Marketing margin of candlenut with Depreciation Convertion

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Abstract. Non-timber forest product is one of the forest resources, which is directly related to the people who live nearby the forest. Non-timber forest products, such as candlenut, increase the income of people who live around the forest. Candlenut is a potentially developed commodity. This study aimed to determine the candlenut marketing channel. Data collection techniques used in this study were purposive sampling and snowball sampling. The results showed that there were four candlenut marketing channels in Gundaling Village, Gunung Sitember Subdistrict, Dairi District. The marketing agencies involved were farmers, village collectors, sub-district traders, wholesalers and retailers. Processing canlenut from raw to peeled candlenut increased the value-added but there was only one farmer (3,3%) processed the raw candlenut into carnel. It was found that marketing channels II, IIIa, IIIb were efficient, but the most efficient channel was Channel IIIa, because it had the smallest cost margin, and the longest profit margin, and the profit was spread throughout intermediary traders.

Keywords: *marketing channels, candlenut, marketing margin, depreciation conversion, marketing efficiency*

1. Introduction

Candlenut is one of the potential plantation commodities to be developed because of the increasingly open candlenut market, due to the increasing need for candlenut consumption, both inside and outside the country. This plant is widely distributed throughout Indonesian archipelago. Not surprisingly, candlenut has many local names. As a non-timber forest product, candlenut has various benefits. The candlenut seed is able to be used as medicine, cooking spices, cosmetics, and various other benefits. The candlenut shell is a good raw material for making charcoal, whereas candlenut wood is widely used as furniture and building materials [1-2].

Candlenut fruit consists of a seed core (kernel) and a seed coat (shell). The kernel contains vegetable oil which is very potential as a source of bio fuels. Aside from being a bio fuel source, the candlenut kernels can also be used as cooking spices and industrial raw materials for medicine, hair oil, soap and paint. Candlenut trunks can also be used for making matches, household furniture, packing boards, pulp, and plywood veneers [3-7].

In the delivery of goods from the producers to the consumers, various activities or actions are needed to expedite the process of delivering the related goods or services, and these activities are called as trading functions. The marketing function and implementation, as well as the amount of marketing costs, determine the price level received by producers from each marketing institution. For the services of marketing institutions in marketing, each institution will take profits, where the profit obtained is a margin between the selling price and marketing costs. This means that the more marketing institutions play a role in marketing, the more inefficient the marketing channels are. The trading system is considered efficient if it is able to deliver the products from producer farmers to consumers at the lowest possible cost and is able to provide a fair distribution of the total price paid by the final consumer to those who participate in the production activities of the trading system. Different distances and transport

means to various markets lead to different prices and the amount of selling volume, and consequently the selling value, to each marketing institution [8-10].

According to Directorate of Plant Cultivation, candlenut production centers in Indonesia were spread in North Sumatra, West Sumatra, South Sumatra, Bengkulu, Lampung, West Java, South Kalimantan, East Kalimantan, Bali, South Sulawesi, Maluku and East Nusa Tenggara with a total area of 205,532 ha. The 2003 agricultural census found out that North Sumatra and East Nusa Tenggara were the largest candlenut suppliers in Indonesia where the number of plants cultivated by the people in each province was reported to be more than 2 million candlenut trees.

In Dairi District alone, in the past 5 years there was an increase in harvested area with an average growth rate of 0.0036 Ha per year. The average annual production was 7,121 tons with the productivity of 1.8 tons/ha. This showed that the amount of production had increased with a decreasing in 2016 [11-15] (Table 1).

Table 1. The total harvesting area, production and productivity of candlenut in Dairi District

No	Year	Harvest Area (Ha)	Production (Ton)	Productivity (Ton/ Ha)
1	2012	3.912	7.161	1,817
2	2013	3.927	6.983	1,778
3	2014	3.942	7.110	1,803
4	2015	3.950	7.171	1,815
5	2016	3.969	7.180	1,809
Total		19.700	35.605	
Average		3.940	7.121	

Source:*2016 Central Statistics Agency*

2. Research Methods

The study was conducted in Gundaling Village, Gunung Sitember Sub district, Dairi District, which was determined using purposive sampling. The population in this study were farmers who cultivated candlenut. Using plants with different ages, the stratification random sampling method was taken. In marketing, data collection was done using snowball sampling method by selecting and taking samples in a continuous network or chain of relationships. The data collected in this study consisted of primary and secondary data.

The analytical tool used was a simple tabulation which was made by calculating marketing costs, price spread costs and margin and profit shares received by farmers (producers) and each marketing agency in each marketing channel.

Margin Share was obtained using the formula [16]:

$$S = \frac{\mathrm{Pp}}{\mathrm{Pk}} \times 100\% \quad (1)$$

Whereas:
S is Margin Share, calculated in percent (%)
Pp is Prices received by farmers or traders (trading institutions)
Pk is Prices used by end consumers

Marketing benefit and efficiency were calculated using marketing margin analysis:

$$Mi = Ci + \pi i \quad (2)$$

Whereas:
Mi is Marketing margin at the i marketing institution
Ci is Marketing costs incurred by the i-agency
πi is Marketing benefits obtained by the i institution

The level of marketing efficiency was calculated using the formula:

$$EPs \frac{TB}{TNP} \; x \; 100 \; \% \qquad (3)$$

Whereas :
EPs is Marketing efficiency
TB is Total marketing costs
TNP is The total value of the marketing product
The marketing margin analysis aimed to find out the distribution of the costs received by marketing institutions in the ongoing trading system. Mathematically the general formula of marketing efficiency was formulated as follows:

$$Mp \; = \; Pr - Pf \qquad (4)$$

Whereas:
Mp is Marketing margin
Pr is Price at the consumer level
Pf is Price at the producer level
A distribution system was considered to be efficient when the value of the marketing margin was less than 50% of the price paid by consumers.
The high price difference after candlenut peeling caused a high profit of the market players who contributed in peeling process. This was due to the high conversion factor of the raw candlenut to peeled candlenut which was 66%; this indicated the importance of considering the conversion calculations due to the reduction process. This conversion calculation was carried out starting from the market participants or institutions who carry out the peeling process. Conversion calculations was done by counting:

$$\frac{number\ of\ candlenut(kg) - number\ of\ canlenut\ x66\%\ (kg)}{number\ of\ canlenut\ (kg)} \; x \; 100 \; \% \qquad (5)$$

3. Results and Discussion

3.1. Candlenut Marketing Channels

In general, there were four candlenut marketing channels found in Gundaling Village, Gunung Sitember Subdistrict, Dairi Regency, which can be seen in Figure 1:

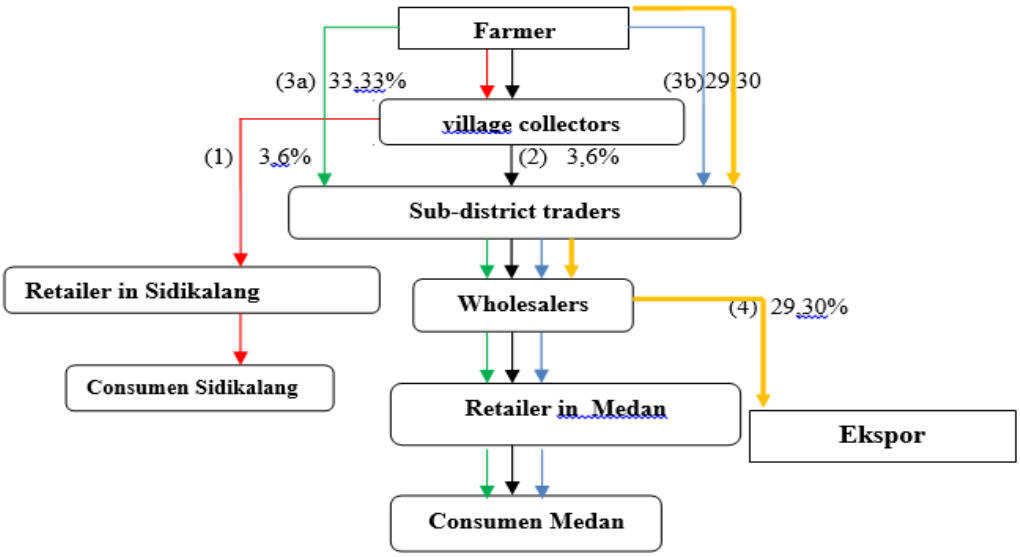

Figure 1. Pecan marketing channel scheme

3.2. Marketing Function

Marketing functions done by candlenut marketing agencies in Gundaling Village, Gunung Sitember Sub district, Dairi District in 2018 was as follows:

Each marketing agency performed a marketing function. On all channels, the involved institutions carried out the sales function, packaging functions and cost functions. On Channel I and II farmers sold candlenut to village collectors. In these channels, farmers carry out the transport function by dropping directly to the place where the village collectors trade by motorcycles. However, on the third and fourth channels farmers did not carry out the transport function because the sub-district traders came directly to the farmers' place to pick up the candlenut.

Based on the results of the research, in the marketing channel I the village collecting traders performed a marketing function in the form of physical functions, namely peeling and sorting of candlenut. After the candlenut was peeled the village collectors sold it directly to the retailers in Sidikalang main market. In this case, the village collectors carried out the transport function. Unlike the second marketing channel, village collectors did not carry out peeling and sorting and did not carry out transportation because village collectors sold candlenut to sub-district collectors in the form of logs (raw candlenut). On Channel IIIa, IIIb and IV, the respondent farmers sold their candlenut directly to the sub-district traders without going through village collectors. This meant that farmers did not carry out the transport function, the differences among the three channels was that farmers on Channel IIIa did the peeling process.

3.3. Distribution of Marketing Costs of Each Institution With Conversion Factors On Channel I, II, IIIa, IIIb, and IV

Marketing costs are all costs spent from the moment the product is manufactured and stored in a warehouse until the product changes into cash. Table 2 shows the costs incurred in each channel, such as the cost of drying, the cost of buying burlap/sack, transportation costs, peeling costs, labour costs, driver salaries, fees and fees to buy plastic packaging.

In this study, peeling costs are costs incurred by marketing institutions that peel the candlenut. Comparison of the breakdown results of peeled candlenut and raw candlenut is 1: 3, that means that 1 kg of raw candlenut will produce 3.3 ounces of peeled candlenut. Therefore, in every institution that performs peeling, it is calculated by the depreciation conversion factor. The high price difference after peeling caused the high profits of market players who contributed in peeling. This is due to the high conversion factor of the raw into peeled candlenut, which is 66%; this makes the importance of consideration of conversion calculations due to the shrinkage process.

Another study [17] used the same research methods, namely purposive sampling and snowball sampling method to determine the marketing flow. The results showed that there were four marketing candlenut channels. The average marketing margin received by farmers was 69.75%, peeler traders received an average marketing margin of 17.21%, village collectors received an average marketing margin of 1.90%, the average marketing margin obtained by district collector traders was 5.16% and retailers accept marketing margins of 5.43%. Candlenut marketing that takes place in Perbulan Village is generally efficient. The most efficient marketing channel is Marketing Channel II with marketing efficiency of 2.34% [17].

Table 2. Marketing Cost

	Cost with a depreciation conversion factor (Rp/Kg) (I)	Cost with a depreciation conversion factor (Rp/Kg) (II)	Average cost (Rp/Kg) (IIIa)	Cost with a depreciation conversion factor (Rp/Kg) (IIIb)	Cost with a depreciation conversion factor (Rp/Kg) (IV)
Farmer					
Cost:					
- Draining @Rp30/kg	30	30	30	30	30
- Sack @Rp 4000/pcs	40	40	40	40	40
- Transportation @ 10.000/ltr	50	50	50	50	50
Amount	**120**	**120**	**120**	**120**	**120**
Village collector					
Cost :					
- Draining @Rp24/kg	8,16		-	-	-
- Peel @ Rp 1.400/kg	476		-	-	-
- Transportation @Rp 10.000/ltr	13,73		-	-	-
- Sack @ Rp 4.000/pcs	137,37	40	-	-	-
- The salary of the driver @Rp 100.000/day	27,2		-	-	-
Amount	**662,46**	**40**			
Sub- District Traders					
Cost :					
- Transportation(buy)@ Rp 10.000/ltr	-	0,71		0,71	0,71
- Labor wages weigh@ Rp 100.000/day	-	5,66	6,31	5,66	5,66
- Draining @ Rp 3/kg	-	1,02	50,50	1,02	1,02
- Peel @ Rp 1.400/kg	-	476	40,40	476	476
- Transportation(sell)@ Rp 500/kg	-	170	500	170	170
- Sack @ Rp 4.000/pcs	-	13,73	10,10	13,73	13,73
- The Cost of the levy @Rp 20.000/pp	-	3,43		3,43	3,43
Amount		**670,56**	**607,31**	**670,56**	**670,56**
Wholesalers					
Cost :					
Transportation	-				
- The salary of the driver @Rp100.000/day	-	2,72	8	2,72	2,72
- Gasoline @ Rp 10.000/ltr	-	1,09	3,2	1,09	1,09
- Cost of driver's meal @60.000/day	-	1,63	4,8	1,63	1,63
- Sorting labor wages@ Rp 100.000/day/org	-	40,8	120	40,8	40,8
- Sack (25 kg) @Rp1.250/pcs		17	50	17	17
- The cost of the levy @ Rp 50.000	-	1,36	4	1,36	1,36
Amount		**64,6**	**190**	**64,6**	**64,6**
Retailer is Sidikalang/Medan					
Cost :					
- Plastic @ Rp 200/pcs	170	136	400	136	
- Transportation @Rp 10.000	680	204	600	204	
Amount	**860**	**340**	**1.000**	**340**	
Total Margin Cost	**1.632,46**	**1.235,16**	**3.287,31**	**1.195,16**	**1.569,16**

3.4. Marketing Margin

In Marketing Channel I, the farmers sold their candlenuts at the price of Rp 6,000/kg. Farmers got a marketing margin of 44.11% of the price paid to consumers and a profit margin of 37.98% so that for farmers this channel was less efficient, but the urgent need to get cash pushed farmers to continue using Marketing Channels I. Due to the costs of reduction conversion factors, the selling price of candlenut from village collectors to retailers in the Sidikalang main market was Rp 11,900/kg or 87.5% of the prices received at the final consumer level. The marketing margin received by village collectors was 43.38% which consisted of marketing costs of 4.87% and marketing profit of 38.51%. The retailers' marketing margin at Sidikalang was 12.50% which consisted of marketing costs of 6.25% and marketing profit margins of 6.25%.

The distribution of marketing margins at each level was uneven, and the highest profit was received by village collectors, which was 38.51%. When comparing the cost to profits, it was appropriate that the village collectors obtained a high profit margin compared to retailers and the marketing parties involved because the village collectors carried out the peeling process that turned the raw (unpeeled) candlenuts into peeled candlenuts (kernel).

Based on the research data, the marketing margin in the Marketing Channel I was not efficient, because the total marketing margin was 55.88%. A system was said to be efficient when the level of marketing margin was less than 50% of the level paid by consumers. Uneven margin distribution also indicated an unbalanced market information control among market participants. The more advanced the knowledge of producers, marketing institutions and consumers on the market information, the more evenly distributed the received profits were.

In the Marketing Channel II, farmers sold their candlenuts to village collectors in the form of raw candlenut at a price of Rp6,000/kg. The marketing margin received by farmers was the same as the margin received in the Marketing Channel I. The difference was that in this Channel II the village collectors did not peel the candlenuts. Village collectors sold their candlenuts to sub-district traders in the form of raw (unpeeled) candlenuts. Those who carried out the peeling process on this channel were the sub-district collectors.

The selling price of candlenut from village collectors to sub-district collectors was Rp7,000/kg or 64.33% of the prices received at the final consumers level. The marketing margin received by village collectors was 9.19%. This was because village collectors acted only as intermediaries between farmers and sub-district collectors. The value of the marketing margin received by village collectors was the wage provided by the sub-district collectors because the village collectors had helped to collect candlenut from farmers. Meanwhile, the sub-district collecting traders received a marketing margin of 23.16% that consisted of a marketing cost of 6.16% and a profit margin of 16.99%. The wholesalers received a marketing margin of 6.25% that consisted of a marketing cost of 0.59% and a marketing profit of 5.65%. Retailers received a marketing margin of 6.25% consisting of a marketing cost of 3.12% and a marketing profit of 3.12%.

The distribution of marketing margins in each level was uneven and the highest profit margin was received by sub-district traders, which was 23.16%. The lowest marketing margin distribution was accepted by wholesalers and retailers. The value of the marketing margin received by both institutions was 6.25%.

In the marketing Channel IIIa, the farmers sold their candlenut in the form of peeled candlenut to the sub-district traders without going through the village collectors. In this channel farmers bore the harvesting costs, drying costs, purchase costs for sacks and peeling costs. On Channel IIIa farmers sold peeled candlenut at a price of Rp 25,000/kg to sub-district collectors, thus farmers received a marketing margin of 73.52% of the price received at the final consumers level. The marketing margin received by farmers consisted of a profit margin of 66.92% and a marketing cost of 6.60%. In this channel, the sub-district collection traders did not carry out the peeling process, and the marketing margin received by the sub-district traders consisted of a profit margin of 7.03% and a marketing cost of 1.78%.

On Channel IIIb, farmers sold their candlenuts to sub-district collectors in the form of raw (unpeeled) candlenuts at a price of Rp. 7,000/kg. In this channel the peelers were the sub-district collecting trader. From these two channels (IIIa and IIIb) the higher marketing margin received by the farmers was on channel IIIa which was 73.52% of the price paid by consumers. It was appropriate that the farmers on channel IIIa obtained high marketing margins and profit margins, because they carried out production activities, including harvesting, drying, and peeling process. Meanwhile, the wholesalers from these two channels received the same marketing margin of 5.88%.

The distribution of marketing margins in each level was uneven and the highest profit was accepted by farmers, which was 64.88%. The lowest distribution of marketing margins was received by the wholesalers, which was 5.88%. Although in marketing the candlenuts the wholesalers bore many marketing costs such as transportation costs (driver's salary, gasoline, driver's meals), sorting costs, and retribution fees, the wholesalers took a small profit only.

Table 3. Marketing Margin

Kind	Marketing Channel								
	I		II		IIIa		IIIb		IV
	Value (Rp/Kg)	(%)	Value (Rp/Kg)	(%)	Value (Rp/Kg)	(%)	Value (Rp/Kg)	(%)	Value (Rp/Kg)
Farmer									
Selling price	6.000	44,11	6.000	55,14	25.000	73,52	7.000	60,55	7.000
Marketing Cost	834	6,13	834	7,66	2.204	6,48	834	0,72	834
Village collector									
Purchase price	6.000	44,11	6.000	55,14	-	-	-	-	-
Marketing Cost	662,46	4,87	40	0,36	-	-	-	-	-
Profit	5.237,54	38,51	960	8,88	-	-	-	-	-
Selling price	*11.900	87,5	7.000	64,33	-	-	-	-	-
Margin	5.900	43,38	1.000	9,19	-	-	-	-	-
P.pengumpul kecamatan									
Purchase price	-	-	7.000	64,33	25.000	73,52	7.000	60,55	7.000
Marketing Cost	-	-	670,56	6,16	607,31	1,78	670,56	5,80	670,56
Profit	-	-	1.849,44	16,99	2.392,69	7,03	1.849,44	15,99	1.849,44
Selling price	-	-	*9.520	87,5	28.000	82,35	*9.520	82,35	9.520
Margin	-	-	2.520	23,16	3.000	8,82	2.520	21,79	2.520
Pedagang besar									
Purchase price	-	-	*9.520	87,5	28.000	82,35	*9.520	82,35	*9.520
Marketing Cost	-	-	64,6	0,59	190	0,55	64,6	0,55	64,6
Profit	-	-	615,4	5,65	1.810	5,32	615,4	5,32	615,4
Selling price	-	-	*10.200	93,75	30.000	88,23	*10.200	88,23	*10.200
Margin	-	-	680	6,25	2.000	5,88	680	5,88	680
Pedagang pengecer									
Purchase price	*11.900	87,5	*10.200	93,75	30.000	88,23	*10.200	88,23	
Marketing Cost	850	6,25	340	3,12	1000	2,94	340	2,94	
Profit	850	6,25	340	3,12	3.000	8,82	1.020	8,82	**EKSPOR**
Selling price	***13.600**	100	***10.880**	100	**34.000**	100	***11.560**	100	
Margin	1.700	12,5	680	6,25	4.000	11,76	1.360	11,76	
Total Marketing Cost	2.346,46	17,25	1.949,16	17,89	4.001,31	11,75	1.909,16	10,01	
Total Profit	6.087,54	44,76	3.764,84	34,64	7.202,69	21,17	3.484,84	30,13	
Total margin	7.600	55,88	4.880	44,85	9.000	26,46	4.560	39,43	
R/C Rasio	2,594		1,931		1,800		1,825		

*:*The price of candlenut after the cost of the reduction conversion factorwas calculated*

There was a difference between Marketing Channel IV and the other previous marketing channels. In Channel IV the candlenuts were sold abroad (exported). Before the candlenuts were sold, the wholesaler first packed them into the 25 kg sacks. Before packing the candlenut, the sorting was firstly done, the purpose of which was to separate the broken peeled candlenuts, round peeled candlenuts and candlenut ash. The exported candlenuts were the round peeled candlenuts only. In this study, the researcher was able to collect information only until the transport process to Belawan Harbour, where the monthly sale volume was 40 tons. The transportation used a container with a capacity of 10 tons. Regarding pricing and export procedures information, the respondents refused to share information because it was confidential.

Table 4 Farmer's Share Analysis on the Candlenut Marketing Channel

Marketing channel	Prices at farmers level (Rp/Kg)	Price at the consumers level	Farmer's Share (%)
I	6.000	*13.600	44,11
II	6.000	*10.880	55,14
IIIa	25.000	34.000	73,52
IIIb	7.000	*11.560	60,55
IV	7.000	export	

*:*The price of candlenut after the cost of the reduction conversion factor was calculated*

3.5. Profit and Cost Ratios

Marketing cost was the cost incurred by marketing agencies in distributing candlenuts from producer farmers to final consumers which were expressed in rupiahs per kilogram. The profit of marketing institutions was the difference between marketing margins and cost incurred during the marketing process. Profit per cost analysis was able to be used to determine whether marketing activities carried out provided benefits to marketers. If the π/c value was more than one ($\pi/c>1$) then the marketing activity was profitable (efficient); on the contrary, if π/c was less than one ($\pi/c <1$) then the marketing activity did not provide benefits (inefficient).

In Channel I the total cost incurred was Rp1,512.46/kg, the largest cost was borne by the retailers, which was Rp.850/kg. The lowest marketing cost was borne by village collectors, which was Rp 662.46/kg. The highest profit was obtained by village collectors, as high as Rp 5,237.54/kg, while the lowest profit was obtained by retailers, which was Rp 850/kg.

In Channel II the total costs incurred were Rp 1,115.16/kg. The highest marketing cost was borne by the sub-district collectors, which was Rp 670.56/kg, while the lowest cost was borne by the village collectors, which was Rp 40/kg. The highest profit was obtained by the sub district traders, which amounted to Rp 1,849.44/kg, while the lowest profit was obtained by retailers, amounting to Rp 340/kg.

Table 5: The Profits to Costs Ratio Analysis in Candlenut Marketing Institutions in Gundaling Village

Marketing Institutions	Profit (Rp/Kg)	Cost (Rp/Kg)	π/c
Marketing channel I			
Farmer	5165,75		
Village collectors	5.237,54	662,46	7,91
Retailers in Sidikalang	850	850	1
Total	6.087,54	1.512,46	4,03
Marketing channel II			
Farmer	5165,75		24
Village collectors	960	40	
Sub-district collecting traders	1.849,44	670,56	2,76
Wholesalers	615,4	64,6	9,53
Retailers in Medan	340	340	1
Total	3.764,84	1.115,16	3,38
Marketing channel IIIa			
Farmer	22.756		
Sub-district collecting traders	2.392,69	607,31	2,65
Wholesalers	1.810	190	9,53
Retailers in Medan	3.000	1000	3
Total	7.202,69	1.797,31	4,01
Marketing channel IIIb			
Farmer	6165,75		
Sub-district collecting traders	1.849,44	670,56	2,76
Wholesalers	615,4	64,6	9,53
Retailers in Medan	1.020	340	3
Total	3.484,84	1.075,16	3,24
Marketing channel IV			
Farmer	6165,75		
Sub-district collecting traders	19.027,76	1.972,24	12,14
Wholesalers	1.810	190	0,52
Export			
Total			

In Channel IIIa the total costs incurred were Rp 1,797.31/kg. The highest marketing costs were borne by retailers, which was Rp 1,000/kg, while the lowest costs were borne by the wholesalers, which was Rp190/kg. The highest profit was obtained by farmers, which was Rp 22,756/kg, while the smallest profit was obtained by the wholesalers, which was Rp 1.810/kg. Meanwhile, in Channel IIIb, the total costs incurred were Rp 1.075,16/kg. The highest marketing costs were borne by farmers, which was Rp 834/kg, while the smallest costs were borne by the wholesalers, which was Rp 64.6/kg. The highest profit was obtained by the sub district traders, which amounted to Rp1,849.44/kg, while the smallest profit was obtained by the wholesalers, which was Rp 615/kg. All of the four channels obtained the value of π/c more than 1 ($\pi/c > 1$), which meant that the marketing activities carried out provided benefits to marketers.

According to the results, it is known that three channels were efficient, but the most efficient was Channel IIIa (Farmer →Sub district Collector →Wholesalers →Retailers in Medan), with the smallest cost margin, the biggest profit cost ratio, the largest profit margin, and profit were spread throughout intermediary traders. The other advantage of Channel IIIa was that farmers carried out the peeling process that turned the raw (unpeeled) candlenut into peeled candlenut (kernel). The result was in line with those of [18] that stated if farmers contribute in a process they would get a big value- added. It is interesting that only 3.3% of the samples did the peeling process and they still did it in a traditional way. It would be better if the process was done using a more advanced technology (machine) so that the unpeeling process would provide a larger income to the farmers [19]. When the farmers do the unpeeling process, they get not only the extra income from the value added, but also the other extra income that came from selling the candlenut shells. This is in line with [20] that stated that there are many functions of candlenut, including its shell.

4. Conclusion

In the four marketing channels of candlenut from Gundaling Village, Gunung Sitember Subdistrict, Dairi District the marketing agencies involved were: farmers, village collectors, sub-district traders, wholesalers and retailers. The function of financing, selling and providing information were the marketing founction. There was only one farmer (3,3% of the samples) processed raw candlenut into kernel. The result showed that Marketing Channels II, IIIa, IIIb were efficient, but the most efficient channel was Channel IIIa, because it had the smallest cost margin, the longest profit margin, and the profit were spread throughout intermediary traders.

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