Marketing Channels and Margin of Coconut Palm Sugar in The Srikandi Women's Cooperative in Purworejo, Central Java, Indonesia

Nurlaila Fatmawati[1], Aulia Rahmawati[2]

[1] Agrotechnology Department, Ma'arif Nahdlatul Ulama University (UMNU) Kebumen, Indonesia
[2] Agrotechnology Department, Ma'arif Nahdlatul Ulama University (UMNU) Kebumen, Indonesia

Coresponding author. e-mail: fatmawati.nurlaila95@gmail.com

Abstract

Coconut palm sugar is one of the sweetener ingredients that are familiar in the society. The advantages of Coconut palm sugar in terms of nutrition have enthusiasts to foreign countries. This good market opportunity is utilized by the Srikandi Women's Cooperative to expand the reach of consumers. Coconut palm sugar Srikandi could reach the market in accordance with organic certificates that were Europe, America, Australia and Sri Lanka. This study aims to identify the marketing channels, marketing margins, farmer's share and the analysis of profit-to-cost ratios. The type of research used by the survey method. The research location was chosen by probability sampling method, The type of probability sampling selected is stratified random sampling which is disproportionate that this technique is used to determine the number of samples when the sample population of the region is less proportional that was in Loano District and Kaligesing District, Purworejo Regency as an object and coconut palm sugar tapper who is a member of Srikandi Women's Cooperative as the subject. The most efficient marketing channel research resulted with a marketing margin value of Rp. 15,000 / kg, farmer's share value of 53.13% on the channel III and the value of profit and cost ratio of 11.57 are found on the channel I.

Keywords: coconut palm sugar, marketing channels, marketing margins, farmer's share, the analysis of profit-to-cost ratios

1. Introduction

Purworejo has quite a lot of plantation potential. Coconut becomes the largest plantation crop commodity and the most production. In addition, coconut is also one of the leading commodities in Purworejo [1]. Based on data from the Purworejo Regency marine food and fisheries agriculture office in 2018-2019, coconut has an area of 24,411.94 Ha (2018) and 24,667.23 Ha (2019) as well as production of 43,718.21 tons (2018) and 12,747.66 tons (2019) [2].

Coconut (*Cocos nucivera* L.) is a plantation plant of the palmae family that almost all parts can be utilized. The coconut tree is called the tree of life because every part of it is economically valuable. [3]. In addition to producing fruit that can be processed into various products of economic value, another product that is no less important than coconut is nira. Nira is obtained by tapping bunches of flowers [4]. This wiretap is marked with yellow fruit [5].

Fresh nira takes a quick time to changed (fermented) when in the open air. Additional ingredients are needed that serve to maintain the freshness of coconut nira in order to maintain its quality. Nira can be processed into coconut sugar and is produced in Purworejo Regency [6]. One of the additional ingredients that are usually used by sugar palm craftsmen (crystal sugar) is to mix nira with laru made from mangosteen peel and betel lime. If the nira is damaged, then the process of making sugar palm becomes disturbed, where the color of nira becomes yellowish and the resulting sugar cannot crystallize and easily absorb water [7].

Coconut palm sugar agroindustrials currently have a pretty good prospect and are expected to be able to increase the household income of the brown sugar maker itself and the surrounding community [8]. The trend of increasing market demand for agroindustry products and the availability of considerable natural resources. This gives hope that agroindustrials are quite prospective and have the potential to create greater added value to every actor involved in the system [9].

Agroindustry activities as a subsystem of agribusiness are recognized to have been able to absorb labor in rural areas. However, small agroindutrial activities on a household scale in developing countries including Indonesia generally have limited capital capabilities, so planning and knowing the amount of production to obtain high profits on a business is very important [10].

Palm sugar is one of the substitute products of granulated sugar.As is known, palm sugar has a low glycemic index value compared to granulated sugar [11], so that either consumed by diabetics or people who want to maintain health. Efficiency of marketing channel is an important of marketing component in the yields [12]. The marketing aspect that needs to be considered in an effort to increase the flow of goods from producer to consumer because through marketing efficiency in addition to the difference in prices received by farmers until the goods are paid by the end consumer and marketing institutions involved in marketing activities [13]. Marketing channels are also reviewed to find out the process of delivering products to consumers. Business opportunities until export's process need to be analyzed about marketing channels and marketing margins appropriately related to product distribution channels.

2. Material and Methods

2.1 Material

The data collection was conducted with in-person interviews as well as the dissemination of questionnaires for tapper of palm sugar. Sample selection is done by probability sampling method by providing equal opportunity for each element (member) of the population to be selected as a member of the sample.

The type of probability sampling selected is stratified random sampling which is disproportionate that this technique is used to determine the number of samples when the sample population of the region is less proportional [14]. While the number of samples taken as many as 30 tapper of palm sugar who members of the Women's Cooperative Srikandi. Loano District as many as 20 (Separe village 7 people, Tedunan village 7 people, Sedayu village 3 people and Klepu village 3 people) and Kaligesing District (Sumongari village 10 people)

2.2 Methods
Marketing Margin

Marketing margin is the difference in the price received by the farmer or producer (Pf) with the price paid by the consumer (Pr) [15]. To analyze the marketing margins of each marketing agency, the formula is: [16]

$$Mp = Pr - Pf \text{ or } Mp = Bp + Kp$$
$$Kp = Mp - Bp \tag{1}$$
$$Bp = Mp - Kp$$

Notes:

Mp = Marketing margin (Rp/kg)
Pr = Retail price (Rp/kg)
Pf = Farmer price (Rp/kg)
Bp = Marketing cost (Rp/kg)
Kp = Profit margin (Rp/kg)

2.3 Farmer Share

Farmer share analysis is useful for knowing the share of prices received by farmers from prices at the consumer level or retail price expressed in percentage (%). Farmer share is formulated as follows:

$$\text{Fs} = \frac{\text{Pf}}{\text{Pr}} \; x \; 100\% \tag{2}$$

Notes:

Fs = *Farmer's share*

Pf = Farmer price (Rp/kg)

Pr = Retail price (Rp/kg)

Decision rules: [17]

FS ≥ 40% = efficient

FS < 40% = non-efficient

Profit and Cost Ratio Analysis

Profit and cost ratio analysis is used to assess the efficiency level of a marketing system by looking at the ratio of profits to costs of the administration. The percentage of profit value against marketing costs at each marketing agency is used to determine the margin spread. The spread of profit and cost ratios in each institution can be formulated as follows :[18]

$$\text{Profit Ratio} = \frac{\text{Profit } (\pi i)}{\text{Marketing Cost (Ci)}} \tag{3}$$

Notes:

Πi : marketing profit at the institution level

Ci : marketing cost at the institution level

Channels that have a value greater than one are profitable channels to run. Profit-to-cost ratio analysis, the most profitable channels to run channels have the highest ratio value [19].

3. Results and Discussion

3.1 Marketing Channel

A marketing agency is a business entity or individual that organizes marketing, distributes services and commodities from producers to end consumers and has relationships with business entities or other individuals. The task of the marketing agency is to carry out marketing functions and fulfill the desires of consumers as much as possible. Marketing channels are interdependent organizations that are covered in the process that make a product or service available for use or consumption [20].

One of the indicators that the marketing channel can be said more efficient when the marketing channel is shorter, has the lowest total marketing margin and has a high farmers' share value [21]. Marketing institutions involved in the marketing of crystal sugar are members of the Srikandi Women's Cooperation such as farmers, collectors or suppliers and cooperatives. Through cooperative marketing of crystal sugar into several channels until the product reaches the hands of consumers. The crystal sugar marketing channel of members of the Srikandi Women's Cooperative purworejo regency consists of 4 types, that were:

First Channel	: farmer → collectors / suppliers → cooperation → exporter → consumer
Second Channel	: farmer → collectors / suppliers → cooperation → wholesaler → retail saler → consumer
Third Channel	: farmer →collectors / suppliers → cooperation → retail saler → consumer
Fourth Channel	: farmer → collectors / suppliers → cooperation → consumer

```
                        ┌─────────────────┐
                        │     Farmer      │
                        └────────┬────────┘
                                 ↓
                        ┌─────────────────┐
                        │Collectors / suppliers│
                        └────────┬────────┘
                                 ↓
                        ┌─────────────────┐
                        │   Cooperation   │
                        └────────┬────────┘
```

```
   I              II              III             IV
┌──────────┐  ┌──────────┐  ┌──────────┐  ┌──────────┐
│ Exporter │  │Wholesaler│  │Retail saler│ │ Consumer │
└────┬─────┘  └────┬─────┘  └────┬─────┘  └──────────┘
┌────┴─────┐  ┌────┴─────┐  ┌────┴─────┐
│ Consumer │  │Retail saler│ │ Consumer │
└──────────┘  └────┬─────┘  └──────────┘
              ┌────┴─────┐
              │ Consumer │
              └──────────┘
```
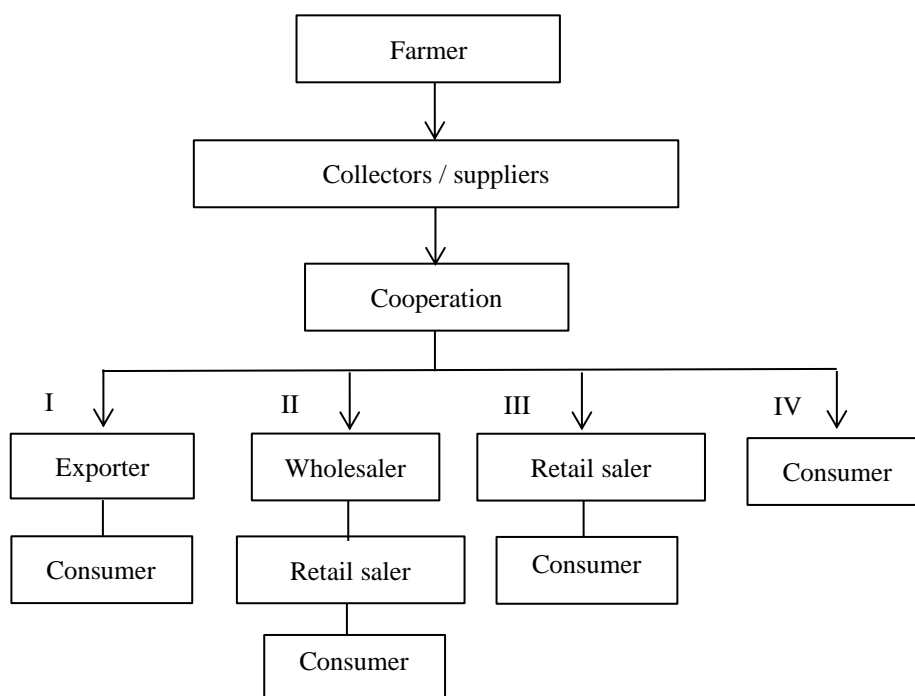
3.2 Margin Marketing

Marketing margins are often used as indicators of marketing efficiency. Suspected factors that affect marketing margins are price at the consumer level, sales volume, physical distance of marketing, number of marketing agencies involved, age of retailer merchants and retailer merchant experience [13]. The amount of marketing margins on various marketing channels can vary, as it depends on the length of the marketing channel and the activities that have been implemented as well as the expected profits by the marketing agency involved in marketing. In table 1 to 4 below, can be seen the results of margin analysis, margin distribution, farmer share as well as profit and cost ratio in marketing.

Table 1

Analysis of marketing margins, margin distribution, price share and profit ratio in palm sugar marketing on First Channel (Channel I)

Marketing Agency	Cost and Price (Rp/kg)		Margin distribution (%)	Price share (%)	Ratio value	R/C
Farmer						
Selling price		17,000				
Collectors						
Purchase price		17,000	37.78			1.19
Packaging		42.5		0.09		
Transportation		189		0.42		
Depreciation		340		0.76		
Total Cost		571.5		1.27		

	Cost/Price	Margin distribution (%)	Price share (%)	R/C
Profit	678.5		1.51	
Selling price	18,250			
Cooperation				
Purchase price	18,250	40.56		9.67
Packaging	520		1.16	
Transportation	0		0	
Depreciation	1050		2.33	
Total Cost	1570		3.49	
Profit	15,180		33.73	
Selling Price	35,000			
Eksporter				
Purchase Price	35,000	77.78		0.71
Packaging	5,000		11.11	
Transportation	833.33		1.85	
Depreciation	0		0	
Total Cost	5,833.33		12.96	
Profit	4,166.67		9.26	
Selling Price	45,000			
Marketing Margin	28,000			

Based on Table 1, it can be known that marketing margin of palm sugar on the channel I was Rp. 28,000. Margin distribution to suppliers amounted to Rp 17,000 or 37.78%, margin distribution to cooperation amounted to Rp. 18.250 or 40,56% and margin distribution to exporters amounted to Rp. 35,000 or 77.78%. The profits and costs earned by the collector or supplier were 1.51% and 1.27%, of 1.27%, million. The profits and costs earned by cooperation were 33.73% and 3.49%, of 3.49%, million. While the profits and costs obtained by exporters were 9.26% and 12.96%. The profit ratio in the collector or supplier were 1.19. The profit ratio at the cooperation was 9.67. While the export profit ratio was 0,71.

Table 2

Analysis of marketing margins, margin distribution, price share and profit ratio in palm sugar marketing on Second Channel (Channel II)

Marketing Agency	Cost and Price (Rp/kg)	Margin distribution (%)	Price share (%)	Ratio value	R/C
Farmer					
Selling price	17,000				
Collectors					
Purchase price	17,000	50.00			1.19
Packaging	42.5		0.13		
Transportation	189		0.56		
Depreciation	340		1.00		
Total Cost	571.5		1.69		
Profit	678.5		2.00		
Selling price	18,250				
Cooperation					
Purchase price	18,250	53.68			5.01
Packaging	520		1.53		

Transportation	222.22		0.65	
Depreciation	830		2.44	
Total Cost	1572.22		4.62	
Profit	7,844.44		23.07	
Selling Price	27,666.66			
Wholesaler				
Purchase price	27,666.66	81.37		0
Packaging	0		0	
Transportation	0		0	
Depreciation	0		0	
Total Cost	0		0	
Profit	2,333.34		6.86	
Selling Price	30,000			
Retail Saler				
Purchase price	30,000	88.24		0.76
Packaging	1,520		4.47	
Transportation	750		2.21	
Depreciation	0		0	
Total Cost	2,270		6.68	
Profit	1,730		5.09	
Selling Price	34,000			
Margin Marketing	17,000			

Based on Table 2, it can be known that marketing margin of palm sugar on the channel II is Rp. 17,000. Margin distribution to suppliers amounted to Rp 17,000 or 50%, margin distribution to cooperation amounted to Rp. 18,250 or 53.68%, margin distribution to wholesaler amounted to Rp. 27,666.67 or 81.37% and margin distribution to retail saler amounted to Rp. 30,000 or 88.24%. The profits and costs earned by the collector or supplier were 2.00% and 1.69%. The profits and costs earned by cooperation were 23.07% and 4.62%. The profits and costs earned by the wholesaler were 6.86% and 0%. While the profits and costs obtained by retail saler were 5.00% and 1.69%. The profit ratio in the collector or supplier was 1.19. The profit ratio at the cooperation was 5.01. The profit ratio at the wholesaler was 0. While the retail saler profit ratio was 0.76.

Table 3

Analysis of marketing margins, margin distribution, price share and profit ratio in palm sugar marketing on Third Channel (Channel III)

Marketing Agency	Cost and Price (Rp/kg)	Margin distribution (%)	Price share (%)	Ratio value R/C
Farmer				
Selling price	17,000			
Collectors				
Purchase price	17,000	53.13		1.19
Packaging	42.5		0.13	
Transportation	189		0.59	
Depreciation	340		1.06	
Total Cost	571.5		1.78	
Profit	678.5		2.12	
Selling price	18,250			

Cooperation				
Purchase price	18,250	57.03		6.54
Packaging	42.5		0.13	
Transportation	0		0	
Depreciation	720		2.25	
Total Cost			2.38	
Profit	4,987.5		15.59	
Selling Price	24,000			
Retail Saler				
Purchase price	24,000	75.00		2.52
Packaging	1,520		4.75	
Transportation	750		2.34	
Depreciation	0		0	
Total Cost			7.09	
Profit	5,730		17.91	
Selling Price	32,000			
Margin Marketing	15,000			

Based on Table 3, it can be known that marketing margin of palm sugar on the channel III is Rp. 15,000. Margin distribution to suppliers amounted to Rp 17,000 or 53.13%, margin distribution to cooperation amounted to Rp. 18,250 or 57.03%, and margin distribution to retail saler amounted to Rp. 24,000 or 75%. The profits and costs earned by the collector or supplier were 2.12% and 1.78%. The profits and costs earned by cooperation were 15.59% and 2.38%. While the profits and costs obtained by retail saler were 17.91% and 7.09%. The profit ratio in the collector or supplier was 1.19. The profit ratio at the cooperation was 6.54. While the retail saler profit ratio was 2.52.

Table 4
Analysis of marketing margins, margin distribution, price share and profit ratio in palm sugar marketing on Fourth Channel (Channel IV)

Marketing Agency	Cost and Price (Rp/kg)	Margin distribution (%)	Price share (%)	Ratio value	R/C
Farmer					
Selling price	17,000				
Collectors					
Purchase price	17,000	34			1.19
Packaging	42.5		0.09		
Transportation	189		0.38		
Depreciation	340		0.68		
Total Cost	571.5		1.15		
Profit	678.5		1.36		
Selling price	18,250				
Cooperation					
Purchase price	18,250	36.5			4.43
Packaging	4,350		8.70		
Transportation	0		0		
Depreciation	1500		3.00		
Total Cost	5,850		11.70		

Profit	25,900	51.80
Selling Price	50,000	
Marketing Margin	33,000	

Based on Table 4, it can be known that marketing margin of palm sugar on the channel IV is Rp. 33,000. Margin distribution to suppliers amounted to Rp 17,000 or 34% and margin distribution to cooperation amounted to Rp. 18,250 or 36.5%. The profits and costs earned by the collector or supplier were 1.36% and 1.15%. While the profits and costs earned by cooperation were 51.80% and 11.70%. The profit ratio in the collector or supplier was 1.19. The profit ratio at the cooperation was 4.43.Tables 1 and 3 have differences in terms of price. Table 1 for the exporter by dollar price while table 3. Table 4 packaging offered by cooperatives directly to consumers in cardboard packaging becomes more expensive.

Marketing margin is defined as the difference between retail prices and farmer prices [22]. Marketing margin provides different price responses at the level of the marketing channel [23]. The selected marketing margin has smaller value, it was channel III. So marketing margins vary between marketing channels [24].

3.3 Farmer's share

Analysis of farmers' share is useful to find out share of prices received by farmers from prices at the consumer level expressed as a percentage. Farmer's share is one of the operational efficiency indicators that shows the share that farmers receive from marketing activities [25]. The amount of farmer's share value does not necessarily indicate that the marketing channel is efficient [26]. Farmers' share value is inversely proportional to the marketing margin. That is, the higher the farmers' share value, the lower the marketing margin value, and vice versa. [27]
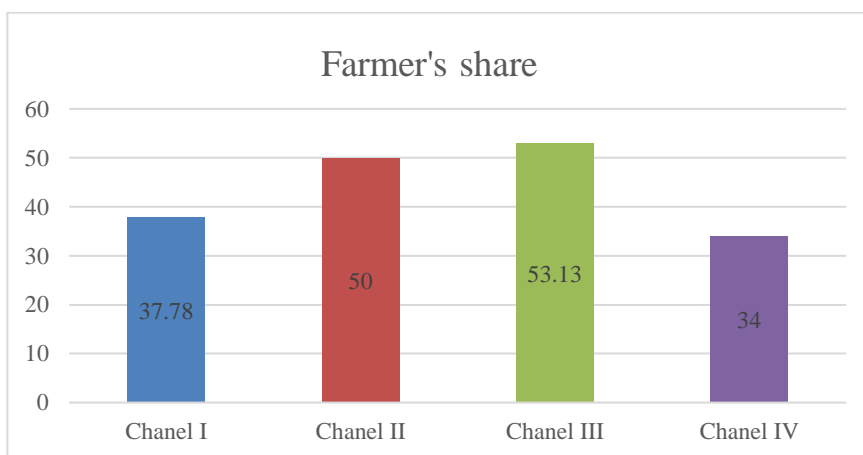

Figure 1
Graphic of farmer's share

Farmer's share is highest on channel III at 53.13%. a lot of percentage explain prices at the farmer level with the end consumer not too far away. The value of farmer's share is influenced by the length of the chain or marketing channel. Channel I and channel IV chains or marketing channels are shorter than channel III but the value of farmer's share is small because prices at the level of large consumers. The greater the share of prices that farmers receive, it can be said that the more efficient the marketing channel. Efficient marketing channels on channels II and III, ≥ 40%.

3.4 Profit and Cost Ratio

To find out the amount of the ratio of marketing profits and costs at each market level in the various marketing channels, can be seen in graph 2 below:
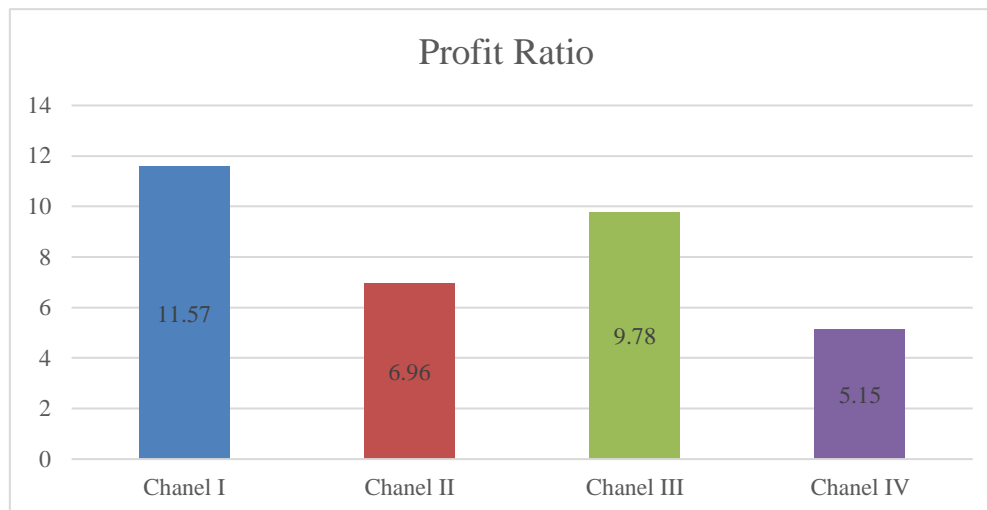

Figure 2
Profit Ratio

Channels that have a value greater than one are profitable channels to run. Based on the analysis of the profit-to-cost ratio, the most profitable channel to run is channel I, as channel I has the highest ratio value of 11.57. Channel III, II, I is covered by 9.78; 6.96; 5.15 so channel III, II, I is also a profitable channel to run.

4. Conclusion

The most efficient marketing channel of palm sugar is marketing channel III because it has a small marketing margin of Rp. 15,000/kg, the highest farmer's share value of 53.13% and channel I has a large profit and cost ratio value of 11.57. They, chanel IV, should use cheaper packaging to attract buyers.

Acknowledgements

References
[1] Kamariah, Sukirman. (2018). KKN-PPM assists in diversification of coconut products in Ngampel Village, Pituruh District, Purworejo Regency. *AJIE – Asian Journal of Innovation and Entrepreneurship,* 3(3), 285-291
[2] Central Bureau of Statistics. (2020). *Purworejo Regency in numbers.* https://purworejokab.bps.go.id/subject/54/perkebunan.html#subjekViewTab3
[3] Suwarto and Octavianty. (2010).Cultivation of Featured Plantation Plants. Jakarta : Penebar Swadaya.
[4] Mashud, N., Matana, Y. (2014). Productivity of nira some accession palm short-age. *Bulletin of Palmae,* 15(2), 110-114
[5] Pongoh, M.A. (2016). Analysis of the application of supply chain management of masarang palm sugar factory. *Journal of Economic Research, Management, Business and Accounting,* 4(3), 695-704
[6] Setyawan, D. (2019). Business analysis and added value of coconut nira into coconut sugar in Grabag District purworejo regency. *Undergraduate Thesis, Agriculture Department, Sebelas Maret University*

[7] Millaty, M. (2018). Potential development of palm sugar industry in Trenten Village Candimulyo District Magelang Regency. *Agribusiness Scientific Periodicals AGRIDEVINA,* 7(1), 51-61

[8] Mugiono, Marwanti, S., Awami, S.N. (2014). Analysis of coconut brown sugar business income (case study in Medono Village Kaliwiro District Wonosobo Regency). *Mediagro*, 10(2), 22-31

[9] Evalia, N.A. (2015). Palm ant sugar agroindustrial development strategy. *Journal of Management and Agribusiness*, 12(1), 57-67

[10] Hardianto, T. (2020). Profitability and opportunity for coconut sugar agroindustry development in coconut agribusiness system (*Cocos nucifera* L.): a case in Sukanagara Village Lakbok District Ciamis Regency. *Agritech (Journal of Agribusiness and Food Technology)*, 1(1), 46-58

[11] Pertiwi, P. (2015). Study of consumer preferences towards coconut ant sugar at Lampung University. *Undergraduate Thesis, Lampung University*

[12] Ghorbani, M. (2008). The efficiency of saffron's marketing channel in Iran. *World Applied Sciences Journal,* 4(4), 523-527

[13] Chaerani, D.S. (2021). Analysis of siamese orange marketing margin (*Citrus nobilis* Lour) in Pasaman District of West Pasaman Regency. *Journal of Embryo*, 13(1), 21-32

[14] Sugiyono. (2008). Quantitative, qualitative and R&D research methods. Bandung : Alfabeta

[15] Jumiati, E., Darwanto, D.H., Hartono, S., Masyhaui. (2013). Channel analysis and internal coconut marketing margin in East Kalimantan border area. *Agrifor: Journal of Agricultural and Forestry Sciences,* 12(1), 1-10

[16] Widiatuti, N., Harisudin, M. (2013). Corn marketing channels and margins in Grobogan Regency. *SEPA: Journal of Socio-Economic Agriculture and Agribusiness*, 9(2), 231-240

[17] Downy, W.D., Erickson, S.P. (1992). *Management of agribusiness*. Jakarta : Erlangga

[18] Purwono, J., Sugiyaningsih, S., Priambudi, A. (2013). Analysis of rice administration in Rogojambi District of Banyuwangi Regency. *Journal of NeO-Bis,* 7(2)

[19] Guntoro, S. (2018). Financial analysis of cultivation and marketing to increase income of siamese orange farmers in Banyuwangi Regency, East Java. *Graduate Thesis, Agricultural Institute Yogyakarta*

[20] Kotler, Keller. (2007). *Management of marketing*. Jakarta : Indeks

[21] Nugroho, H., A. Suyanto, dan Radian. (2016). Analysis of marketing efficiency of Kelam Permai Rakyat rubber in Sintang Regency, West Kalimantan. *Journal Sosio Economics of Agriculture*. 5 (2) : 65 – 77.

[22] Kinnucan, H.W., Zhang, D. (2015). Notes on farm-retail price transmission and marketing margin behavior. *The Journal of the International Association of Agricultural Economists,* 46(6), 729-737

[23] Pick, D.H., Karrenbrock, J., Carman, H.F. (1990). Price asymmetry and marketing margin behavior : an example for California – arizona citrus. *Agribusiness an International Journal,* 6(1), 75-84

[24] Sabir, H.M., Khan, M.B., Hussain, Z. (2010). Marketing margin of mandarin : a case study of Sargodha Region, Pakistan. *Pakistan Journal of Social Sciences,* 30(2), 275-291

[25] Ningsih, K. (2012). Marketing Chanels and Margin Analysis of Camplong Water Guanrantee Farmers (syzygium aqueum). *AGROMIX*, 3(1)

[26] Iswahyudi, Sustiyana. (2019). Marketing channel pattern and farmer's share guava air CV Camplong. *Journal of Hexagro,* 3(2), 33-38

[27] Annisa, I. F.. (2017). Factors Affecting Entrepreneurial Intentions of Brown Sugar Cane Processing Farmers in Agam District. *Graduate Thesis. Andalas Univercity. Padang.*