https://doi.org/10.1051/e3sconf/202459501040

# The Efficiency of Environmentally Friendly Shallots Marketing Channels in Kulon Progo Regency

*Diah Rina* Kamardiani[1,*], *Tabah* Nugroho[1], and *Titik* Ekowati[2]

[1] Department of Agribusiness, Faculty of Agriculture, Muhammadiyah University of Yogyakarta, Indonesia

[2] Department of Agribusiness, Faculty of Animal Husbandry and Agriculture, Diponegoro University, Indonesia

**Abstract.** Farmers in Sentolo, Kulon Progo Regency have farmed shallots using environmentally friendly cultivation systems. Unfortunately, the farmers have weak bargaining positions, so they receive a low farmer's share. The research aimed to determine the channels, margins, and marketing efficiency. The respondents were 38 farmers and 42 traders. The results showed that one channel was sold to the local consumer market and seven channels were sold to the consumer market in the southern part of Central Java, West Java, and DKI Jakarta. The highest marketing cost was IDR 4,064/kg sold on the Cikarang retail market channel. The highest marketing margin was IDR 16,996/kg sold in the Kramatjati and Cikarang markets with a marketing profit of IDR 13,456/kg. Farmer's share was greater than 40 percent in the local market which was directly sold to Kulon Progo consumers, Banyumas and Bandung consumer markets. However, the sales volume of the local market was low. The low farmer's share was in the consumer market in Klaten and DKI Jakarta. A lower technical efficiency value (IET) was found in Bandung consumer market channel. Meanwhile, the value of Economic Efficiency (IEE) of the local market channel, and Bandung consumer market was more efficient than other channels.

## 1 Introduction

Shallot *(Allium ascalonicum L)* is one of the superior horticultural commodities that is widely cultivated in Indonesia due to its high economic value. This commodity is included in the unsubstituted spice group which is useful as a food flavoring and as a traditional medicine. Shallots have the potential to become one of the sources of income and help the country's economic growth [1]. This is evidenced by the per capita consumption of shallots in Indonesia which tends to increase every year (Figure 1).

The analysis results in Figure 1, how that shallot consumption in Indonesia tends to increase over time. Onion consumption in Indonesia showed an increase from 2018 to 2022, although there was a small decrease in 2020 due to the Covid-19 pandemic. In the last five-year period, the average increase in shallot consumption per year was 0.065 kg/capita/year with an average annual growth of around 2.37%.

* Corresponding author: kamardiani@umy.ac.id

https://doi.org/10.1051/e3sconf/202459501040

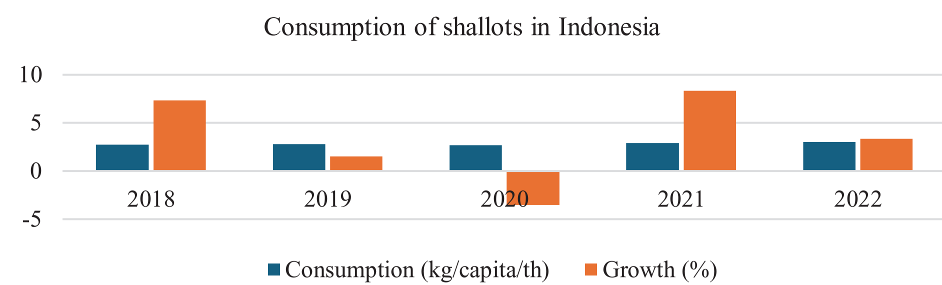


**Fig. 1.** Data on Household Consumption of Shallots in Indonesia 2018-2022

**Table 1**. Production of Shallots in Indonesia 2019-2022

| Province | Production of shallots (Ton) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 2019 | | 2020 | | 2021 | | 2022 | |
| | Production | Percentage (%) | Production | Percentage (%) | Production | Percentage (%) | Production | Percentage (%) |
| Jawa Tengah | 481,890 | 30.49 | 611,165 | 33.66 | 564,255 | 28.15 | 556,510 | 28.07 |
| Jawa Timur | 407,877 | 25.81 | 454,584 | 25.04 | 500,992 | 24.99 | 478,393 | 24.13 |
| NTB | 188,255 | 11.91 | 188,740 | 10.40 | 222,620 | 11.11 | 201,155 | 10.15 |
| Jawa Barat | 173,463 | 10.98 | 164,827 | 9.08 | 170,650 | 8.51 | 193,318 | 9.75 |
| Sumatera Barat | 122,399 | 7.75 | 153,770 | 8.47 | 200,366 | 10.00 | 207,376 | 10.46 |
| Sulawesi Selatan | 101,762 | 6.44 | 124,381 | 6.85 | 183,210 | 9.14 | 175,160 | 8.84 |
| Sumatera Utara | 18,072 | 1.14 | 29,222 | 1.61 | 53,962 | 2.69 | 64,835 | 3.27 |
| Bali | 19,687 | 1.25 | 14,207 | 0.78 | 23,215 | 1.16 | 31,492 | 1.59 |
| **DIY** | **16,999** | **1.08** | **18,811** | **1.04** | **29,809** | **1.49** | **22,307** | **1.13** |
| Jambi | 9,686 | 0.61 | 11,977 | 0.66 | 13,264 | 0.66 | 16,050 | 0.81 |
| Others province | 40,157 | 2.54 | 43,760 | 2.41 | 42,250 | 2.11 | 35,762 | 1.80 |
| **Indonesia** | **1,580,247** | | **1,815,445** | | **2,004,590** | | **1,982,360** | |

Central Java Province is the main center of national shallot production with a contribution to national production of around 28.07 percent in 2022 [3]. Then, it is followed by East Java which supplies about 24.9 percent, and West Nusa Tenggara as much as 10.15 percent. Meanwhile, the Special Region of Yogyakarta ranks ninth by supplying around 1.13% of national production or 22,307 tons (Table 1).

Kulon Progo Regency is one of the shallots producing areas in the Special Region of Yogyakarta. This can be seen based on data from BPS in 2021 [4], which shows that shallot production in Kulon Progo Regency is 108,772 quintals, the second largest after Bantul Regency which produces 169.008 quintals of shallots. Then, in third place is Sleman Regency with 2.269 quintals, and in fourth place is Gunung Kidul Regency with 18.037 quintals [5].

Sentolo District is the main center of shallot production in Kulon Progo Regency. In 2021, shallot production in the area reached 53.078 (BPS Kulon Progo, 2021). Therefore, the area has been used as a pioneer in the application of environmentally friendly cultivation systems since 2020, precisely in Srikayangan Village which has a land area of 300 hectares [6]. The implementation of environmentally friendly cultivation systems in the region has the support of various stakeholders, such as the Sentolo District Agricultural Extension Center (BPP), which intensively provides direction and assistance to environmentally friendly shallot farmers in Srikayangan Village. This is certainly an important supporting factor in achieving an environmentally friendly shallot cultivation system.

An interview with the head of Gapoktan Sumber Makmur in February 2023, many shallot farmers in Srikayangan Village sell their shallot harvest directly to traders. Farmers sell their harvest at a price of around IDR10,000 - IDR20,000/kg. However, when it reaches the consumer, the purchase price of shallots can reach more than IDR30,000/kg. In some cases, farmers are often in a weak position when negotiating with traders. Therefore, the price received by farmers is often lower than the price paid by consumers, making the marketing system inefficient [7].

There have been many studies on marketing efficiency in agricultural commodities, such as Ramesh's research on rice marketing efficiency in Cuddalore, India, using the Sheperd approach, Acharya, and Agarwal's [8] which showed that. Malaisamy's research on supply chain and marketing efficiency of shallots [9], shows that commission agents play a key role in shallot marketing. The difference between the price paid by consumers and received by farmers is used as a measure of market efficiency. Kumar's research on mustard marketing efficiency in Rajasthan, India [10] suggests that the Farmer Producer Organization (FPO) channel is more efficient than the traditional marketing channel.

Although there have been many studies on marketing efficiency, the different geographical, social, and economic conditions in Indonesia require further research to understand how factors such as price, margin, marketing profit, farmer's sahre affect marketing efficiency. This study also measures marketing efficiency using the farmer's share approach and the ratio of profit to marketing cost, as well as the ratio of marketing cost to marketing distance.

Based on the previous explanation, research is needed to analyze marketing channels, marketing costs, margins, profits, and the share received by farmers (Farmer's share) in sustainable shallot marketing in Kulon Progo Regency. This analysis will also evaluate the efficiency of environmentally friendly shallot marketing channels in Kulon Progo Regency to consumers. The efficiency of marketing system is the focus for actors such as farmers, marketing institutions, and consumers.

## 2 Research Methods

### 2.1 Determination of Research Location

This research was conducted in Srikayangan Village, Sentolo Sub-district, Kulon Progo Regency which was puIDRosively selected with the consideration that the area is the main center, as well as a pioneer in the application of environmentally friendly shallot cultivation systems in Kulon Progo Regency.

## 2.2 Determination of Respondents

There are two types of respondents taken in this study, namely environmentally friendly shallot farmers and marketing institutions. The technique used in sampling environmentally friendly shallot farmers is Proportional Random Sampling. In this study, the total population is 416 farmers, which are divided into 9 farmer groups in Srikayangan Village. The nine farmer groups are farmer groups that have the number of environmentally friendly shallot farmers above 5% of the total number of environmentally friendly shallot farmers in Srikayangan Village.

Of the total population, the research sample selected was 42 farmers. However, after collecting data, there were only 38 farmers who could be traced to consumers. The remaining four farmers were only traced to the traders. This is because some traders are not willing to provide information related to shallot marketing.

Meanwhile, the sampling of respondents at marketing institutions uses the Snowball Sampling technique, which is a sampling technique that is initially small, then enlarged [11]. The marketing institution were 42 respondents, consisting of 12 slash system trader, one collector, five wholesalers, seven *centeng*, two sales, four *Bandar*, and 11 retailers.

## 2.3 Data Collection

### *2.3.1 Primary Data*

Primary data is data obtained directly from respondents through interviews, questionnaires, and observations as complementary. Primary data is obtained directly from respondents through interviews with farmers and marketing institutions using a questionnaire as a tool or guide, as well as observations made by systematically observing and recording changes made by farmers and marketing institutions during the cultivation and marketing process (price level at farmer and middleman, marketing cost, sales volume, distance, and marketing function)

### *2.3.2 Secondary Data*

Secondary data is data obtained indirectly through intermediary media such as documents, publications, and research results [11]. The secondary data is in the form of general conditions of the research location and various other data obtained from the Central Bureau of Statistics, the Ministry of Agriculture, and other literature related to the research.

## 2.4 Data Analysis

### *2.4.1 Marketing Cost*

Marketing costs include cleaning costs, drying costs, sorting costs, transportation costs, storage costs, packaging costs, loading and unloading, market information costs, and shrinkage risk costs. The following is the formula for calculating marketing costs, [12].

$$Bp = Bp1 + Bp2 + Bp3 + \ldots + Bpn \quad (1)$$

where, *Bp* was total marketing cost (IDR/kg) and *Bp1...Bpn* was marketing costs at each marketing institution.

### *2.4.2 Marketing Margin*

The marketing margin is the difference between the price at the farmer and the price at the consumer. The following is the formula for calculating marketing margins [12].

$$M = Pr - Pf \quad \text{or} \quad M = \pi + B \tag{2}$$

where, $M$ was marketing margin (IDR/kg); $Pr$ was Price at consumer level (IDR/kg); $Pf$ was Price at farm level (IDR/kg); $\pi$ was marketing profit (IDR/kg); $B$ was marketing cost (IDR/kg)

### *2.4.3 Marketing Profit*

Marketing profit is the difference between marketing margin and total marketing cost, the following is the formula for calculating marketing profit [12].

$$Kp = Mp - Bp \tag{3}$$

where, $Kp$ was marketing profit (IDR/kg); $Mp$ was marketing margin (IDR/kg); $Bp$ was marketing cost (IDR/kg)

### *2.4.4 Marketing Efficiency*

**1) Farmer's share**

Farmer's share is the ratio between the price at the farm level and the price at the retailer level, following the Farmer's share calculation formula [13].

$$\mathrm{FS} = \frac{Pf}{Pr}\ x\ 100\% \tag{4}$$

where, $Pr$ was price at retailer level (IDR/kg); $Pf$ was price at farm level (IDR/kg); $FS$ was farmer's share (%)

**2) Economic Efficiency and Technical Efficiency**

Marketing channel efficiency consists of economic efficiency and technical efficiency [14]. The Index of Technical Efficiency (IET) and Index of Economic Efficiency (IEE) do not determine whether a marketing channel is efficient or not, but only compare which one is more efficient between one channel and another.

a. Index of Technical Efficiency (IET): $T_{ij} = V_{ij} / d$ (5)
   Description:
   $T_{ij}$ : Technical Efficiency Index
   $V_{ij}$ : Marketing cost (IDR/kg)
   d : Total marketing distance (km)

b. Index of Economic Efficiency (IEE): $E = (\sum k\ (\pi_{ijk}))/V_{ij}$ (6)
   Description:
   $E_{ij}$ : Economic Efficiency Index
   $V_{ij}$ : Total marketing cost (IDR/kg)
   k : Marketing actors
   i : Commodity type
   j : Marketing channel type
   π : Marketing profit (IDR/kg)

Marketing channels are declared to be more efficient if the IET and IEE values are lower than the IET and IEE values in other channels.

# 3. Result and Discussion

## 3.1 Profile of Respondents

### *3.1.1 Profile of Farmers*

Age can be used as an indicator to understand the physical condition and mindset of farmers in managing their agricultural businesses. Productive age allows farmers to have good physical strength and a more advanced mindset, making it easier to accept innovations in agricultural practices. Productive age ranges from 15 to 64 years [15].

Based on the farmer age analysis, of the 38 shallot farmers involved in the study in Srikayangan Village, 94.74% were in the productive age range between 23 to 64 years. This shows that most shallot farmers are still productive to conduct the entire process, from cultivation to marketing. The remaining 5.26% are between 65 and 75 years old.

The education level of farmers in Srikayangan Village is mostly high school/vocational school graduates, with a percentage of 68.42%. This shows that shallot farmers in Srikayangan Village have a good awareness of the importance of education. A proficient level of education helps farmers make the right decisions for their farms and influences their ability to understand and accept new technologies delivered by agricultural extension workers and related agencies.

Based on farming experience, most shallot farmers in Srikayangan Village have between 1 and 7 years of experience, with a percentage of 89.47%. The existence of shallot extension and knowledge inherited from farmers' parents gives them a long farming experience.

### *3.1.2 Profile of Marketing Institutions*

There are seven marketing institutions involved in this study, namely, Slash System Traders, collectors, wholesaler, *Bandar*, Grocers/*centeng*, sales and retailer. If based on the provisions of the Ministry of Health [15], that the productive age ranges from 15 to 64 years, then all traders are at a productive age. Productive age allows traders to have good physical strength and a more advanced mindset.

Of the 42 marketing agents, 85.71 percent were male. The remaining 14.29 percent were women, and even then, only in the *centeng* and retailers. This may be since the job of a shallot trader, especially apart from *centeng* and retailers, requires a strong physique, so the job tends to be done by men.

The education level of the existing marketing institutions is mostly high school/vocational school graduates. In fact, there are no traders who did not go to school. Meanwhile, most of the marketing institutions' trading experience is between 1-11 years, as much as 50%. These two aspects may influence the right decision-making process in the marketing process.

## 3.2 Marketing Channels

Channel determination is made based on the market location where consumers buy shallots. The first channel is a channel that distributes shallots directly to end consumers in the DIY area without going through marketing institutions. There are 5.88% of farmers who market shallots to end consumers in the DIY area, and the remaining 94.12% of farmers market environmentally friendly shallots outside the DIY area. The following is the marketing channel for environmentally friendly shallots in Srikayangan Village.

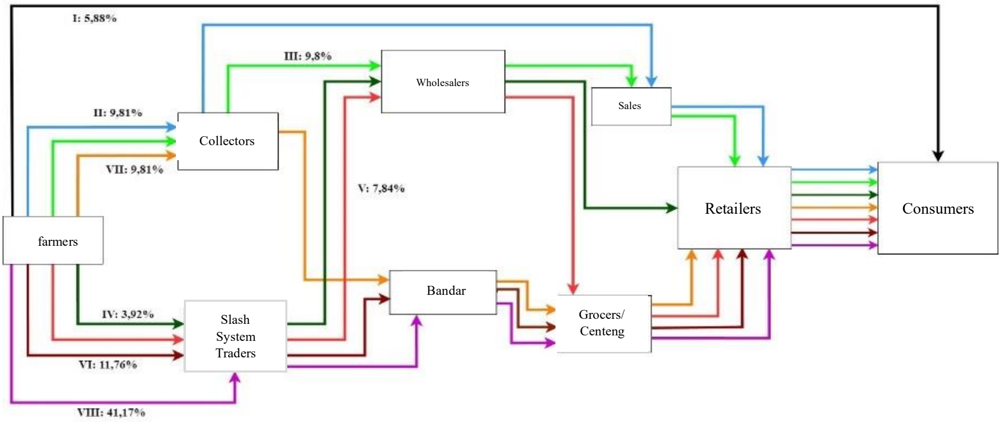


**Fig. 2**. Marketing Channel of Environmentally Friendly Shallots in Kulon Progo Regency

The results of the marketing channel analysis show that there are 8 marketing channels for environmentally friendly shades in Kulon Progo Regency (Figure 2). Most of the farmers sold their crops to Slash System Traders (64.69%), 29.43% sold to collectors, and 5.88% to direct consumers. Decision-making during the marketing process by farmers can be influenced by the amount of production, farmer age, education level, and trading experience.

The following is the marketing channel for environmentally friendly shallots farming in Kulon Progo Regency.

| | | |
|---|---|---|
| Channel I | : | Farmers - Consumers (Kulon Progo Regency). |
| Channel II | : | Farmers - Collectors - Sales - Retailers - Consumers (Cawas Market, Klaten). |
| Channel III | : | Farmers - Collectors - Wholesalers - Sales - Retailers - Consumers (Wedi Market, Klaten District). |
| Channel IV | : | Farmers - Slash System Traders - Wholesalers - Retailers - Consumers (Thengok Market, Banyumas Regency). |
| Channel V | : | Farmers - Slash System Traders - Wholesalers - *Centeng* - Retailers - Consumers (Gumelar Market and Sokaraja Market, Kab. Banyumas). |
| Channel VI | : | Farmers - Slash System Traders - *Bandar*– *Centeng*/Grocers - Retailers - Consumers (Andir market and Cijerah Market, Bandung). |
| Channel VII | : | Farmers - Slash System Traders - *Bandar* – *Centeng/*Grocers - Retailers - Consumers (Cikarang Market, Bekasi). |
| Channel VIII | : | Farmers - Slash System Traders - *Bandar* – *Centeng/*Grocers - Retailers - Consumers (Kramat Jati Market and Cijantung Market, Jakarta). |

Basuki's research shows that there are 4 marketing channels in Java, namely: Channel I: Farmers → Consumers; Channel II: Farmers → Collecting Traders → Consumers; Channel III: Farmers → Collecting Traders → Wholesalers → Consumers; Channel IV: Farmer → Trader → Wholesaler → Retailer → Consumer [19].

### 3.3 Marketing Function

The marketing function is conducted by marketing institutions for environmentally friendly shallots so that the shallots reach the hands of consumers according to what consumers want. The marketing function performed at each institution varies according to their respective needs. The marketing function consists of three types, namely the exchange function consisting of buying and selling, the physical function consisting of packaging, transportation, storage, loading and unloading, and drying, and the facility function consisting of risk coverage, market information, and sorting. Table 2 presents marketing functions in each marketing institution.

**Table 2**. Marketing Function of each Marketing Institution

| No | Marketing function | Description | Farmers | Collectors | Slash System Traders | Wholesaler | Bandar | Sales | *Centeng* | Retailers |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Exchange | Purchase | | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| | | Sales | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| 2 | Physical | Transportation | ✔ | | ✔ | | | ✔ | ✔ | ✔ |
| | | Drying | ✔ | ✔ | ✔ | | | | | |
| | | Storage | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| | | Packaging | ✔ | ✔ | ✔ | ✔ | | ✔ | ✔ | ✔ |
| | | loading and unloading | | ✔ | ✔ | ✔ | | | | |
| | | Sorting | ✔ | ✔ | ✔ | | | | | |
| 3 | Facilities | Market Information | | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| | | Standardization | | ✔ | ✔ | ✔ | | ✔ | ✔ | ✔ |
| | | Shrinkage Risk | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |

All institutions perform marketing functions. In fact, in this study farmers perform physical function activities, such as transportation, packaging, and storage. This is because there are some farmers who sell their shallots independently to collectors, so they need to conduct these physical function activities.

The existence of drying and storage activities causes farmers and marketing institutions to bear the cost of shrinkage risk. The amount of shrinkage risk costs borne by each marketing actor varies. For marketing actors who conduct drying and storage activities such as farmers, collectors, and Slash System Traders, they will bear the risk of shrinkage costs of 5 to 7 percent. Meanwhile, Wholesalers, Grocers/*Centeng,* and sales are only 3-4 percent, and retailers are 1-2 percent.

## 3. 4 Marketing Cost

Marketing costs incurred by each marketing institution vary depending on the marketing functions performed. Marketing costs are known by adding up each of the costs incurred from each marketing function carried out by marketing institutions. While the total marketing cost on one channel is the sum of the marketing costs of each marketing agency on a particular channel. Table 3 shows the marketing cost carried out by each environmentally friendly shallot channel.

**Table 3**. Marketing Costs of Environmentally Friendly Shallots per Marketing Channel

| Channel | Customer Market | Number of Marketing Institution | Marketing Distance (km) | Marketing Cost (IDR/kg) |
|---|---|---|---|---|
| I | Kulon Progo | 0 | 15 | 1,848 |
| II | Cawas Market, Klaten | 3 | 112 | 3,383 |
| III | Wedi Market, Klaten | 4 | 85 | 3,811 |
| IV | Thengok Market, Banyumas | 3 | 182 | 2,387 |
| V | Gumelar and Sokaraja Market, Banyumas | 4 | 176 | 3,804 |
| VI | Andir Market, Bandung | 4 | 398 | 3,713 |
| **VII** | **Cikarang Market, Bekasi** | **4** | **623** | **4,064** |
| VIII | Kramat Jati and Cijantung Market, Jakarta | 4 | 486 | 3,724 |

The average total cost of marketing costs on each marketing channel are different. Of the eight marketing channels, the highest average total marketing channel costs are in marketing channel VII, which is IDR4,064/kg, while the marketing channel that incurs the lowest marketing costs is marketing channel I, amounting to IDR1,848/kg. The size of marketing costs on each channel can be caused by the marketing distance. Channels that have a long marketing distance tend to have greater marketing costs.

In channels II and IV, the marketing institutions involved are three institutions, with marketing costs in these channels amounting to IDR 3,383/kg and IDR2,387/kg, respectively, smaller than other channels that have more institutions involved. The results of the analysis on each channel can also be influenced by the number of marketing institutions. The more marketing institutions, the greater the marketing costs will be. This is in line with Sehgal's research on apple marketing efficiency in Kashmir, India [16].

## 3.5 Selling Price and Marketing Margin

### *3.5.1 Selling Price*

In each channel, the selling price of environmentally friendly shallots is different. The selling price paid follows the marketing costs incurred in performing the marketing function. If the marketing has incurred a lot of marketing costs, then the agency will increase the selling price to get marketing profits. The selling price of farmers can vary depending on the quality of the harvest and the date of harvest of shallots. The difference causes the price at each marketing institution to also differ. Table 4 shows the selling price of shallots at each marketing institution.

**Table 4.** Selling Price of Environmentally Friendly Shallots Per Marketing Institution (IDR/kg)

| Marketing Organization | Marketing Channel | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Farmers | 9,753 | 8,689 | 8,689 | 9,127 | 8,484 | 9,456 | 8,929 | 9,504 |
| Colllectors | 0 | 10,875 | 10,875 | 0 | 0 | 0 | 10,875 | |
| Slash System Traders | 0 | 0 | 0 | 11,722 | 12,036 | 12,481 | 0 | 11,476 |
| Wholesalers | 0 | 0 | 12,259 | 12,722 | 13,808 | 0 | 0 | 0 |
| Bandar | 0 | 0 | 0 | 0 | 0 | 14,000 | 12,500 | 13,000 |
| Centeng/Grocers | 0 | 0 | 0 | 0 | 16,792 | 17,000 | 16,000 | 18,333 |
| Sales | 0 | 15,000 | 17,000 | 0 | 0 | 0 | 0 | 0 |
| Retailer | 0 | 17,850 | 20,000 | 18,000 | 21,750 | 20,400 | 22,000 | 26,500 |

The highest average selling price of environmentally friendly shallots at the farm level is on Marketing Channel I, which is IDR9,753/kg. This is because farmers in channel I sell shallots directly to consumers. Meanwhile, the lowest selling price is in marketing channels II and III, which is IDR8,689/Kg.

In this study, the selling price of farmers in the 2023 harvest was low compared to previous years. This was caused by disease attacks that attacked the plants, so that the plants became dry, and the weight of the tubers decreased. In addition, the low price in the market is also caused by the harvest time that coincides with shallot centers in other areas, so demand is down.

### *3.5.2 Marketing Margin*

Marketing margin is the difference between the selling price and the purchase price. The amount of marketing margin in each marketing institution varies depending on the marketing costs incurred. In this study, there is a marketing margin on farmers. This is because farmers in this study incurred marketing costs. The amount of marketing margin available to farmers is equal to the amount of costs incurred by farmers. Table 5 presents the marketing margins for each institution and marketing channel.

**Table 5.** Marketing Margin of Environmentally Friendly Shallots per Marketing Institution (IDR/kg)

| **Marketing Organization** | **Marketing Channel** | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** |
| Farmers | 1,848 | 2,244 | 2,244 | 0 | 240 | 167 | 2,244 | 184 |
| Collectors | | 2,186 | 2,186 | | | | 1,946 | |
| Slash System Traders | | | | 2,596 | 3,552 | 3,026 | | 1,972 |
| Wholesalers | | | 1,384 | 1,000 | 1,772 | | | |
| Bandar | | | | | | 1,519 | 1,625 | 1,524 |
| *Centeng*/Grocers | | | | | 2,983 | 3,000 | 3,500 | 5,333 |
| Sales | | 4,125 | 4,741 | | | | | |
| Retailer | | 2,850 | 3,000 | 5,278 | 4,958 | 3,400 | 6,000 | 8,167 |
| **Amount** | **1,848** | **11,405** | **13,555** | **8,873** | **13,506** | **11,111** | **15,315** | **17,180** |

The analysis shows that the highest marketing margin is on Marketing Channel VIII, amounting to IDR17,180/Kg. This is because the difference in selling prices between institutions at channel VIII is quite high, especially at Retailers and Centeng. Meanwhile, the lowest marketing margin is found on Marketing Channel IV, amounting to IDR 8,873/kg. Channel IV only passes through three marketing institutions, fewer than the others, namely loggers, wholesalers, and retailers in Thengok Market, Banyumas. The low margin in marketing channel IV can also be caused by the small marketing costs incurred, so that marketing institutions tend to have low selling prices.

It can also be concluded that the number of marketing institutions involved in the marketing channel can affect the high and low margins. The more marketing institutions involved, the higher the marketing margin in the channel. For example, channels III, V, VI, VII, and VIII involve four marketing institutions and have higher margins compared to channels II and IV which only involve three marketing institutions.

In addition to the number of institutions involved, the high and low margins can also be influenced by the selling price at the retailer's level. If the price at the retailer level is high, then the marketing margin on that channel also tends to be high. For example, marketing channel VIII has a price at the retailer level of IDR26,500/Kg, and the marketing margin of IDR17.180/Kg is the highest among other marketing channels. Meanwhile, on channel IV, the price at the retailer's level is IDR18,000/Kg, and the marketing margin is IDR8.873/Kg.

This is because the higher the price at each marketing institution, the retailer will also increase the selling price.

The description is in line with Malaisamy's research [9], which shows the highest marketing margin value is found in Dindigul Channel I with a value of Rs 211.00 for small onions and Rs 249.00 for Bellary onions. While the smallest margin is found on Ottanchatram Channel I with Rs 95.00 for small onions and Rs 134.00 for Bellary onions in Channel II.

### 3.6 Marketing Profit

Marketing profit is the difference between the marketing margin and the total marketing costs incurred by marketing institutions. The following are the marketing profits in each marketing channel (Table 6).

**Table 6.** Marketing Profits of Environmentally Friendly Shallots Per Channel

| Channel | Marketing Margin (IDR/kg) | Marketing Cost (IDR/kg) | Marketing Profit (IDR/kg) |
|---|---|---|---|
| I | 1,848 | 1,848 | 0 |
| II | 11,405 | 3,383 | 8,023 |
| III | 13,555 | 3,811 | 9,745 |
| IV | 8,873 | 2,387 | 6,486 |
| V | 13,506 | 3,804 | 9,702 |
| VI | 11,111 | 3,713 | 7,397 |
| VII | 15,315 | 4,064 | 11,251 |
| VIII | 17,180 | 3,724 | 13,456 |

The largest marketing profit value is on channel VIII, amounting to IDR13,456/kg, with a marketing margin on channel of IDR17,180, and incurred marketing costs of IDR3,724/kg. Meanwhile, the smallest marketing profit is found on channel IV, amounting to IDR6,486 with a marketing margin of IDR8,873, and incurring marketing costs of IDR2,387. The difference in marketing profits in each marketing channel is due to differences in marketing costs incurred and marketing margins.

This is in accordance with the results of Nursan's research [17] on channel analysis and efficiency of shallot marketing in East Lombok which shows that there are 3 marketing channels, namely Channel I: Farmers - Village-level Collectors - Consumers, have a profit of IDR1,800 / kg, with a marketing margin of IDR4,000 / kg, and incur marketing costs of IDR1,800 / kg; Channel II: Farmers - Village-level Collectors - Retailers - Consumers have a profit of IDR3,350/kg, with a marketing margin of IDR6,000/kg, and a marketing cost of IDR2,650; and Channel III: Farmers - Village-level Collectors - *Centeng* - Retailers - Consumers have a marketing profit of IDR3,650/kg, with a marketing margin of IDR8,000/kg and incur marketing costs of IDR4,350/kg.

### 3.7 Marketing Efficiency

#### *3.7.1 Farmer's share*

Farmer's share is the percentage of the selling price at the farm level and the price received by consumers. Farmer's share reflects how much share the farmer receives compared to the share received by the marketing channel. The following is the Farmer's share value for each marketing channel (Table 7).

**Table 7**. Farmer's share of each Marketing Channel

| Marketing Channel | Farmers Price (IDR/kg) | Consumer's Price (IDR/kg) | *Farmer's share* (%) |
|---|---|---|---|
| I | 7,905 | 9,753 | **81.05** |
| II | 6,445 | 17,850 | 36.11 |
| III | 6,445 | 20,000 | 32.22 |
| IV | 9,127 | 18,000 | **50.70** |
| V | 8,244 | 21,750 | 37.91 |
| VI | 9,289 | 20,400 | 45.54 |
| VII | 6,685 | 22,000 | 30.39 |
| VIII | 9,320 | 26,500 | 35.17 |

The highest Farmer's share value is found on channel I, because on this channel farmers do not involve other marketing institutions selling shallots. This is followed by marketing channel IV, which ends at Thengok Market, Banyumas Regency, with a Farmer's share value of 50.7%, meaning that farmers receive a share of 50.7% of the selling price at the retailer level. The lowest farmer's share value of 30.39% is found on channel VII, which ends at Cikarang Market, Bekasi. This means that on this channel, farmers receive a share of 30.39% of the selling price at the retailer's level.

The high value of Farmer's share is influenced by the low marketing margin of each channel. These findings are in line with other studies that state that the higher the marketing margin, the lower the farmer's share value. Conversely, the lower the marketing margin, the higher the farmer's share value [17], [18].

Farmer's share can be used to measure whether the channel is efficient or not. The following details the Farmer's share value per marketing channel. According to Kohls and Uhl [13], if the Farmer's share value is less than 50%, then the channel is said to be inefficient. Conversely, if the Farmer's share value is more than 50%, then the marketing channel is said to be efficient. Based on these indicators, it can be concluded that the efficient shallot marketing channels are channels I and IV, while the other six channels are inefficient because the Farmer's share value is less than 50%. Nursan's research on channel analysis and shallot marketing efficiency in East Lombok shows that of the 3 existing channels, all are said to be efficient. The channel has a Farmer's share value >50%, each of which is 83.3%, 76.9%, and 71.4% [17].

#### *3.7.2 Technical Efficiency Index and Economic Efficiency Index*

According to Calkin and Wang [14], the Index of Technical Efficiency (IET) and Index of Economic Efficiency (IEE) do not determine whether a marketing channel is efficient or not, but only compare which one is more efficient between one channel and another. Marketing channels are declared to be more efficient if the IET and IEE values are lower than the IET and IEE values in other channels. The following are the IET and IEE values of the environmentally friendly shallot marketing channel in Kulon Progo Regency (Table 8).

It shows that technically, marketing channel VII (Cikarang Traditional Market) is more efficient than the other channels. This is because the IET value on channel VII is the lowest among the others, which is 6.52. This means that every delivery of environmentally friendly shallots per kilometer will cost IDR6.52/Kg. The results of the analysis show that marketing channels that incur lower marketing costs tend to be more efficient than other channels. This is in accordance with the results of Ramesh's research on rice marketing efficiency in Cuddalore with Sheperd and Acharya and Agarwal's approach showing that the efficient channel is channel III. In this channel, the marketing costs incurred are the lowest among others [8].

**Table 8**. IET and IEE of each Marketing Channel

| Channel | Marketing Distance (km) | Marketing Cost (IDR/kg) | Marketing Profit (IDR/kg) | IEE | IET |
|---|---|---|---|---|---|
| I | 15 | 1,848 | 0 | **0** | 123.19 |
| II | 112 | 3,383 | 8,023 | 2.37 | 30.28 |
| III | 85 | 3,811 | 9,745 | 2.56 | 45.04 |
| IV | 182 | 2,387 | 6,486 | 2.72 | 13.13 |
| V | 176 | 3,804 | 9,702 | 2.55 | 21.13 |
| VI | 398 | 3,713 | 7,397 | **1.99** | 9.33 |
| VII | 623 | 4,064 | 11,251 | 2.77 | **6.52** |
| VIII | 486 | 3,724 | 13,456 | 3.61 | 7.67 |

Meanwhile, economically, the more efficient marketing channel among other channels is channel I, because farmers sell directly to consumers, so that the IEE value of the channel is 0. In addition, there are also marketing channels outside DIY whose IEE value is also low, namely marketing channel VI (Andir Market and Cijerah Market, Bandung), with a value of 1.99. This means that for every thousand rupiah of costs incurred, the marketing profit obtained by the marketing institution is IDR1,990/Kg. While the highest IEE value is found on channel VIII (Kramat Jati Market and Cijantung Market, Jakarta) with a value of 3.61. This means that for every thousand rupiah of costs incurred, the marketing profit obtained by the marketing institution is IDR3,610/Kg.

# 4 Conclusion and Recommendation

## 4.1 Conclusion

Environmentally friendly shallot marketing in Kulon Progo Regency has 8 marketing channels which are divided based on the location of the last market. The highest marketing channel costs are in marketing channel VII, which is IDR4.064/kg, while the marketing channel that incurs the lowest marketing costs is marketing channel I, amounting to IDR1,848/kg. The highest marketing margin is in marketing channel VIII, amount to IDR17,180/Kg. While the lowest marketing margin is in marketing channel IV, amounting to IDR8,873/Kg. The highest marketing profit is found on channel VIII, which amounted to IDR13,456/Kg. While the lowest marketing profit is found in channel VI, amount to IDR6,486/Kg. Based on Farmer's share analysis, of the 8 existing marketing channels, only two channels are declared efficient, namely channels I and IV. The highest Farmer's share value is found on channel I, amount to 81.05%, because in this channel farmers do not involve other marketing institutions to sell shallots. Then, it is followed by Marketing Channel IV with a Farmer's share value of 50.7%. While the lowest Farmer's share value is 30.39%, which is found on channel VII. Technically, the more efficient channel among others is channel VII, with an IET value of 6.52. While economically, the more efficient channel among others is channel I, because farmers sell directly to consumers, so the IEE value is 0. In addition, there are also marketing channels with low IEE values, namely marketing channel VI, amount to 1.99.

## 4.2 Recommendation

1. Given that marketing channels I and IV are efficient channels based on the Farmer's share value, it is better if farmers sell their shallots to channels I and IV. However, for

channel I, which is sold directly to consumers, it would be advisable if farmers obtain their crops in small quantities. Meanwhile, if the harvest is in large quantities, it is more advisable to sell to markets outside DIY such as channel IV.

2. Further research is expected to show a larger number of samples of traders (especially retailers) to obtain better research results.

## References

1. D. Pitaloka, Jurnal Teknologi Terapan: G-Tech **1**, 1 (2020)
2. Pusat Data dan Sistem Informasi Pertanian, *Outlook Komoditas Pertanian Subsektor Hortikultura Bawang Merah* (Jakarta, 2023)
3. Badan Pusat Statistik, *Data Production Bawang Merah di Indonesia* (Jakarta, 2022)
4. BPS Kulon Progo, *Data Production Bawang Merah di Kabupaten Kulon Progo Tahun 2020* (Kulon Progo, 2021)
5. BPS Daerah Istimewa Yogyakarta, *Data Production Bawang Merah di DIY* (Yogyakarta, 2022)
6. Online Sleman, Online Sleman (2022)
7. Annisa Widya, CAKRAWALA **12**, (2018)
8. C Ramesh, EPRA International Journal of Economic and Business Review **4**, 34 (2016)
9. A. Malaisamy, International Journal of Farm Sciences **11**, 1 (2021)
10. M. Kumar, Economic Affairs **66**, (2021)
11. Sugiyono, *METODE PENELITIAN KUANTITATIF, KUALITATIF, DAN R&D,* 19th ed. (Alfabeta, Bandung, 2013)
12. Ratna Winandi Asmarantaka, *Pemasaran Agribisnis* (IPB Press, Bogor, 2012)
13. Richard Louis Kohls and Joseph N. Uhl, *Marketing of Agricultural Product: Sixth Edition* (Macmillan, New York, 1985)
14. Peter H. Calkins and Hu-Mei Wang, AVRDC Tech **9**, 78 (1978)
15. Kementerian Kesehatan RI, (2022)
16. S. Sehgal and M. Kumar, South Asian Journal of Social Studies and Economics **1**, 16 (2022)
17. Muhammad Nursan, M. Yusuf, Syarif Husni, and Nurtaji Wathoni, Jurnal Multidisiplin Madani **3**, 1225 (2023)
18. H. Bhandari, T. Bhandari, K. P. Timsina, and H. K. Panta, Journal of Agriculture and Natural Resources **4**, 111 (2021)
19. S. Basuki, M. Eti Wulanjari, Komalawati, and D. Sahara, E3S Web of Conferences **316**, 02004 (2021)