



(RESEARCH ARTICLE)



## Marketing System of vegetables from the village to the central market in Palembang City, South Sumatra Province

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### Abstract

Market dominance, widely fluctuating prices, and demand patterns make small producers vulnerable to market forces and increase the risk of income uncertainty. Identifying and describing vegetable marketing channels and marketing functions performed by marketing agencies, it is necessary to analyze the efficiency of vegetable marketing channels. The research method used was a survey method by conducting 35 samples of farmers who farmed three commodities, namely large chilies, cabbage, and chinese cabbage—selected snowball sampling method for marketing agencies. The data analysis used is marketing channel analysis, marketing margin analysis, farmer's share, and marketing efficiency. The research results show that there is only one marketing channel pattern, namely farmers - collectors - wholesalers - retailers - consumers. Moreover, in every sales transaction, the market power rests with the wholesalers as price makers. Several functions include purchasing and selling parts and facility functions carried out by farmers and marketing in the marketing system. Even though the market structure is one-sided because market forces are more vital at the wholesalers, marketing from Kerinjing Village to the Jakabaring Palembang wholesale market has proven effective based on market margins, profit margins, and farmer's share. Comprehensive government support policies to build linkages between small producers and the larger market. With state policies such as building access roads, facilitating farmers in accessing market information,

**Keywords:** Marketing Agency; The Marketing Function; Vegetable Cultivation; Problems; Solutions

### 1. Introduction

The agricultural sector ranks third in contribution to Indonesia's Gross Domestic Product (GDP) [1]. It proves that many people depend on agricultural products for their livelihood. One of the agricultural sub-sectors that is a source of economic growth in Indonesia is the horticulture sub-sector. The benefits of horticultural products for humans include serving as a source of food and nutrition, a source of family and state income, and a buffer for natural sustainability. One of the horticultural commodities that many farmers in Indonesia cultivate is vegetables. Vegetables play an important role in meeting the needs and income of farming families. Likewise, vegetables are needed by the community. Vegetables are so common in the human diet that a meal without a vegetable is considered incomplete in any part of the world [2].

The main problem farmers face is the low price at the farm level due to the nature of vegetables which have a relatively short lifespan and are easily damaged. Productivity and production levels of vegetable crops depend on different climatic factors [3]. So, it needs to be easily damaged and cannot be stored for too long if it is not explicitly treated so that the vegetables produced by farmers must be quickly sold to consumers, but in general, farmers as producers experience several obstacles such as a lack of information and relationships to distribute vegetable products to urban areas far from rural farms [4–6] [5,6] There are also several problems, such as traders producing asymmetric information that benefits traders, excess production and supply of similar products in the same season, and the absence of market linkages, which will increase production and lower prices [7].

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South Sumatra Province is one of Indonesia's largest provinces producing vegetables. One of the provinces which is the center of vegetable production in Indonesia is South Sumatra Province. Many vegetable crops cultivated by farmers in South Sumatra Province are scattered in every district and city in the form of lowland vegetable crops (red beans, eggplant, green beans, large chilies, bird's eye chilies, chayote, kale, and spinach) such as well as highland crops (potatoes, leeks, cabbage, carrots, and chinase cabbage. The data shows that the potential center of vegetable production in South Sumatra Province is Pagar Alam City. Based on this, it can be seen from the areas with commodities that have a comparative advantage. Pagar Alam is the area with the most commodities, namely (the Central Bureau of Statistics of South Sumatra 2022 [8]. The tropical climate and cool air temperatures are perfect so that in 2021 in Pagar Alam, it is recorded that 13.38% of vegetables for consumption for the province of South Sumatra, consisting of 12 Regency Governments and 4 City Governments, come from the City of Pagar Alam. Therefore, it is necessary to analyze marketing margins to see the effectiveness of marketing vegetables in Pagar Alam City. According to [1], vegetable production in Pagar Alam is relatively low because farming is not very efficient, starting from the workforce and the technology used. In addition, vegetable commodities in Pagar Alam City have decreased significantly. This is due to simultaneous harvests, which cause oversupply, so prices fall. The bargaining position of farmers is more likely to be price takers [9]. So the need for further research on farming efficiency, one of which is marketing efficiency.

Vegetable marketing is one of the most important areas of agricultural activity because it is directly related to the income of farmers and other marketing institutions. Vegetable production increases yearly to meet consumer demand. The problem is that farmers do not know the amount produced and delivered to the market due to a lack of understanding of market trends and forecasts of future demand. This causes rapid price fluctuations in vegetable marketing due to excess or scarcity [10,11]. Price fluctuations for vegetable commodities are the highest compared to other commodities. Based on several studies, small farmers experience difficulties in accessing markets and obtaining relevant market information [12], the same as in Pagar Alam City. The vegetable marketing chain from Pagar Alam City is very complex because its distribution reaches all districts in South Sumatra Province. However, the largest market share is in Palembang City, especially the Jakabaring Central Market. Every night dozens of trucks transport fresh vegetables with various types of vegetables, but the most always transported are large chilies, cauliflower, and Chinese cabbage. In Kerinjing Village, only one collector buys vegetables from Kerinjing Village to be sold at the Jakabaring primary market. Based on empirical studies conducted, the costs incurred for transportation are more significant with long distances.

Research on marketing margins that have been carried out in Indonesia, such as in Magelang Regency, has many marketing channels. There are farmers who sell directly to retail traders because market access is close to urban areas. Research conducted [13] an effective marketing channel is a channel that uses middlemen even though there are channels without middlemen [14]. Study [15] in Magelang Regency, Adrika advised farmers to choose level zero marketing channels and level one marketing channels because these channels are more efficient when compared to other marketing channels. Our research is here to provide an overview of marketing margins, functions, and problems in Pagar Alam City, which differs in demographics from previous studies. This research is also different because it combines marketing functions, marketing efficiency, and solutions for cases in Kerinjing Village. [16], Said that to keep pace with the expansion and changing needs of the agricultural marketing sector on the one hand and to eliminate marketing imperfections on the other hand, a series of reforms were carried out from time to time. One of the main strategies is to build an orderly marketing system. Establishing regulated markets in many countries is one such step in which the government intervenes in the operation of the market. Regulated markets have drastically impacted marketing practices in India by reducing various levies imposed on producers, introducing pricing and payment systems, and providing market infrastructure. However, lately, several weaknesses have emerged that make it not in line with the times,

In line with the research conducted [13,15,17,18] that many markets in Indonesia have not yet experienced marketing efficiency that focuses on problems to be faced by traditional marketing channels, and identified several obstacles, especially that there was no explanation regarding the constraints on the marketing of chili, cabbage and cabbage vegetables in Pagar Alam. In the agricultural commodity marketing channel, traders often control the purchase price from farmers to marketing agencies because traders have a stronger bargaining position and market power. In many areas in Indonesia, the form of the market is an oligopsony or monopsony market which tends to fix prices. However, the purchase price on the consumer side usually stays the same because marketing agencies often suppress the purchase price of vegetables from farmers in order to get the maximum profit. Just as when consumer prices rise, changes in price levels are not fully passed on to producers/farmers. Farmers do not benefit fully from rising market prices, so this intermediation method is considered unprofitable for producers/farmers. This area of research is crucial, yielding answers regarding the pattern of the marketing channel for vegetables from Kerinjing Village to Jakabaring Central Market Palembang, the marketing function that occurs in the process of marketing vegetables, analyzing the efficiency of marketing vegetables in Pagar Alam, the problems faced by vegetable farmers in Pagar Alam, providing

solutions based on actual problems that occur based on conventions and previous studies. However, some of the findings from the study could be transferrable across other regions in Indonesia.

## 2. Material and methods

The data collection method is by survey method [19]. The data collected is in the form of primary and secondary data. Primary data collection was carried out by interview method using a list of questions (questionnaire) attached to farmers in Kerinjing Village, Agung Lawangan Village, and marketing institutions such as collector traders and retailers. Secondary data is obtained from literature studies and publications from various official agencies. The data comes from research journals, literature, and library books related to this research, village office data, and publications from the Central Bureau of Statistics for South Sumatra Province.

The approaching model used in this study is diagrammatic, as follows:

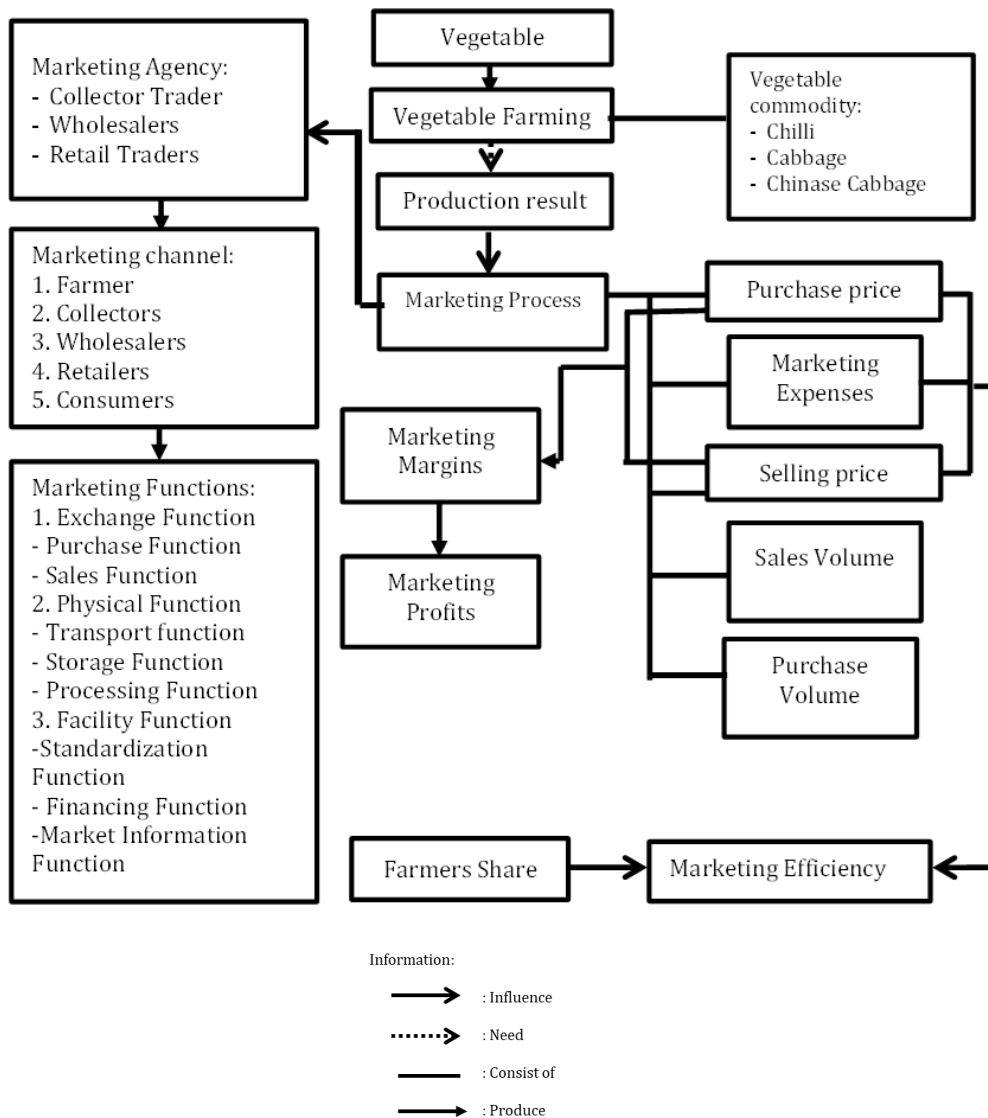


Figure 1 Approach Model Diagram

Vegetable cultivation in Pagar Alam is spread over five districts. According to [20], the central vegetable-producing area is located in Dempo Utara District. Its location at the foot of Mount Dempo is equipped with cool temperatures, making it suitable for farming various vegetables. The center of vegetable production in North Dempo District is in Agung Lawangan Village, which consists of 5 hamlets dominated by vegetable farming and one of the largest, namely Kerinjing Village. The sampling method used for sampling farmers and marketing channels in this study used the Snowball

sampling method. Snowball sampling is a recruitment technique in which research participants are asked to assist researchers in identifying other potential subjects.

The respondent farmers in this study were 35 people. The characteristics of selected respondents are farmers who do farming of cabbage, chinase cabbage, and large chili because these three types of vegetables are the types of vegetables with the highest intensity of production and marketing. Characteristics of farmers include age, level of education, land area, and land ownership status. The data analysis used descriptive analysis to describe the marketing channel patterns of large chilies, cabbage, and chinase cabbage. Furthermore, analysis of marketing margins, farmer's share, and marketing efficiency with the formula according to [21].

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### **3. Results and discussion**

#### **3.1. General Condition of Location, Farmers, and Marketing Institutions**

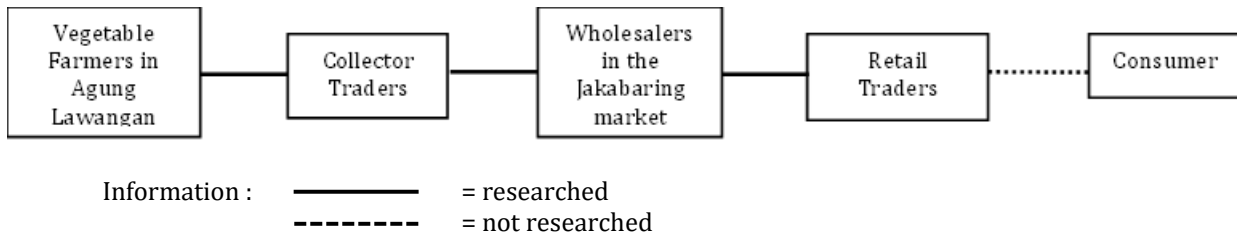
The characteristics of the respondents, namely farmers who carry out vegetable farming in Kerinjing Village, are classified as being of productive age. The education level of farmers generally influences the ability of farmers to understand knowledge and technology in carrying out vegetable farming. In the Kerinjing Village average, the number of farmers with an education level below the compulsory education standard required by the Indonesian state is 88.6 percent. Study [23] in Nigeria, people with high education will cause a decrease in marketing efficiency because they are considered to have little direct experience in the field. The results of this study show that the level of education affects the marketing of agricultural products. In line with research [24]. Land area is one of the factors that affect the productivity of farmers in vegetable farming. The land area owned by farmers in Kerinjing Village is in the narrow land category, namely 0.25-1.00 hectares. Land ownership status in Kerinjing Village is categorized into three categories: own land, leased land, and production sharing the land. In Kerinjing Village, 82.85% farmers work the land with a profit-sharing system. The majority of farmers who do vegetable farming with the profit-sharing system are farmers who come from West Java Province. Farmer using the capital lent by the land owner. When the vegetables have been harvested, the sale proceeds are deducted from the capital borrowed from the land owner, and then the sharecroppers share the profits with the land owner in half.

The characteristics of institutions in the marketing channel in our research are individuals who carry out marketing, distribute services and commodities from producers to final consumers, and have relationships with other business entities or individuals. Consists of collectors, wholesalers, and retailers. Collector traders in this study consisted of one person who was chosen purposively (purposive sampling). The collector traders come from Kerinjing Village, Agung Lawangan Village, Dempo Utara District, Pagaralam City. There is only one collector in the Kerinjing Village who distributes vegetables from Kerinjing Village to the Jakabaring Central Market. Meanwhile, other collectors distribute vegetables to places like Prabumulih Market and South Bengkulu Regency. Collector traders usually buy goods from farmers according to the requests of wholesalers in the Palembang Jakabaring Central Market. Wholesalers are traders who buy vegetables from collectors from Kerinjing Village, Agung Lawangan Village, Dempo Utara District, Pagaralam City. Retailers are marketing institutions or individuals who buy vegetables from wholesalers at the Jakabaring Central Market Palembang and resell vegetables to consumers. In this study, retailers were not explicitly listed and explained because retailers who buy vegetables are uncertain, and there needs to be specific data or information.

#### **3.2. Marketing Agency**

The marketing channel for green chili, chinase cabbage, and cabbage/cabbage vegetables has a marketing pattern, namely from producers/farmers selling to collectors in Kerinjing Village and then collecting traders selling vegetables to wholesalers in the Jakabaring Central Market Palembang by sending vegetables using the services of expedition trucks from Nendagung Terminal, Pagaralam City and new wholesalers sell to retailers and consumers at the Palembang Jakabaring Central Market. There is only one marketing channel for vegetables from Kerinjing Village to the Jakabaring Central Market because there is only one collector with the aim of marketing to the Jakabaring Central Market, Palembang.

The exchange function is an activity related to the transfer of ownership rights in the marketing system and analysis of demand and supply, which is applied directly. The exchange function includes the buying function and the selling function. The exchange function includes the buying function and the selling function. The exchange function between farmers, collectors, wholesalers, and retailers is carried out directly. Farmers prefer to harvest large green chilies even though the selling price is lower than the ripe ones because chilies that are picked when they are not ripe are not prone to rotting even though the intensity of rain and high fog continues to envelop Kerinjing Village, which makes the chilies susceptible to disease and causes fruit to drop.



**Figure 2** Vegetable Marketing Channels in Kerinjing Village

**3.3. Marketing Agency**

**Table 1** Buying price, selling price, and trading volume of Vegetables in Kerinjing.

Merchant Type	Description	Vegetable Commodity		
		Big Chili	Cabbage	Chinese cabbage
Collector Traders	Purchase price	18,000	3,500	2,000
	Selling price	21,000	5,000	3,500
	Volume	200	770	689
Wholesalers	Purchase price	21,000	5,000	3,500
	Selling price	24,000	6,000	5,000
	Volume	200	770	689

This explains the purchase price, selling price, purchase volume, and sales volume of large chilies, cabbage, and chinese cabbage from Kerinjing Village.

From Table 1. it can be explained that the marketing margin of each type of vegetable is different. For collectors, the marketing margin for large chilies averages Rp. 3,000/kg or 16.7%, cabbage, and chinese cabbage, respectively Rp. 1,500/kg or 42.9% and Rp. 1,500/kg or 75%. The lower the price of vegetables, the higher the marketing margin percentage. The same thing happened to wholesalers. Namely, the margin for significant chili commodities was Rp. 3,000/kg or 14.3%, cabbage was Rp. 1,000/kg or 20%, and chinese cabbage was Rp. 1,500/kg or 42.9%. The marketing margin for collectors is higher than for wholesalers. However, in terms of turnover, there are more large traders because the trading volume is more significant, so the profits of large traders will be greater than that of collecting traders.

**3.4. Marketing Functions**

The marketing function provides added value to vegetable products at each institution that markets them because each marketing agency incurs marketing costs according to their respective needs. The marketing function is carried out starting from farmers who act as vegetable producers to consumers by involving marketing institutions such as collectors, wholesalers, and retailers. The following are marketing functions carried out by existing marketing channels. In Table 2. the marketing agency that performs the most marketing functions is the collector trader. And the type of vegetable that has the most marketing functions is chinese cabbage.

Physical functions include storage functions, transport functions, and processing functions. Farmers, collectors, and wholesalers do not store vegetables. This is because the vegetables harvested by farmers are directly sold to collectors according to the demand for goods from wholesalers which can cause low prices due to damage and excess yields. Bangladesh is also facing problems with inadequate storage facilities and a lack of processing centers [22]. Hence, the prices of primary agricultural products fall into the low category. The need for a storage area to avoid oversupply which makes prices at the farm level low. The unavailability of storage facilities is one of the problems that hinder the production and marketing of vegetables, so the construction and cold storage facilities will reduce pre- and post-harvest losses. The same problems and solutions were also found in research [23]. All marketing channels carry out the transportation function except for wholesalers because the wholesalers only need to receive the goods that arrive at the Jakabaring Palembang Main Market, which will then be sold directly to retailers and consumers. Collector traders incur different marketing costs such as packing, sorting, transportation, loading and unloading costs as well as

research[24]. This marketing agency does not carry out the processing function because the vegetables are sold directly without any changes in the shape or additional packaging under product criteria.

**Table 2** Vegetable Marketing Functions in Each Marketing Institution

No.	Marketing Function	Marketing Institute		
		Farmer	Collector Traders	Wholesalers
1.	Exchange Function:			
	Purchasing Function	x	√	√
	Sales Function	√	√	√
2.	Physical Function:			
	Storage Function	x	x	x
	Transport Function	√	√	x
	Processing Function	x	x	x
3.	Facility Function:			
	Standardization Function	√	√	√
	Financing Function	√	√	√
	Market Information Function	x	√	√

Note: √ : Do; x : Did not do; Source: Primary Data Analysis 2022

The facility functions, namely standardization function, financing function, and market information function. The light standardization function is carried out by farmers in separating vegetables that are not fresh and damaged before being sold to collectors. Then the collecting traders do not perform the processing function because the vegetables have been processed at the farmer level. Wholesalers at the Palembang Jakabring Central Market also carry out light processing of large chilies, cabbage, and chinese cabbage before being sold to retailers and consumers to ensure good standardization of vegetables. Because rotten and damaged vegetables can lower the selling price and cause consumer dissatisfaction. The type of vegetable that is processed the most is chinese cabbage because its texture is more easily damaged [6]. The financing function, such as marketing costs, includes equipment costs such as sacks, ropes, and transportation costs to packaging. Farmers, collectors, and wholesalers carry out the financing function because each institution incurs expenses according to individual needs. The financing challenges in marketing identified in the study area are poor infrastructure and lack of credit services in line with research [25]. The price of agricultural produce is highly dependent on its quality and freshness. Another obstacle is the price of the product because farmers need to figure out the price that can be realized. According to research, demand for chili, cabbage, and cabbage in various consumer centers and competition with producers from other regions play a significant role in determining prices [5]. The market information function in Kerinjing Village does not carry out the market information function because the farmers already know each other and believe that the collecting traders buy vegetables according to the prevailing market prices. In addition, the buying and selling relationship between farmers and collectors in Kerinjing Village has been going on for a long time. Meanwhile, collectors and wholesalers carry out the function of market information. Research conducted [26] regarding rubber marketing in Thailand, the primary sources of marketing information for farmers are service bulletin boards, extension workers, traders, other farmers, and agrochemical agents. The type of information available and used by farmers is limited by application or acceptance. There should be more transparency in terms of information dissemination to farmers.

### 3.5. Marketing Efficiency

Marketing costs are incurred by each marketing agency in distributing vegetables from producers (farmers) to consumers. Each marketing agency spends different marketing costs according to their respective needs. This is because each marketing agency has various marketing functions and risks. This risk exists because vegetables have four characteristics: they are easily damaged, they cannot last long, they are voluminous, which makes vegetables take up quite a lot of space, and they are seasonal.

**Table 3** Cost of Marketing of Large Chili, Cabbage and Chinese cabbage at the Collector Trader Level in Kerinjing Village (Rp/kg), November 2021

No.	Fee Type	Types of Vegetables		
		Big Chili	Cabbage	Chinese cabbage
1.	Bag	133.30	34,63	38,70
2.	Rope	16,66	4,32	4,83
3.	Transportation	130.00	33,76	37,70
4.	Expedition Truck	774,20	201,09	224,73
Amount		1.054,16	273,80	305,96

These costs are incurred by collecting traders because they have to transport vegetables from Pagar Alam City to Palembang City for about 294 kilometers which can be reached in about 8 hours.

**Table 4** Cost of Marketing of Large Chilies, Cabbage and Chinese cabbage at the Wholesaler Level at the Jakabaring Central Market, November 2021

No.	Fee Type	Types of Vegetables (Rp/kg)		
		Big Chili	Cabbage	Chinese cabbage
1.	Rent a stall	38,88	10,10	11.28
2.	Electricity	33,30	8,65	9.67
3.	Transportation	25.00	6,49	7,25
4.	Packaging	83,33	21.64	24,18
5.	Consumption	50.00	12.98	14.51
Amount		230.51	59,86	66,89

The cost of renting a stall is a fee paid by wholesalers to the manager of the Palembang Jakabaring Central Market within three months, which is IDR 2,100,000.

**Table 5** Vegetable Marketing Margin at wholesaler and wholesaler level (Rp/kg)

Merchant Type	Description	Types of Vegetables		
		Big Chili	Cabbage	Chinese cabbage
Collector Traders	Marketing Margins	3,000	1,500	1,500
	Marketing Expenses	1,054	274	305
	Profit Margins	1946	1,326	1,195
Wholesalers	Marketing Margins	3,000	1,000	1,500
	Marketing Expenses	230	60	67
	Profit Margins	2,770	940	1,433

Table 5. Illustrates that the collecting traders sell vegetables with a price difference that is similar to the big traders at the Jakabaring Central Market, Palembang. This is because the collecting traders pay quite a large freight load for the expedition trucks and incur transportation costs. In line with research [25] that the reason for the high cost of transportation is the long journey and the winding road conditions because it is transported from mountainous areas to the city, the same is true in Pagar Alam. Meanwhile, wholesalers incur costs for renting trade stalls, packaging, and other costs and do not incur costs for transporting vegetables. The wholesalers only need to receive the vegetables until they reach the Jakabaring Central Market and market them immediately.

**Table 6** Marketing Efficiency of Large Chili, Cauliflower, and Chinese cabbage at the Collector and Wholesaler Level (Rp/kg), November 2021

Merchant Type	Description	Types of vegetables		
		Big Chili	Cabbage	Chinese cabbage
Collector Traders	Marketing Expenses	1,054	273	305
	Selling price	21,000	5,000	3,500
	Efficiency	5.01	5,47	8,74
Wholesalers	Marketing Expenses	230	58	67
	Selling price	24,000	6,000	5,000
	Efficiency	1.09	0.98	1.33
<i>Farmer's Share</i> (%)		75.00	58.00	40.00

The value of the marketing efficiency of the three types of vegetables at the collector level is below 50 percent, which means that the marketing of large chilies, cabbage, and chinese cabbage is efficient. Farmer's share for each vegetable is different because there are variations in the price of vegetables that farmers receive from collectors and the price paid by consumers. In addition, the level of farmer's share is also different because of the characteristics of vegetables, namely perishable, non-durable, bulky, and seasonal, so there is a risk cost for each marketing agency.

*Farmer's share* for each vegetable is different because there are variations in the price of vegetables received by farmers from collectors and the prices paid by consumers. In addition, the level of farmer's share is also different because of the characteristics of vegetables, namely perishable, non-durable, valuable, and seasonal, so there is a risk cost for each marketing agency. In Japan, infrastructure has been provided for perishable agricultural products, such as warehouses for storing agricultural products created by the government and the private sector and to increase the bargaining power of Japanese farmers by forming groups to increase the bargaining power of farmers and avoid unnecessary intermediaries in the agricultural marketing process [27] The trading strategy in partnership allows for new market opportunities to introduce horticultural products to potential customers [28].

In addition to the long marketing system, the income of farmers in Kerinjing Village is affected by yields that are not sold due to low quality caused by long distances and less than optimal storage, so the buying price for middlemen for farmers is low. Several studies conducted [29,30] have designed an information system that can be used to promote and inform quickly, precisely, and accurately agricultural products in the City of Pagar Alam. So that the agricultural products of Pagar Alam City can be known by people outside the city of Pagar Alam or the wider community so that they can attract consumers to make purchases. They are designing an agricultural product marketing information system using a website to access the system using an internet network and a browser. Similarly, marketing communications play a vital role for marketers. Without communication, consumers or customers as a whole will not know the existence of the product on the market [31,32] to reach more wholesalers by shortening the marketing chain. In Indonesia, based on research [33,34], the fact that many vegetable farmers have contracted with specialized suppliers for supermarkets in rural Java suggests that smallholders can engage in contract farming with the advent of retail modernization.

#### 4. Conclusion

This article provides empirical evidence about vegetable marketing channels. Vegetables play an important role in meeting the overall goals of sustainable agriculture, food security, and poverty alleviation, particularly among rural small-scale farmers, and can sustain urban vegetable supplies. There is only one marketing channel for large chilies, cabbage, and chinese cabbage, namely farmers - collectors - wholesalers - retailers - consumers, but it has been effective. Market power rests with the wholesalers as price makers. Farmers only receive prices that wholesalers have determined. The marketing problem is that there is only one collecting trader who buys produce from Kerinjing Village to sell to the wholesale market in Palembang City, market information can only be obtained from collectors, transportation costs are expensive, there is no storage warehouse, so vegetables must be transported directly, and so on. The marketing agency that performs the most marketing functions is the collector trader. There is still a significant opportunity to increase the productivity of vegetables in Pagar Alam because, from a marketing point of view, it is already efficient. Although, there are still some opportunities that still need to be exploited. Because seen from the existing marketing side is already efficient. Although, there are still some opportunities that still need to be exploited.



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## Compliance with ethical standards

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### *Statement of ethical approval*

The authors declare that there is no conflict of interest

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