Journal of Natural Resources and Environmental Management
13(4): 723–738. http://dx.doi.org/10.29244/jpsl.13.4.723–738
E-ISSN: 2460-5824
http://journal.ipb.ac.id/index.php/jpsl

Marketing of non-timber forest products as products from the Protected Forest Management Unit Batutegi, Lampung, Indonesia

Dwi Kurniati[a], Hardjanto[b], Soni Trison[b]

[a] Forest Management Study Program, Postgraduate School, IPB University, IPB Darmaga Campus, Bogor, 16680, Indonesia
[b] Department of Forest Management, Faculty of Forestry and Environment, IPB University, IPB Darmaga Bogor Campus, 16680, Indonesia

Article Info:
Received: 28 - 03 - 2023
Accepted: 08 - 06 - 2023

Keywords:
Coffee, honey, marketing, non-timber forest products (NTFPs), palm sugar

Corresponding Author:
Hardjanto
Department of Forest Management, Faculty of Forestry and Environment, IPB University;
Phone: +62811110559
Email:
hardjanto@gmail.com

Abstract. *PFMU Batutegi has much potential for NTFPs, which have been developed in coffee, palm sugar, and honey. The marketing of NTFPs needs attention because what often happens is inefficient marketing, so it doesn't provide additional income for the community. This study aimed to identify marketing channels, functions, and efficiency based on marketing margins, farmers' share, and profit-to-cost ratio. There are three marketing channels for coffee, two for palm sugar, and three for honey. The marketing functions performed by farmers, collectors, wholesalers, exporters, KUPS, cooperatives, and resellers are exchange, physical, and facilitation functions. Channel 1 palm sugar is an efficient marketing channel with a marketing margin of IDR 13,724.19 per kilogram, a farmer's share of 100%, a profit ratio of 15.03, and marketing channel 1 honey with a marketing margin of IDR 224,112.70 per kilogram (*Trigona *honey), and IDR 124,494.35 per kilogram (*Cerana *and* Dorsata *honey), a farmer's share of 100%, and profit ratio of 10.21 (*Trigona *honey) and 6.47 (*Cerana *and* Dorsata *honey).*

How to cite (CSE Style 8th Edition):
Kurniati D, Hardjanto, Trison S. 2023. Marketing of non-timber forest products as products from the Protected Forest Management Unit Batutegi, Lampung, Indonesia. JPSL **13**(4): 723–738. http://dx.doi.org/10.29244/jpsl.13.4.723–738.

INTRODUCTION

Non-timber forest products (NTFPs) are defined as biological forest products, including both plants and animals, along with their derivatives and cultivated products other than wood (Regulation of the Minister of Forestry of the Republic of Indonesia Number P.35/Menhut-II/2007). Policies have been issued by the central government in the framework of developing and increasing NTPFs production such as P.35/Menhut-II/2007 Concerning Non-Timber Forest Product, P.19/Menhut-II/2009 Concerning National Non-Timber Forest Product Development Strategy, P.21/Menhut-II/2009 Concerning Criteria and Indicators for Determining Superior Types of Non-Timber Forest Products, Law of the Republic of Indonesia Number 11 of 2020 Concerning Job Creation, and Republic of Indonesia Government Regulation Number 23 of 2021 Concerning Implementation of Forestry which explain concerning multi-business forestry including utilization and collection NTFPs. The Protected Forest Management Unit (PFMU) Batutegi is a forest area manager based in Minister of Forestry Decree Number SK. 650/Menhut-II/2010 dated November 22, 2010, concerning the determination of the Batutegi model protected forest management unit area in West Lampung Regency, Central Lampung Regency and Tanggamus Regency, Lampung Province, covering an area of 58,162 ha, which has many potential NTFPs. PFMU Batutegi is currently dominated by community co-management in the form of

Community Forest Utilization Business Permit (*Izin Usaha Pemanfaatan Hutan Kemasyarakatan*/IUPHKm). There were 24 farmer groups in the study area.

NTFPs that are widely cultivated by farmers in the IUPHKm area are coffee, palm sugar, and honey. Coffee is the main commodity cultivated by farmers, accounting for 95% of the area of PFMU Batutegi (Protected Forest Management Unit Batutegi 2013). Lampung is the largest coffee exporting province in Indonesia so that Lampung coffee exports greatly affect the large number of Indonesian coffee exports to foreign countries (Agustin et al. 2020). Statistical data for 2021 show that Indonesia's coffee exports amounted to 384,510.6 tons (Badan Pusat Statistik 2023), most of which were Lampung coffee exports of 116,139 tons (Badan Pusat Statistik Provinsi Lampung 2023). Although coffee is the most cultivated and has an open market, Lestari et al. (2017) stated that price fluctuations were the cause of the problem of selling coffee. Sugar palm is a multi-purpose plant that has many benefits and does not require specific soil conditions; it can grow on clay and sandy soils, but is not resistant to acidic soils (Hidayat et al. 2016). The marketing channel in the small palm sugar industry is short; farmers sell to collectors so that they do not carry out promotions because palm sugar production will be taken up by collectors (Memonah 2013). Honey is one of the leading commodities; however, the quality of forest honey is not guaranteed, and customers are doubtful about the authenticity of the honey produced (Nurrahmi et al. 2018). Low levels of processing technology and marketing are obstacles.

Marketing is a problem faced by all industries, including both large- and small-scale industries (Fatemyo et al. 2017). Marketing is an activity in channeling products from farmers to final consumers, with many productive activities to create or add use value with the aim of consumer satisfaction (Asmarantaka 2012). Research related to coffee marketing has been conducted by Sugiarti (2010) and Desiana et al. (2017), and marketing of palm sugar was conducted by Wakerkwa et al. (2019), Yanti et al. (2019) and marketing of honey conducted by Nurhikmah et al. (2020) and Heryanto et al. (2021) shows that marketing agencies involved in each marketing channel. More marketing agencies involved are likely to result in a smaller share of the price received by farmers. Farmers have a low bargaining position because they have less information and capital; therefore, the role of marketing agencies becomes dominant. Nasution (2015) states that farmers' bargaining position is weak because price information is closed, so farmers are only price takers. This position makes farmers unable to improve their welfare, even though farming is profitable. Based on the existing marketing problems, it is necessary to conduct research related to the marketing of NTFPs (coffee, palm sugar, and honey) in PFMU Batutegi. This study aims to analyze marketing channels, marketing functions, and marketing efficiency based on the value of marketing margins, farmers' share, and profit-to-cost ratio of NTFPs in PFMU Batutegi Lampung Province, so that it can be profitable for PFMU Batutegi and the community.

METHODS

Study Area

This research was conducted from January 2022 to March 2022. The research location was PFMU Batutegi in Tanggamus Regency, Lampung, Indonesia. Respondents were farmer members of Gapoktan (association of farmer group) Mandiri Lestari, a farmer member of Gapoktan Margorukun in the PFMU Batutegi area, and marketing agencies around the PFMU Batutegi area in Tanggamus Regency, Lampung Province (Figure 1).

Data Collection Methods

Data were collected through observations, interviews using questionnaires, and a literature review. Primary data were obtained from observations and interviews regarding the number of NTFPs produced, selling price, purchase price, number of NTFPs sold, number of NTFPs purchased, marketing costs, marketing agencies involved, and marketing functions. Secondary data were collected through literature review. Purposive sampling was used for 90 farmers. The considerations used were the farmers had marketed NTFPs

(coffee, palm sugar, and honey), based on the recommendation of the farmer group leader and forestry instructor at the PFMU Batutegi. Determination of marketing agency respondents using the snowball sampling method based on information from farmers.

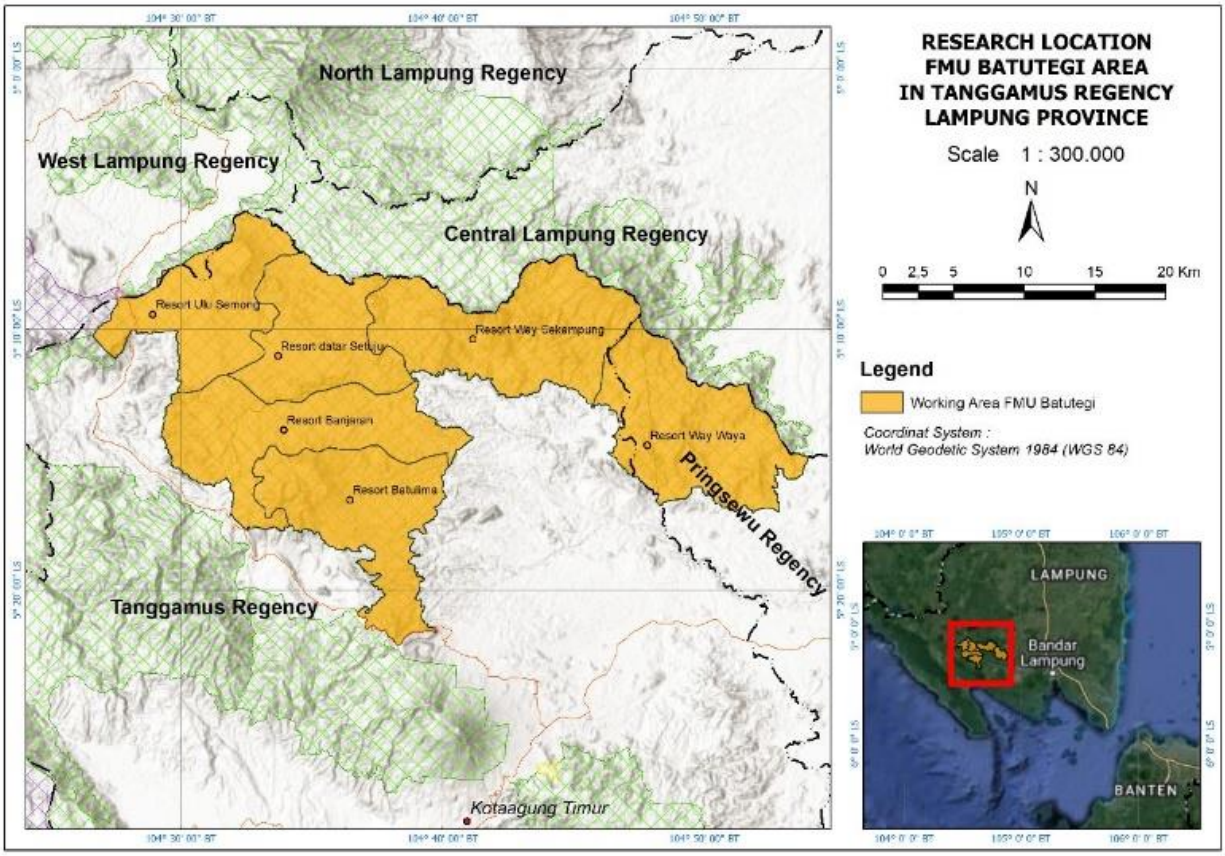

Figure 1 Map of the research location

Data Analysis Methods

The data were analyzed using qualitative and quantitative methods. Qualitative analysis was used to identify marketing channels and marketing functions. Quantitative analysis is used to calculate the value of the marketing margin, farmers' share, and profit-to-cost ratio (Asmarantaka 2012).

Marketing Channel

Marketing channels are identified by tracing the distribution activities of NTFPs (coffee, palm sugar, and honey) from farmers to final consumers (Asmarantaka 2012). Using this method, marketing agencies are involved in NTFP marketing in PFMU Batutegi. Marketing channels were analyzed descriptively to identify the marketing channels for NTFPs in PFMU Batutegi.

Marketing Function

The marketing function is identified by each marketing agency in the marketing process of NTFPs (coffee, palm sugar, and honey) from farmers to consumers. Functions performed in the form of exchange functions (sales and purchases), physical functions (storage, transportation, and processing), and facility functions (standardization and grading, risk sharing, financing, and market information) are carried out by each marketing agency (Kohls and Uhl 1985). The marketing function overcomes the problems faced by producers to satisfy consumers effectively and efficiently (Ningrum et al. 2020). The marketing function is descriptively analyzed to show the activities that occur in each marketing agency.

Marketing Margin

The marketing margin is calculated as the selling price minus the purchase price at each marketing agency. The marketing margin can also be calculated by adding the marketing costs incurred and the profits earned. The marketing margin can be formulated as follows (Asmarantaka 2012):

$$Mi = Pji - Pbi$$
$$Mi = Ci + \pi i$$
$$Pji - Pbi = Ci + \pi i$$
$$\Pi i = Pji - Pbi - Ci$$
$$MT = \sum Mi$$

Information:
Mi = Marketing margin of *i-th* marketing agency
Pji = Selling price at the *i-th* marketing agency (IDR/unit)
Pbi = Purchase price at the *i-th* marketing agency (IDR/unit)
Ci = Marketing cost of the *i-th* marketing agency (IDR/unit)
πi = Profit of the *i-th* marketing agency (IDR/unit)
MT = Total Marketing margin
i = 1, 2, 3, …., etc

Farmers Share

Farmers' share is used to determine the efficiency of the marketing channel by calculating the share received by farmers (Pf) from the price paid by the final consumer (Pr), expressed as a percentage. A farmer's share value indicates whether the marketing channel provides balanced remuneration to all parties involved in the marketing chain. The farmer's share is calculated using the following formula (Asmarantaka 2012):

$$Fs\ (\%) = \frac{Pf}{Pr} \times 100\ \%$$

Information:
Fs = Farmers share (%)
Pf = Price at the farm level (IDR/unit)
Pr = price at the final consumers level (IDR/unit)

Profit-to-cost Ratio

The profit-to-cost ratio (π/C) is the percentage of marketing profits to marketing costs. The profit-to-cost ratio is obtained from marketing profit sharing (π) with marketing costs (C). The ratio of benefits to costs at each institution can be formulated as follows (Asmarantaka 2012):

$$R/C = \frac{\pi i}{Ci}$$

Information:
πi = Profit at the *i-th* marketing agency (IDR /unit)
Ci = Marketing cost of the *i-th* marketing agency (IDR /unit)

RESULTS AND DISCUSSION

Description of The Research Location

Gapoktan Mandiri Lestari is administratively located in Pekon Datar Lebuay, Air Naningan Subdistrict, Tanggamus Regency. Gapoktan Mandiri Lestari is located in Way Sekampung resort in the Register 39 Kota Agung Utara. The determination of Gapoktan Mandiri Lestari as IUPHKm is based on Minister of Forestry Decree No. 751/Menhut-II/2009 November 2, 2009, and Decree of IUPHKm of the Regent of Tanggamus No. B.262/39/12/2009, dated December 11, 2009, covering an area of 1,401.80 ha. Gapoktan Mandiri Lestari consists of 15 forest farmer groups (*Kelompok Tani Hutan*/KTH) The number of members of Gapoktan Mandiri Lestari is 235 farmers, most of whom are Javanese, Sundanese, and Semendo.

Gapoktan Margorukun is administratively located in Pekon Ngarip, Ulu Belu Subdistrict, Tanggamus Regency. Gapoktan Margorukun is located in the Banjaran resort in Register 39 Kota Agung Utara and Register 32 Bukit Rindingan. Determination of Gapoktan Margorukun as IUPHKm based on Minister of Forestry Decree No. 751/Menhut-II/2009 dated November 2, 2009, and the Decree of IUPHKm of the Regent of Tanggamus No. B.264/39/12/2009, dated December 11, 2009, covering an area of 1,428.7 ha. Gapoktan Margorukun consists of 7 forest farmer groups (KTH) with a total of 400 members, most of whom are Javanese, Sundanese, and Semendo. Most of the livelihoods of the Gapoktan Mandiri Lestari and Gapoktan Margorukun members are farmers.

Marketing Channel

Coffee Marketing Channel

Thirty respondents were farmers in the coffee marketing are as 30 respondents. The coffee marketing channel consists of three channels, all of which involve marketing agencies in distributing coffee products from farmers to final consumers. The coffee marketing channel described in Figure 2 is the marketing channel most widely used by farmers. This channel used 25 respondents from three marketing agencies. This marketing channel is the longest one connecting farmers and consumers. Farmers sell coffee directly by transporting it to collectors via motorcycles. Farmers could transport an average of two sacks of coffee (100 kg) per trip. Farmers and collectors do not have a certain cooperative relationship; therefore, farmers can switch to selling coffee to other collectors. Pricing is usually determined by collectors based on the quality of the received coffee.

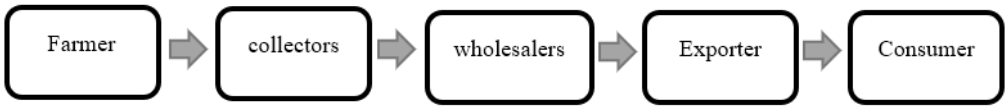

Figure 2 Coffee marketing channel 1

Collectors buy coffee from farmers. Coffee purchased by collectors has a moisture content ranging from 14% to 23%. Next, the collectors repackage the coffee and sell it to wholesalers. Wholesalers buy coffee from coffee collectors with a moisture content of between 22% and 28%. Even though there is a bargaining process between collectors and wholesalers, ultimately the wholesaler is the price maker. Wholesalers sell coffee to exporters in Bandar Lampung. Exporters determine the purchase price by considering the price of coffee on the world market. Exporters sell coffee in Asian and European markets. The selling price of Indonesian coffee is based on the fluctuating price of coffee on the world market. Indonesia cannot yet be a country that determines the selling price of coffee, even though it is one of the largest exporters in the world.

Figure 3 Coffee marketing channel 2

Coffee Marketing Channel 2 (Figure 3) was used by three respondents. Channel 2, the marketing channel, is quite short and involves only one marketing agency, *Kelompok Usaha Perhutanan Sosial*/KUPS (social forestry business group). KUPS buys coffee in the form of fruit (cherry) and then manually sorts it to separate yellow and green coffee from red coffee. Only red-picked coffee was selected by KUPS. KUPS produces more coffee using natural processes. Consumers who buy KUPS' coffee come from the coffee shops or cafes in Jakarta, Tangerang, Bogor and East Java. The taste of coffee produced by KUPS is considered better by consumers. KUPS delivers coffee to consumers through delivery services. KUPS determines the selling price based on market price information obtained from the internet, social media, and traders.

Coffee Marketing Channel 3 (Figure 4) was the marketing channel used by two respondents, and only one marketing agency was involved. The cooperative only accepts coffee sorted and dried by farmers. The purchasing standard of the cooperative is a water content between 14% and 16%. The coffee received by the cooperative was the same as that of KUPS, only red-picked coffee. Consumer cooperatives are located in Jakarta, Bogor, Serang, and Riau. Cooperative coffee packaging uses good packaging and has a brand with a content weight of 200 g per pack. The transportation of coffee to consumers uses delivery services. The cooperative provides credit assistance to farmers by using a business savings system. Budiningsih et al. (2019) stated that the purpose of forming cooperatives is so that farmers can carry out marketing without going through intermediary traders. Coffee marketing channels 1 and coffee marketing channels 3 were also reported by Lestari et al. (2017), Pratiwi et al. (2019), and Rosiana (2020). These studies show that although the two marketing channels are not operationally efficient, they are often used by farmers to distribute coffee to consumers.

Figure 4 Coffee marketing channel 3

Palm Sugar Marketing Channel

Palm sugar marketing was selected from 30 respondents. Farmers use two marketing channels to distribute palm sugar to consumers. Palm sugar marketing channel 1 (Figure 5) was used by 21 respondents. Palm sugar marketing channel 1 does not involve marketing agencies, because farmers directly buy and sell transactions with consumers. The selling price is determined by the farmers themselves, and information on market prices is obtained from other farmers. The payment system for purchasing palm sugar between farmers and consumers was cash.

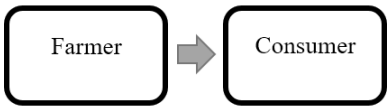

Figure 5 Palm sugar marketing channel 1

Nine respondents used the palm sugar marketing channel in Figure 6. Only one marketing agency is involved in the reseller. Resellers are individuals who directly take palm sugar from farmers' homes. The reseller usually purchases 80–200 kg of palm sugar once per week. The reseller transports palm sugar using motorcycles. Farmers and resellers do not standardize palm sugar quality. The reseller only manually sees that the shape of the palm sugar is not broken or dry. The packaging of palm sugar used 1 kg of plastic. The payment system used by resellers was cash. If farmers sell palm sugar for grocery purposes, they can be paid in cash or exchanged for daily staples.

Figure 6 Palm sugar marketing channel 2

Palm sugar marketing channel 1 is more efficient because the marketing channel is short; thus, the costs incurred by farmers to market the product are smaller. This is in line with Muslimah et al. (2019), who state that marketing channels carried out by farmers directly to consumers are more efficient because they incur the lowest possible marketing costs. Marketing channel 2 through retailers was also found in research by Gojali et al. (2015), who stated that it was inefficient because of the large marketing costs incurred.

Honey Marketing Channel

The number of respondents among the farmers in honey marketing was 30. The honey marketing channel consists of two channels. The honey marketing channel shown in Figure 7 was used by 10 respondents. Farmers sell honey directly to consumers. When honey is not available, consumers place orders in advance using cash payment systems. The demand for honey has increased among consumers in 2021 during the Covid-19 pandemic. The marketing channel for Honey 1 was also found in the Ciamis Regency and Tulungagung Regency. This study also found that this channel is efficient because sales are made directly to consumers (Heryanto et al. 2021; Winahyu et al. 2021).

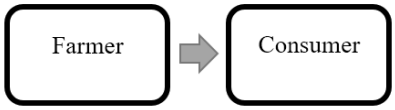

Figure 7 Honey marketing channel 1

The honey marketing channel shown in Figure 8 was used by 20 respondents. Only one marketing agency involved KUPS. Farmers sell honey to KUPS and consumers. Farmers sell honey to KUPS because it is easier to market honey. KUPS communicates and collaborates with beekeeping associations and cooperatives in the PFMU Batutegi to promote and sell honey from forest farmer groups. Honey is produced in almost all parts of Indonesia, especially in forest areas, both from wild honey bees and honey bee cultivation. In the production and marketing of honey, many obstacles result in honey not having a high price. The main obstacles to honey production are the lack of modern technology; escaping bees, pests, and predators; lack of access to credit; lack of counseling; lack of beekeping equipment; and death of bee colonies. In marketing, the constraints faced include poor market relations, lack of market information, inadequate infrastructure, low product prices, weak bargaining power of farmers, remote market locations, lack of packaging and storage, illicit trade, and no product branding (Tadesse et al. 2021).

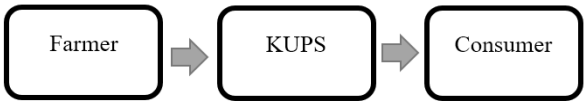

Figure 8 Honey marketing channel 2

Marketing Function

The marketing agency involved in the marketing of NTFPs PFMU Batutegi, Tanggamus Regency, Lampung Province performs a marketing function in distributing products from farmers to final consumers. Marketing functions performed by marketing agencies include exchange (sales and purchases), physical (storage, transportation, and processing), and facility functions (standardization and grading, risk sharing,

financing, and market information). The marketing function of each marketing agency varies according to its needs. Gracia and Martauli (2021) state that price differences that occur in each marketing agency are influenced by the differences in the marketing functions carried out by each marketing agency. The marketing functions of farmers, collectors, wholesalers, exporters, KUPS, and cooperatives in marketing NTFPs at the PFMU Batutegi are presented in Table 1.

Table 1 Marketing functions of NTFPs

NTFPs type/Channel/ Marketing gencies	**Marketing function**									
	Exchange		**Physical**					**Facilitation**		
	Sales	**Purchase**	**Storage**	**Transport**	**Processing**	**Standardi-zation**	**Grading**	**Risk sharing**	**Financing**	**Market information**
Coffee										
Channel 1										
Farmer	√	-	-	√	√	-	-	-	-	√
Collectors	√	√	√	√	-	√	-	√	√	√
Wholesalers	√	√	√	√	-	√	√	√	√	√
Exporter	√	√	√	√	-	√	√	√	√	√
Channel 2										
Farmer	√	-	-	√	√	-	-	-	-	√
KUPS	√	√	√	√	√	√	-	-	√	√
Channel 3	√	-	√	√	√	-	-	-	-	√
Farmer	√	√	√	√	√	√	-	-	√	√
Cooperative										
Palm sugar										
Channel 1	√	-	-	√	√	-	-	-	-	√
Farmer										
Channel 2	√	-	-	√	√	-	-	-	-	√
Farmer	√	√	-	√	-	-	-	-	-	√
Reseller										
Honey										
Channel 1	√	-	-	-	√	-	-	-	-	√
Farmer										
Channel 2	√	-	-	√	√	-	-	-	-	√
Farmer	√	√	√	-	-	-	-	-	-	√
KUPS	√	-	√	√	√	-	-	-	-	√

Marketing Margin

Coffee Marketing Margins

The marketing margin, characterized as some function of the difference between retail and farm price of a given farm product, is intended to measure the cost of providing marketing services. The margin is influenced primarily by shifts in retail demand, farm supply, and marketing input prices. But other factors also can be important, including time lags in supply and demand, market power, risk, technical change, quality, and spatial considerations. Coffee marketing margins are calculated for three coffee marketing channels and agencies involved in coffee marketing in PFMU Batutegi. The results of calculating the coffee marketing margins are presented in Table 2.

Table 2 Coffee marketing margins

Marketing agencies	Channel 1 (IDR/kg)	Channel 2 (IDR/kg)	Channel 3 (IDR/kg)
Farmer			
Productions cost	8,777.53	8,219.91	7,437.30
Marketing cost	1,056,80	530.00	530.00
Selling price	19,840.00	35,000.00	27,000.00
Marketing margin	11,062.47	26,780.09	19,562.70
Profit	10,005.67	26,250.09	19,032.70
Collectors			
Marketing cost	254.53	-	-
Purchase price	20,875.00	-	-
Selling price	22,075.00	-	-
Marketing margin	1,200.00	-	-
Profit	945.47	-	-
Wholesalers			
Marketing cost	337.33	-	-
Purchase price	21,433.33	-	-
Selling price	23,666.67	-	-
Marketing margin	2,233.33	-	-
Profit	1,896.01	-	-
Exporters			
Marketing cost	1,499.00	-	-
Purchase price	24,500.00	-	-
Selling price	28,298.98	-	-
Marketing margin	3,798.98	-	-
Profit	2,299.98	-	-
KUPS			
Marketing cost	-	9,733.33	-
Purchase price	-	35,000.00	-
Selling price	-	50,000.00	-
Marketing margin	-	15,000.00	-
Profit	-	5,266.67	-
Cooperative			
Marketing cost	-	-	9,333.33
Purchase price	-	-	27,000.00
Selling price	-	-	40,000.00
Marketing margin	-	-	13,000.00
Profit	-	-	3,666.67
Total marketing cost	3,147.65	10,263.33	9,863.33
Total profit	15,147.13	31,516.75	22,699.37
Total marketing margin	18,294.78	41,780.09	32,562.70

The total margin for coffee marketing in Table 2 shows that marketing channel 2 in coffee marketing has the largest marketing margin (IDR 41,780.09/kg) compared with marketing channels 1 and 3. This channel is the last option for farmers because it is not efficient in terms of marketing margin and marketing costs incurred is also highest (IDR 10,263.33/kg). Although it is one of the shortest marketing channels (farmers to KUPS), this shows that a short marketing channel is also capable of forming high marketing margins. Marketing

channel 1 with a total marketing margin of IDR. 18,294.78/kg is the smallest of the 3 marketing channels and can be said to be an efficient marketing channel. This indicates that long marketing channels do not always form large marketing margins. Based on the total profit, coffee marketing channel 2 had the highest profit (IDR 31,516.75/kg). KUPS sells red-picked coffee to consumers at quite high prices and makes quite large profits, and farmers also earn high profits at high coffee buying prices. Different market segmentations cause differences in the treatment and quality of marketed coffee, and the consequences are significant price differences (Hamzah et al. 2021).

Palm Sugar Marketing Margins

Table 3 shows that channel 2 had the highest marketing margin for palm sugar (IDR 17,311.23/kg). The marketing margin is largely due to the high marketing costs incurred by the reseller for transportation. This is slightly different from Prasetya et al. (2020), who state that large marketing costs are due to labor and transportation costs. Palm sugar marketing channel 1 is efficient because marketing margins and costs are small. This indicates that short marketing channels are more efficient because they do not involve marketing agencies. Marketing channel 2 is inefficient because the marketing margin and costs incurred are large. The results of calculating palm sugar marketing margins are presented in Table 3.

Table 3 Marketing margin for palm sugars

Marketing agencies	Channel 1 (IDR/kg)	Channel 2 (IDR/kg)
Farmer		
Productions cost	37.71	22.10
Marketing cost	856.19	1,165.19
Selling price	13,761.90	14,333.33
Marketing margin	13,724.19	14,311.23
Profit	12,868.00	13,146.04
Reseller		
Marketing cost	-	264.00
Purchase price	-	15,000.00
Selling price	-	18,000.00
Marketing margin	-	3,000.00
Profit	-	2,736.00
Total marketing cost	856.19	1,429.19

Honey Marketing Margins

The largest total margin is the marketing margin for honey marketing channel 2 with a marketing margin for *Trigona* Honey of IDR 286,044.49/kg and *Cerana* Honey of IDR 199,353.60/kg. This is influenced by the marketing costs incurred. Marketing channel 1 is efficient because the marketing margins are small and the marketing costs incurred are also small. This finding proves that short marketing channels that do not involve marketing agencies are more efficient. Farmers can set the selling price of a product to obtain greater market benefits (Mokuna et al. 2017). The results of calculating honey marketing margins are presented in Table 4.

Table 4 Marketing margin honey

Marketing agencies	Channel 1 (IDR/kg)	Channel 2 (IDR/kg)
Farmer		
Production cost		
Trigona honey	887.30	760.56

Cerana and *Dorsata* honey	505.65	646.40
Marketing cost		
Trigona honey	20,000.00	24,457.41
Cerana and *Dorsata* honey	16,666.67	17,527.78
Selling price		
Trigona honey	225,000.00	243,055.56
Cerana and *Dorsata* honey	125,000.00	125,000.00
Marketing margin		
Trigona honey	224,112.70	242,294.99
Cerana and *Dorsata* honey	124,494.35	124,353.60
Profit		
Trigona honey	204,112.70	217,837.58
Cerana and *Dorsata* honey	107,827.69	106,825.82
KUPS		
Marketing cost		
Trigona honey	-	11,400.00
Cerana honey	-	18,000.00
Purchase price		
Trigona honey	-	243,750.00
Cerana honey	-	125,000.00
Selling price		
Trigona honey	-	287,500.00
Cerana honey	-	200,000.00
Marketing margin		
Trigona honey	-	43,750.00
Cerana honey	-	75,000.00
Profit		
Trigona honey	-	32,350.00
Cerana honey	-	57,000.00
Total marketing cost		
Trigona honey	20,000.00	35,857.41
Cerana and *Dorsata* honey	16,666.67	35,527.78
Total Profit		
Trigona honey	204,112.70	250,187.58
Cerana and *Dorsata* honey	107,827.69	163,825.82
Total Marketing margin		
Trigona honey	224,112.70	286,044.99
Cerana and *Dorsata* honey	124,494.35	199,353.60

Farmers Share

The value of coffee farmers' share is largest in coffee marketing channel 1 (70.11%), with a small marketing margin and small marketing costs; thus, coffee marketing channel 1 is more efficient in channels 2 and 3. Farmers share the smallest value in coffee marketing channel 3 (67.60%), with a large marketing margin, and is the second largest marketing margin after coffee marketing channel 2. KUPS and its cooperatives sell coffee at a high price and earn high profits, causing marketing margins to be high, so the value farmers' share becomes low. KUPS and the cooperative hope that farmers will benefit from joining and raising prices at the farmer level. The largest farmer's share value is in palm sugar marketing channel 1. This marketing channel,

because farmers sell palm sugar directly to consumers and there is no marketing agency involved, the share of the price received by farmers is 100%.

The price of palm sugar is set by the farmer so that the farmer obtains a sizable profit. Palm sugar marketing channel 2 has a smaller farmer's share value than palm sugar marketing channel 1 (79.63%). In the honey marketing channel, the largest farmers' share is in honey marketing channel 1. Farmers sell honey directly to consumers, and no marketing agency is involved; thus, the share of the price received by farmers is 100%. There is no standardized purchase price for honey; therefore, farmers are free to determine the most profitable price. Honey marketing channel 2 has the smallest farmer's share value among all NTFPs commodities (62.50%). This shows that honey marketing channel 2 is the most inefficient because the value of farmers' shares is low, and the value of the marketing margin is high. The low share of farmers is because prices are determined by intermediary traders who have bargaining power and farmers are only price takers (Wulandari et al. 2018). Table 5 shows that the largest farmers' share value is in palm sugar marketing channel 1 and honey marketing channel 1 (100%), and the smallest farmer's share value is in honey marketing channel 2 (62.50%).

Table 5 Farmers' share NTFP

NTFP type/ Marketing channel	Selling price at farmer level (IDR/kg)	Selling price at final consumer level (IDR/kg)	Farmers share (%)
Coffee			
Channel 1	19,840.00	28,298.98	70.11
Channel 2	35,000.00	50,000.00	70.00
Channel 3	27,000.00	40,000.00	67.50
Palm sugar			
Channel 1	13.761.90	13,761.90	100.00
Channel 2	14.333,33	18,000.00	79.63
Honey			
Channel 1			
Trigona honey	225,000.00	225,000.00	100.00
Cerana honey	125,000.00	125,000.00	100.00
Channel 2			
Trigona honey	243,055.56	287,500.00	84.54
Cerana honey	125,000.00	200,000.00	62.50

Profit-to-cost Ratio

Coffee marketing channel 3 has the lowest benefit-to-cost ratio value (2.30), while coffee marketing channel 1 has the largest profit-to-cost ratio (3.70), which means that every 1 rupiah used for marketing costs will generate a profit of IDR 3.70/kg. In palm sugar marketing channel 1, the value of the largest profit ratio is 15.03, which means that every 1 rupiah used for marketing costs will generate a profit of IDR 15.03/kg. Honey Marketing channel 1 has the largest profit-to-cost ratio values at 10.21, *Trigona* Honey and 6.47, respectively. Table 6 shows that the marketing channels for coffee, palm sugar, and honey have a profit-to-cost ratio value of more than 1 (R/C > 1), indicating that the business is efficient. All three NTFP commodities have a value of R/C > 1, which means that the business is feasible. Honey bee cultivation in the East Lampung Regency and Oil Palm in the North Bengkulu Regency is feasible because it has an R/C > 1, which indicates efficient and profitable marketing activities (Sari et al. 2013; Sumartono et al. 2018).

Table 6 Profit-to-cost ratio NTFP

NTFP type / Marketing agencies	Channel 1	Channel 2	Channel 3
Coffee			
Farmer			
πi (IDR/kg)	10,005.67	26,250.09	19,032.70
Ci (IDR/kg)	1,056.80	530.00	530.00
Ratio (πi/Ci)	9.47	49.53	35.91
Collectors			
πi (IDR/kg)	945.47	-	-
Ci (IDR/kg)	254.53	-	-
Ratio (πi/Ci)	3.71	-	-
Wholesalers			
πi (IDR/kg)	1,896.01	-	-
Ci (IDR/kg)	337.33	-	-
Ratio (πi/Ci)	5.62	-	-
Exporter			
πi (IDR/kg)	2,299.98	-	-
Ci (IDR/kg)	1,499.00	-	-
Ratio (πi/Ci)	1.53	-	-
KUPS			
πi (IDR/kg)	-	5,266.67	-
Ci (IDR/kg)	-	9,733.33	-
Ratio (πi/Ci)	-	0.54	-
Ratio (πi/Ci)	5.62	-	-
Cooperative			
πi (IDR/kg)	-	-	3,666.67
Ci (IDR/kg)	-	-	9,333.33
Ratio (πi/Ci)	-	-	0.39
Total			
πi (IDR/kg)	5,141.46	31,516.75	22,699.37
Ci (IDR/kg)	2,090.85	10,263.33	9,864.33
Ratio (πi/Ci)	2.46	3.07	2.30
Palm sugar Farmer			
πi (IDR/kg)	12,868.00	13,146.04	-
Ci (IDR/kg)	856.19	1,165.19	-
Ratio (πi/Ci)	15.03	11.28	-
Reseller			
πi (IDR/kg)	-	2,736.00	-
Ci (IDR/kg)	-	264.00	-
Ratio (πi/Ci)	-	10.36	-
Total			
πi (IDR/kg)	12,868.00	15,882.04	-
Ci (IDR/kg)	856.19	1,429.19	-
Ratio (πi/Ci)	15.03	11.11	-

Honey			
Farmer			
πi (IDR/kg)			
Trigona honey	204,112.70	217,837.58	-
Cerana honey	107,827.69	106,825.82	-
Ci (IDR/kg)			
Trigona honey	20,000.00	24,457.41	-
Cerana honey	16,666.67	17,527.78	-
Ratio (πi/Ci)			
Trigona honey	10.21	8.91	-
Cerana honey	6.47	6.09	-
KUPS			
πi (IDR/Kg)			
Trigona honey	-	32,350.00	-
Cerana honey	-	57,000.00	-
Ci (IDR/Kg)			
Trigona honey	-	11,400.00	-
Cerana honey	-	18,000.00	-
Ratio (πi/Ci)			
Trigona honey	-	2.84	-
Cerana honey	-	3.17	-
Total πi (IDR/Kg)			
Trigona honey	204,112.70	250,187.58	-
Cerana honey	107,827.69	163,825.82	-
Total Ci (IDR/Kg)			
Trigona honey	20,000.00	35,857.41	-
Cerana honey	16,666.67	35,527.78	-
Total Ratio (πi/Ci)			
Trigona honey	10.21	6.98	-
Cerana honey	6.47	4.61	-

CONCLUSION

Marketing channels in PFMU Batutegi consists of 3 coffee marketing channels, 2 palm sugar marketing channels and 2 honey marketing channels. The marketing functions performed by marketing agencies (farmers, collectors, wholesalers, exporters, KUPS, cooperatives, and resellers) is exchange function (sales and purchase), physical functions (storage, transportation, processing), and facilitation function (standardization and grading, financing, risk sharing, financing, and market information).

An efficient marketing channel is palm sugar marketing channel 1 with a marketing margin of IDR 13,724.19/kg, farmers share of 100%, profit ratio of 15.03; and honey marketing channel 1 with marketing margin of IDR 224,112.70/kg (*Trigona* honey) and IDR 124,494.35/kg (*Cerana* honey), farmer's share of 100%, profit ratio of 10.21 (*Trigona* honey) and 6.47 (*Cerana* honey). Farmers sell NTFP products directly to consumers and farmers can determine the market price so that the share received by farmers is greater than marketing through intermediaries.

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