Kg (80% of the final price received by consumers). The marketing costs incurred

are Rp.310/kg which is the accumulation of packaging costs of Rp.120/kg and transportation costs of Rp.150/kg, while the marketing loss is Rp.40/Kg. For these expenses, the retailer earns a profit of Rp. 1,690/Kg, a marketing margin of Rp. 2,000/Kg.

In addition to the marketing channel pattern 1, the following is a description of the marketing pattern for tomato vegetables in marketing channel 2.

Table 2 The amount of marketing costs and margins Tomato Marketing Channel 2

No	Description	Selling/Buying Price (Rp/Kg)	Marketing Fee (Rp/Kg)	Share Margin (%)
1	Producer Farmer			
	Selling price	5,000		84.00
	Production cost		941.73	13.45
	Profit		4058.27	57.97
	Marketing Margin			
2	Collecting Merchant			
	Purchase price	5,000		
	Selling price	7,000		
	Marketing Fee		340	4.85
	*Cart/Bakul fee		100	1.42
	*Labor		50	0.71
	*Transportation		150	2.14
	*Marketing loss		40	0.57
	Profit	2,000	1.660	23.71
	Marketing Margin			
3	Retailer			
	Purchase price	7,000		
	Selling price	8,000		
	Marketing fee		325	4.06
	*Packaging		100	1.25
	*Transportation		150	1.87
	*Labor		50	0.71
	*Marketing loss		25	0.31
	Profit	1,000	675	
	Marketing Margin			
4	Consumer			
	*Purchase price	8,000		100

Source: Primary Data Processed (2021)

Based on table 2 above, it can be seen that the sale of tomatoes in channel II is at a price of Rp. 5,000/Kg (84% of the final price received by consumers) to collectors with a production cost of Rp. 941.73/Kg and a profit of Rp. 4,058.27. /kg. In channel II, collecting traders buy tomatoes from farmers who are generally picked up to farmers' fields

around the Jono Oge and Sidondo areas, where these areas are affected by earthquakes and liquefaction. Collectors then sell the tomatoes to retailers at Manonda and Masomba Markets with an average sale of around 500 kg to 1,000 kg with a selling price to retailers of IDR 7,000/Kg (87.5% of the price received by final consumers).

The marketing costs incurred by the collecting traders are Rp.

Furthermore, retailers sell tomatoes to consumers both in Manonda and Masomba at a price of Rp. 8,000,-/Kg with a marketing cost of Rp. 325,-/Kg so that retailers earn a profit of Rp. 675,-/Kg from a marketing margin of Rp.1,000,-/kg.

The costs, benefits, and marketing margins of chili vegetables in marketing channel 1 are presented in Table 3 as follows:

Table 3 The amount of chili marketing costs and margins in Marketing Channel 1

No	Description	Selling/buying price (Rp/kg)	Marketing costs (Rp/kg)	Share Margin (%)
1	Producer Farmer			
	Selling price	35,000		89.74
	Production cost		1161.61	2.97
	Profit		33,838.39	86.76
	Marketing Margin			
2	Retailer			
	Purchase price	35,000		
	Selling price	39,000		
	Marketing Fee		350	0.89
	*Packaging		125	0.32
	*Transportation		150	0.38
	*Marketing loss		75	0.19
	*Profit			
	*Marketing Margin	4,000	3.650	9.39
3	Consumer			
	*Purchase price	39,000		100

Source: Primary Data Processed (2021)

In marketing channel 1 for chili vegetables as presented in Table 3 above, it can be seen that farmers sell chili harvests for Rp. 35,000/Kg, or 89.75% of the final price received by consumers with production costs reaching Rp. 1,161.61/Kg. earn a profit of Rp.33,838.39,-/Kg. In general, retailers in marketing channel 1 buy tomatoes from farmers who are picked up directly at the land where the vegetables are harvested, namely around the land areas in Jono Oge and Sidondo that were affected by the earthquake and liquefaction and not farmers who bring them to retailers. The average amount of sales reached 500 kg to 1,000 Kg with marketing

costs of IDR 350/kg which is the accumulation of packaging costs of Rp. 125/kg and transportation costs of Rp. 150/kg, while the marketing loss is Rp. 75/Kg. For these expenses, the retailer earns a profit of Rp. 3,650/Kg, with a marketing margin of Rp. 4,000/Kg.

Next to the pattern 1 pemasaran marketing channel above, the following is a description of the marketing pattern of chili vegetables in marketing channel 2 as presented in Table 4 below.

Table 4.5 The amount of marketing costs and margins Chili Marketing Channel 2

No	Description	Selling/Buying Price (Rp/Kg)	Marketing Fee (Rp/Kg)	Share Margin (%)	
1	Producer Farmer				
	Selling price	35,000		89.74	
	Production cost		1161.61	2.97	
	Profit		33,838.39	86.76	
	Marketing Margin				
	Collecting Merchant				
2	Purchase price	35,000			
	Selling price	39,000			
	Marketing Fee		380	0.97	
	*Cart/Bakul fee		120	0.30	
	*Labor		80	0.20	
	*Transportation		150	0.38	
	*Marketing loss		30	0.07	
	Profit	4,000	3,620	9.28	
	Marketing Margin				
	3	Retailer			
	Purchase price	39,000			
Selling price	40,000				
Marketing fee		320	0.80		
*Packaging		90	0.23		
*Transportation		150	0.38		
*Labor		50	0.13		
*Marketing loss		25	0.63		
Profit	1,000	675	1.68		
Marketing Margin					
4	Consumer				
*Purchase price	40,000		100		

Source: Processed Primary Data (2021)

From the results of the analysis as presented in Table 4. In marketing channel II for chili vegetables, it can be seen that farmers sell chili harvests for Rp. 35,000/Kg, or 89.75% of the final price received by consumers with production costs reaching Rp. 1,161.61/Kg. so that farmers get a profit of Rp.

33,838,39,-/Kg. Collectors buy tomatoes from farmers who are generally picked up from farmers' fields around the Jono Oge and Sidondo areas, where these areas are affected by earthquakes and liquefaction.

Collecting traders then sell the chilies to retailers at Manonda and Masomba Markets with an average sale of around 500 kg to 1,000 kg with a selling price to retailers of Rp. 39,000/Kg (97.5% of the price received by consumers). The marketing costs incurred by the collecting traders are Rp. 380,-/Kg so that the collectors get a profit of Rp. 3,620/Kg with a marketing margin of Rp. 4,000, -/Kg.

Furthermore, retailers sell tomatoes to consumers both in Manonda and Masomba at a price of Rp. 40,000,-/Kg with a marketing cost of Rp. 320,-/Kg so that retailers earn a profit of Rp. 680,-/Kg from a marketing margin of Rp.1,000,-/kg.

Farmer's Share

To find out the results of the distribution of prices received by farmers compared to prices at the final consumer level, the calculation of Farmer's share (Fs) is used which is a comparison of the price received by farmers with the price paid by the final consumer and is expressed as a percentage (%).

Table 5 Percentage of farmer's share in each marketing channel of tomatoes and chili

Channel Marketing	Farmers Selling Price (Rp/Kg)	Consumer Purchase Price (Rp/Kg)	Farmer's Share (%)
Tomato			
I	5,000	7,000	71.43
II	5,000	8,000	62.5
Chilli			
I	35,000	39,000	89.74
II	35,000	40,000	87.50

Source: Primary Data Processed (2021)

Based on Table 5, it can be seen that each marketing channel of tomato vegetables with a different percentage of farmer's share. Farmer's share of tomatoes in marketing channel I was 71.43%, higher than Fs in marketing channel II, which was 62.5%. This shows that the longer the marketing chain of a commodity, the smaller the Fs received by farmers (Fatmawati & Zulham, 2019; Osterhoudt et al., 2020). Each marketing agency involved in the marketing chain determines the margin (Sharma et al., 2020; Althunian et al., 2020), and with a long marketing chain in the end it is the end consumer who bears the high price (Dvir & Strasser, 2018; Li et al., 2021). The Fs value in the tomato marketing chain I compared to the marketing chain II for tomatoes has a difference of 8.93%, where the difference reflects the lower farmers' income due to the involvement of other marketing institutions. (Argüelles et al., 2018; Purwawangsa et al., 2021). The same thing also happened to chili, where the Fs value in

marketing channel I was 89.74% while in marketing channel II it was 87.50 percent. This condition indicates that the Fs value in channel I is more profitable for farmers than marketing channel II as a result of the length of the marketing chain involving more and more marketing agencies involved.(Bannor et al., 2021; Milford et al., 2021).Section

Marketing Channel Efficiency

Efficiency in marketing channels is important in realizing the success of marketing activities by looking at marketing margins, farmer's share value which is determined from the selling price of commodities traded by producers.(Hao et al., 2018; Kholifah & Hartanti, 2021). Price efficiency shows the ability of prices and price indications for sellers and provides information to consumers as a guide in the use of production resources in terms of production and marketing.(Reshetko et al., 2021; Tadesse et al., 2021). Using the concept of marketing costs, a marketing system is categorized as efficient if it can be implemented at a relatively low cost(Savitri & Natariasari, 2021; Shen et al., 2020).

Based on the calculation of the value of the marketing efficiency of tomatoes, an efficient marketing channel is marketing channel I. A marketing channel is called inefficient if the share received by farmers (farmer's share) is less than 50% (Bhanot et al., 2021; Yemelyanov et al., 2021) and is called efficient if the value of Fs is greater than 50% (Pratama & Nuswantara, 2020; Schoolman et al., 2021) by using the concept of marketing costs, as well as a marketing system that is carried out using the lowest relatively low cost (Ferré et al., 2018; Daadi & Latacz-Lohmann, 2021). If we look at the two tomato marketing channels, basically they are both efficient, but with a difference in the value of Fs, marketing channel I is more efficient with a difference of Fs of 8.93%. according to(Soekartawi, 2006), if you want to determine the efficiency can use the equation;

$$Ep = \frac{TB}{TNP} \times 100\%$$

Where the EP (Efficiency) describes marketing efficiency, TB (Total Cost) as the total marketing cost, and TNP is the total value of the product that must be paid by the end consumer. In this method, the value of marketing efficiency is shown from the comparison of marketing costs incurred by marketing agencies with prices to final consumers(Cain, 2021; Rasidin et al., 2018).

To find out the efficiency of each tomato marketing channel in Jono Oge and Sidondo, it is presented in Table 6 below.

Table 6 Efficiency levels in each Tomato and Chili marketing channel

Marketing channel	Total Marketing Cost (Rp/Kg)	Prices at the Consumer Level (Rp/Kg)	Efficiency Level (%)
Tomato			
I	310	7,000	4.43
II	665	7,000	9.50
Chilli			

I	350	39,000	0.88
II	700	39,000	1.79

Source: Processed from Primary data (2021)

Based on the data in Table 4.7 above, it shows that both tomatoes and chilies, which have the highest marketing efficiency are in marketing channel I compared to marketing channel II. Efficiency in channel I can be achieved due to a shorter marketing chain(Novita & Prajanti, 2020; Patel & Tsionas, 2022), because the longer the marketing chain and the more marketing agencies involved, the higher the marketing costs required (Kumse et al., 2021; Nurfadila et al., 2021). This is related to activities that include packaging, transportation and the existence of a loss in marketing or marketing loss(Siong Chung & Low, 2021; Xie et al., 2021).

IV. CONCLUSION

The longer the marketing chain in the tomato and chili vegetable trading system in the research area around Jono Oge and Sidondo which was affected by the earthquake and liquefaction, the more inefficient it will be. Thus, marketing channel I for both tomatoes and chilies is the one that gives a higher Farmer's Share value and is more efficient than marketing channel II. All institutions involved in the marketing chain, from farmers, traders to retailers, carry out marketing functions, namely buying, selling, transportation, storage, processing, standardization and grading, financing, risk management, and market information. The margin share of producer farmers in each marketing channel for each tomato and chili is 84% and 89.74%, respectively.

REFERENCE

- [1] Abebe, GK, Bijman, J., & Royer, A. (2016). Are middlemen facilitators or barriers to improve smallholders' welfare in rural economies? Empirical evidence from Ethiopia. *Journal of Rural Studies*, 43, 203–213. <https://doi.org/10.1016/j.jrurstud.2015.12.004>
- [2] Ahmed, HO (2020). The impact of social distancing and self-isolation in the last corona COVID-19 outbreak on the body weight in Sulaimani governorate- Kurdistan/Iraq, a prospective case series study. *Annals of Medicine and Surgery*, 59, 110–117. <https://doi.org/10.1016/j.amsu.2020.09.024>
- [3] Ahsanuzzaman, & Islam, MQ (2020). Children's vulnerability to natural disasters: Evidence from natural experiments in Bangladesh. *World Development Perspectives*, 19, 100228. <https://doi.org/10.1016/j.wdp.2020.100228>
- [4] Althunian, TA, de Boer, A., Mantel-Teeuwisse, AK, Groenwold, RHH, Gispen-de Wied, CC, Leufkens, HGM, & Klungel, OH (2020). Assessment of the Regulatory Dialogue Between Pharmaceutical Companies and the European Medicines Agency on the Choice of Noninferiority Margins. *Clinical Therapeutics*, 42(8), 1588–1594. <https://doi.org/10.1016/j.clinthera.2020.06.004>
- [5] Argüelles, L., Anguelovski, I., & Sekulova, F. (2018). How to survive: Artificial quality food schemes and new forms of rule for farmers in direct marketing strategies. *Journal of Rural Studies*, 62, 10–20. <https://doi.org/10.1016/j.jrurstud.2018.06.005>
- [6] Bannor, RK, Ibrahim, N., & Amrago, EC (2021). Examining the influence of commercialization and postharvest losses on the choice of marketing outlet among poultry farmers. *Scientific African*, 12, e00792. <https://doi.org/10.1016/j.sciaf.2021.e00792>
- [7] Bhanot, D., Kathuria, V., & Das, D. (2021). Can institutional innovations in agri-marketing channels alleviate distress selling?

- Evidence from India. *World Development*, 137, 105202. <https://doi.org/10.1016/j.worlddev.2020.105202>
- [8] BPS. (2021). Sigi Regency in Figures 2021. Central Bureau of Statistics.
- [9] Cain, PM (2021). Modeling short and long-term marketing effects in the consumer purchase journey. *International Journal of Research in Marketing*, S0167811621000495. <https://doi.org/10.1016/j.ijresmar.2021.06.006>
- [10] Daadi, BE, & Latacz-Lohmann, U. (2021). Assessing farmers' attitudes to, and the behavioral costs of, organic fertiliser practices in northern Ghana: An application of the behavioral cost approach. *Heliyon*, 7(6), e07312. <https://doi.org/10.1016/j.heliyon.2021.e07312>
- [11] Demeulenaere, E., & Piersante, Y. (2020). In or out? Organizational dynamics within European 'peasant seed' movements facing opening-up institutions and policies. *The Journal of Peasant Studies*, 47(4), 767–791. <https://doi.org/10.1080/03066150.2020.1753704>
- [12] Dupas, P., Robinson, J., & Saavedra, S. (2020). The daily grind: Cash needs and labor supply. *Journal of Economic Behavior & Organization*, 177, 399–414. <https://doi.org/10.1016/j.jebo.2020.06.017>
- [13] Dvir, E., & Strasser, G. (2018). Does marketing widen borders? Cross-country price dispersion in the European car market. *Journal of International Economics*, 112, 134–149. <https://doi.org/10.1016/j.jinteco.2018.02.008>
- [14] Fatmawati, F., & Zulham, Z. (2019). Margin Analysis and Marketing Channel Efficiency of Corn Farmers (*Zea mays*) in Suka Makmur Village, Pohuwato Regency, Gorontalo Province. *Gorontalo Agriculture Technology Journal*, 2(1), 19. <https://doi.org/10.32662/gatj.v2i1.488>
- [15] Ferré, M., Engel, S., & Gsottbauer, E. (2018). Which Agglomeration Payment for a Sustainable Management of Organic Soils in Switzerland? – An Experiment Accounting for Farmers' Cost Heterogeneity. *Ecological Economics*, 150, 24–33. <https://doi.org/10.1016/j.ecolecon.2018.03.028>
- [16] Grillitsch, M., & Sotarauta, M. (2020). Trinity of change agency, regional development paths and opportunity spaces. *Progress in Human Geography*, 44(4), 704–723. <https://doi.org/10.1177/0309132519853870>
- [17] Hao, J., Bijman, J., Gardebroek, C., Heerink, N., Heijman, W., & Huo, X. (2018). Cooperative membership and farmers' choice of marketing channels – Evidence from apple farmers in Shaanxi and Shandong Provinces, China. *Food Policy*, 74, 53–64. <https://doi.org/10.1016/j.foodpol.2017.11.004>
- [18] Kholifah, SN, & Hartanti, DAS (2021). THE EFFICIENCY OF DURIAN (*Durio zibethinus*) MARKETING CHANNELS IN MLANCU VILLAGE, KANDANGAN DISTRICT, KEDIRI REGENCY. *Sigmagri*, 1(01), 28–34. <https://doi.org/10.32764/sigmagri.v1i01468>
- [19] Kumar, A., & Somani, A. (2020). Dealing with Corona virus anxiety and OCD. *Asian Journal of Psychiatry*, 51, 102053. <https://doi.org/10.1016/j.ajp.2020.102053>
- [20] Kumse, K., Suzuki, N., Sato, T., & Demont, M. (2021). The spillover effect of direct competition between marketing cooperatives and private intermediaries: Evidence from the Thai rice value chain. *Food Policy*, 101, 102051. <https://doi.org/10.1016/j.foodpol.2021.102051>
- [21] Li, Z., Pan, Y., Yang, W., Ma, J., & Zhou, M. (2021). Effects of government subsidies on green technology investment and green marketing coordination of supply chain under the cap-and-trade mechanism. *Energy Economics*, 101, 105426. <https://doi.org/10.1016/j.eneco.2021.105426>
- [22] List, J. (2020). Editorial: Volume 61: Intellectual Property information in the time of corona virus. *World Patent Information*, 61, 101971. <https://doi.org/10.1016/j.wpi.2020.101971>
- [23] Liu, T., Gong, D., Xiao, J., Hu, J., He, G., Rong, Z., & Ma, W. (2020). Cluster infections play important roles in the rapid evolution of COVID-19 transmission: A systematic review. *International Journal of Infectious Diseases*, 99, 374–380. <https://doi.org/10.1016/j.ijid.2020.07.073>
- [24] Luciano, EM (2020). Information management hits and misses in the COVID19 emergency in Brazil. *International Journal of Information Management*, 102194. <https://doi.org/10.1016/j.ijinfomgt.2020.102194>
- [25] Milford, AB, Lien, G., & Reed, M. (2021). Different sales channels for different farmers: Local and mainstream marketing of organic fruits and vegetables in Norway. *Journal of Rural Studies*, S0743016721002424. <https://doi.org/10.1016/j.jrurstud.2021.08.018>
- [26] Mishra, AK, Kumar, A., Joshi, PK, & Dsouza, A. (2020). Monopsonists, Disruptive Innovation and Food Security: The Case of High-Value Commodity. *Applied Economic Perspectives and Policy*, aepp.13122. <https://doi.org/10.1002/aepp.13122>
- [27] Mohammadi, P., Kavooosi-Kalashami, M., & Zanganeh, M. (2020). Olive Marketing Analysis in Northern Iran: Marketing Margins and Indices. *Alinteri Zirai Bilimler Dergisi*. <https://doi.org/10.28955/alinterizbd.740347>
- [28] Nariswari, TN, & Nugraha, NM (2020). Profit Growth: Impact of Net Profit Margin, Gross Profit Margin and Total Assets Turnover. *International Journal of Finance & Banking Studies* (2147-4486), 9(4), 87–96. <https://doi.org/10.20525/ijfbs.v9i4.937>
- [29] Novita, AD, & Prajanti, SDW (2020). Analysis of Production Efficiency and Value Chain of Bean Vegetable Marketing in Wonosobo Regency (Case Study of Kalikajar District). *Indicators : Journal of Economic and Business*, 2(2), 363–371. <https://doi.org/10.47729/indicators.v2i2.85>
- [30] Nurfadila, N., Prihantini, CI, Erni, E., Samaria, S., & Erwin, E. (2021). Efficiency Analysis of Cashew Marketing Channels in Rakada Village, Poleang Barat District, Bombana. *AGRIMOR*, 6(3), 121–126. <https://doi.org/10.32938/ag.v6i3.1406>
- [31] Nurhadi, Suparmini, Sutrisnowati, SA, Septiana, ME, & Praptiwi, NY (2019). Farmers Household Multidimensional Level and Its Effect on Participation in Agricultural Land Conservation in Disaster Residents. *IOP Conference Series: Earth and Environmental Science*, 271, 012007. <https://doi.org/10.1088/1755-1315/271/1/012007>
- [32] Osterhoudt, S., Galvin, SS, Graef, DJ, Saxena, AK, & Dove, MR (2020). Chains of Meaning: Crops, commodities, and the 'in-between' spaces of trade. *World Development*, 135, 105070. <https://doi.org/10.1016/j.worlddev.2020.105070>
- [33] Paré, G., Marsan, J., Jaana, M., Tamim, H., & Lukyanenko, R. (2020). IT vendors' legitimacy strategies and market share: The case of EMR systems. *Information & Management*, 57(5), 103291. <https://doi.org/10.1016/j.im.2020.103291>
- [34] Patel, PC, & Tsionas, MG (2022). Cultural interconnectedness in supply chain networks and change in performance: An internal efficiency perspective. *International Journal of Production Economics*, 243, 108314. <https://doi.org/10.1016/j.ijpe.2021.108314>
- [35] Pratama, YY, & Nuswantara, B. (2020). MARKETING ANALYSIS OF PEANUT IN DISTRICT PABELAN SEMARANG REGENCY. *Jambura Agribusiness Journal*, 2(1), 34–38. <https://doi.org/10.37046/jaj.v2i1.7042>
- [36] Purwawangsa, H., Oktaviarini, M., & Mutaqin, F. (2021). Marketing Analysis of Community Forest Timber in Bogor Regency. *Journal of Tropical Silviculture*, 12(2), 51–59. <https://doi.org/10.29244/j-siltrop.12.2.51-59>
- [37] Rasidin, R., Yusriadi, Y., & Rahman, R. (2018). REVENUE ANALYSIS AND MARKETING EFFICIENCY OF RED CHILLIES (*Capsicum annum L.*) IN WATANGPULU DISTRICT, SIDRAP REGENCY. *Journal of Agricultural Technology Education*, 4, 84. <https://doi.org/10.26858/jtp.v4i0.6916>
- [38] Reshetko, NI, Vakulenko, SP, Kurenkov, PV, Alexandrova, J., Merkulina, I., Kuzina, EL, Vasilenko, MA, Chebotareva, EA, Sopol, IA, & Gašparik, J. (2021). Analysis of marketing efficiency on the example of Faraday future (Manufacturer of electronic machines). *Transportation Research Procedia*, 55, 348–355. <https://doi.org/10.1016/j.trpro.2021.07.091>
- [39] Rollett, R., Collins, M., Tamimy, MS, Perks, AGB, Henley, M., & Ashford, RU (2020). COVID-19 and the Tsunami of Information.

- Journal of Plastic, Reconstructive & Aesthetic Surgery, S1748681520304617. <https://doi.org/10.1016/j.bjps.2020.08.112>
- [40] Savitri, E., & Natariasari, R. (2021). Accelerating the income of oil palm farmers through improving marketing performance and competitive strategies. *Riau Journal of Empowerment*, 4(1), 41–47. <https://doi.org/10.31258/raje.4.1.41-47>
- [41] Schoolman, ED, Morton, LW, Arbuckle, JG, & Han, G. (2021). Marketing to the foodshed: Why do farmers participate in local food systems? *Journal of Rural Studies*, 84, 240–253. <https://doi.org/10.1016/j.jrurstud.2020.08.055>
- [42] Sharma, A., Sharma, S., & Chaudhary, M. (2020). Are small travel agencies ready for digital marketing? Views of travel agency managers. *Tourism Management*, 79, 104078. <https://doi.org/10.1016/j.tourman.2020.104078>
- [43] Shen, C., Luong, T., Ho, J., & Djailani, I. (2020). Social media marketing of IT service companies: Analysis using a concept-linking mining approach. *Industrial Marketing Management*, 90, 593–604. <https://doi.org/10.1016/j.indmarman.2019.11.014>
- [44] Siong Chung, T., & Low, A. (2021). CEO Regulatory Focus and Myopic Marketing Management. *International Journal of Research in Marketing*, S0167811621000719. <https://doi.org/10.1016/j.ijresmar.2021.09.004>
- [45] Soekarno. (2006). *Agroindustry in Socio-Economic Perspective*. PT. Mighty Grafindo King.
- [46] Su, Y.-L., Wang, Y.-F., & Ow, DW (2020). Increasing effectiveness of urban rooftop farming through reflector-assisted double-layer hydroponic production. *Urban Forestry & Urban Greening*, 54, 126766. <https://doi.org/10.1016/j.ufug.2020.126766>
- [47] Sun, T.-T., Su, C.-W., Mirza, N., & Umar, M. (2021). How does trade policy uncertainty affect agriculture commodity prices? *Pacific-Basin Finance Journal*, 66, 101514. <https://doi.org/10.1016/j.pacfin.2021.101514>
- [48] Tadesse, B., Tilahun, Y., Bekele, T., & Mekonen, G. (2021). Assessment of the challenges of crop production and marketing in Bench-Sheko, Kaffa, Sheka, and West-Omo zones of southwest Ethiopia. *Heliyon*, 7(6), e07319. <https://doi.org/10.1016/j.heliyon.2021.e07319>
- [49] Turland, M., & Slade, P. (2020). Farmers' willingness to participate in a big data platform. *Agribusiness*, 36(1), 20–36. <https://doi.org/10.1002/agr.21627>
- [50] Ulhaq, ZS, & Soraya, GV (2020). The prevalence of ophthalmic manifestations in COVID-19 and the diagnostic value of ocular tissue/fluid. *Graefe's Archive for Clinical and Experimental Ophthalmology*, 258(6), 1351–1352. <https://doi.org/10.1007/s00417-020-04695-8>
- [51] Wammes, JD, Kolk, D., van den Besselaar, JH, MacNeil-Vroomen, JL, Buurman- van Es, BM, & van Rijn, M. (2020). Evaluating perspectives of relatives of nursing home residents on the nursing home visiting restrictions during the COVID-19 crisis: A Dutch cross-sectional survey study. *Journal of the American Medical Directors Association*, S1525861020308318. <https://doi.org/10.1016/j.jamda.2020.09.031>
- [52] Xie, W., Chen, B., Huang, F., & He, J. (2021). Coordination of a supply chain with a loss-averse retailer under supply uncertainty and marketing effort. *Journal of Industrial & Management Optimization*, 17(6), 3393. <https://doi.org/10.3934/jimo.2020125>
- [53] Yanti, B., Wahyudi, E., Wahiduddin, W., Novika, RGH, Arina, YMD, Martani, NS, & Nawan, N. (2020). COMMUNITY KNOWLEDGE, ATTITUDES, AND BEHAVIOR TOWARDS SOCIAL DISTANCING POLICY AS PREVENTION TRANSMISSION OF COVID-19 IN INDONESIA. *Journal of Indonesian Health Administration*, 8(2), 4. <https://doi.org/10.20473/jaki.v8i2.2020.4-14>
- [54] Yemelyanov, V., Chernyi, S., Yemelyanova, N., & Varadarajan, V. (2021). Application of neural networks to forecast changes in the technical condition of critical production facilities. *Computers & Electrical Engineering*, 93, 107225. <https://doi.org/10.1016/j.compeleceng.2021.107225>
- [55] Zeevat, F., Dvortsin, E., Wondimu, A., Wilschut, JC, Boersma, C., & Postma, MJ (2021). Rotavirus Vaccination of Infants Delayed and Limited within the National Immunization Program in the Netherlands: An Opportunity Lost. *Vaccines*, 9(2), 144. <https://doi.org/10.3390/vaccines9020144>
- [56] Zhong, Y., Liu, W., Lee, T.-Y., Zhao, H., & Ji, J. (2020). Risk perception, knowledge, information sources and emotional states among COVID-19 patients in Wuhan, China. *Nursing Outlook*, S0029655420306199. <https://doi.org/10.1016/j.outlook.2020.08.005>