Distribution Margin Analysis of Chilli in Banyumas

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Abstract. This study analyze the distribution margin of cayenne pepper in each distribution channel, profit and measure the level of distribution efficiency of cayenne pepper in Banyumas Regency. The type of research used is a quantitative type with primary data obtained through interviews using a questionnaire. The method of determining respondents using saturated sampling method with the number of respondents as many as 58 farmers. The data analysis techniques used are distribution margin analysis, farmer's share, distribution costs, distribution benefits and distribution efficiency analysis. The results of this study indicate that there are 3 distribution channels namely channel I (farmers-consumers), channel II (farmers-collectors-retailers-consumers) and channel III (farmers-collectors-wholesalers-retailers-consumers). Distribution channel III is the most profitable channel with a margin value of Rp 9,800. In addition, it was found that the shorter the distribution channel, the larger the farmer's share. Therefore, farmers are expected to understand which channels can benefit them .

Keywords: Distribution Margin · Profit · Farmer's Share · Efficiency

1 Introduction

Agricultural development in Indonesia has a strategic position with activities based on food crops and horticulture. In addition to involving the largest workforce in production activities, this sector is also a staple food item for national consumption. Viewed from the business side, economic activities based on food crops and horticul-ture are the largest business activities and are widespread throughout Indonesia [1]. One of the leading horticultural products in Indonesia, namely chili, chili is one of the vegetable commodities that are widely cultivated by farmers in Indonesia because it has a high selling price. Cayenne pepper is one of the commodities consumed by various groups of people regardless of their social level or income. With the develop-ment of the times, cayenne pepper is not only consumed in raw form, but also con-sumed in the form of processed new products.

Badan Pusat Statistik (BPS) noted that the production of cayenne pepper in Indone-sia reached 1.51 million tons in 2020. This number increased 9.76 percent compared to the previous year which was 1.37 million tons. The production of cayenne pepper

in Indonesia has continued to increase since the last five years. During the 2016–2020 period, the average increase in cayenne pepper production was 13.6 percent per year. In 2020, the highest production of cayenne pepper occurred in August, reaching 177.91 thousand tons. Meanwhile, the lowest chili production occurred in February, which was 86.31 thousand tons [2].

Based on Badan Pusat Statistik (BPS) recorded the land area of cayenne pepper in Indonesia is 172,847 ha where per hectare chili plants produce around 6–7 tons per production. The largest contribution of chili production in Indonesia is on the island of Java, especially in East Java, with a total production of 250,000 tons. Central Java province is the second largest producer after East Java, with a total production of 150,000 tons. One of the districts in Central Java that has the largest chili produc-tion is Banyumas Regency with 11,029 tons [3].

The demand for chili for daily needs can fluctuate, which is caused by fluctuations in chili prices that occur in the retail market. Price fluctuations that occur in the retail market, apart from being caused by factors that affect the demand side, are also caused by factors that affect the supply side. From the supply side, it shows that the process of providing (production and distribution) of chili has not been fully con-trolled by the farmers. The main factor causing this is that chili farmers are small farmers whose production decision-making processes are allegedly not handled and supported by a good production and price forecast [4].

The increase in chili prices is highly dependent on the harvest and planting seasons as well as the influence of climate and weather. In addition, price increases are also related to distribution activities. When compared to prices in consumer areas, chili prices in producer areas are lower. Some of the influencing factors include transporta-tion factors, the low durability of chili peppers, and low public purchasing power [5].

Distribution activities can not be separated from the existence of distribution institu-tions contained in it and are interrelated with each other. Activities carried out can be in the form of distribution of goods, processing of goods and other arrangements such as setting prices. This activity is carried out so that profits can be achieved by institu-tions that make up distribution channels [6].

Chili distribution activities are a series of activities that occur in the process of flowing goods and services from production centers to consumption centers in order to meet needs and provide satisfaction for consumers and provide benefits for producers [7]. The main problems of chili distribution are long distribution channels, unequal distri-bution margins, the emergence of imperfect market structure problems and large distribution margins, so that the distribution efficiency for farmers is far from the expectation of enjoying the share or share of the price that should be received [8]. Another main problem with cayenne pepper is that it is not durable, perishable and easily damaged. The problem that often arises is that the price of chili received by farmers is almost always low during the harvest season. Farmers are always in the most disadvantaged position because if the price of chili to farmers goes up, then it is not necessarily the price of chili to consumers who goes up too, while if the price of cayenne pepper falls, it will also have an impact on farmers so that the price of chili in farmers will also fall [9].

These factors then have an impact on chili production and farmers' income in each region, so it is necessary to know chili distribution and chili distribution margins. Distribution margin is often used as an indicator of distribution efficiency. The amount of distribution margin in various distribution channels can be different, because it depends on the length of the distribution channel and the activities that have been carried out as well as the profits expected by the distribution institutions involved in the distribution [10].

Distribution margin is the difference between the price paid by consumers and the price received by farmers or is the cost of distribution services needed as a result of demand and distribution services. The greater the price difference between the trading institutions involved, especially between the prices that occur at the retail level and the prices received by farmers, the greater the trading margin of the commodity in question, and the more inefficient its distribution [11].

From the description above, this study aims to 1) identify the tasks of marketing institutions in Limpakuwus Village, Sumbang District, Banyumas Regency. 2) identi-fy the profit and distribution margin of chili in Limpakuwus Village, Sumbang Dis-trict, Banyumas Regency. 3) identify the efficiency level of each chili distribution channel in Limpakuwus Village, Sumbang District, Banyumas Regency.

2   Research and Method

This study uses a quantitative approach. The research location is in Limpakuwus, Sumbang, Banyumas. This study uses saturated sampling, which is a sampling technique when all members of the population are used for the sample, therefore this study uses a saturated sampling technique because the population is relatively small, namely 58 farmers. The research uses distribution margin analysis, farmer's share analysis, cost and profit analysis.

2.1   Distribution Margin

This analysis is used to determine the price difference between final consumers and producer prices and their distribution in each distribution agency, formulated as follows [12]:

$$Mmi = Ps - Pb \tag{1}$$

Description:
Mmi: Distribution margin at each level of distribution agency.
Ps: Selling price at each level of distribution agency (Rp/Kg).
Pb: Purchase price at each level of distribution agency (Rp/Kg).

2.2   Benefits of Each Institution

The following formula is used to calculate the profit from each institution [12]:

$$\pi = M - BP \tag{2}$$

Description:
π: Distribution Profit.
M: Distribution Margin.
Bp: Distribution Cost.

2.3 Farmer's Share

To find out how much part of the price received by farmers from the selling price of chili, the following formula is used [12]:

$$S1 = \frac{PY}{pf} \times 100\%$$ (3)

Description:
S1: Part of the price received by chili farmers.
PY: Selling price received by farmers.
Pf: Final consumer purchase price.

2.4 Share Distribution Costs and Share Profits

The percentage of distribution costs and the percentage of profit costs obtained by each distribution agency can be calculated by the following formula [12]:

$$SKi = \frac{(Ki)}{(Pr - Pf)} \times 100\%$$ (4)

Description:
Ski: Distribution agency profit share.
Ki: Distribution agency profit.
Pf: Producer level price.
Pr: Consumer-level prices

$$SBi = \frac{(Bi)}{(Pr - Pf)} \times 100\%$$ (5)

Description:
SBi: Share distribution costs of institutions.
Bi: Distribution agency distribution costs.
Pf: Producer level price.
Pr: Consumer-level prices.

The conclusion is that if the profit share and distribution costs of each institution involved in the distribution process are evenly distributed in the sense that the profit share received is higher than the costs incurred, then the distribution can be said to be efficient [13].

2.5   Distribution Efficiency

To determine the level of marketing efficiency of cayenne pepper in each distribution agency, the following formula is used [14].

$$EPs = \frac{BP}{HE} \times 100\% \tag{6}$$

Description:
Eps: Distribution Efficiency.
BP: Cost of Distribution.
HE: Retail Price.
The test criteria where EPs < 5% means efficient while EPs > 5% means inefficient.

3   Results and Discussion

3.1   Chili Distribution Channel

Based on the results of the research that has been carried out, it can be described about the distribution channel pattern of cayenne pepper in Limpakuwus, Sumbang, Banyumas. Collecting data to find out the various distribution channels of cayenne pepper used, obtained by tracing the distribution channels of cayenne pepper from farmers to consumers. Based on the results of research that has been carried out on the distribution of cayenne pepper in Limpakuwus, there are three distribution channels (Fig. 1):

Based on the picture above, the distribution channel of cayenne pepper in Limpakuwus Village, Contributing District, through several channels, namely:

Distribution Channel I. In this distribution channel I only involves farmers and consumers where the sales process is the producers or farmers directly sell them directly to consumers.

Distribution Channel II. Farmers sell chilies to collectors, then from collectors they sell them back to wholesalers, only after that they are marketed to consumers. This distribution system includes assisting producers in marketing cayenne pepper, especially at the time of harvest on a large scale or when production is abundant. This pattern of marketing channels occurs by means of producers coming to middlemen to sell. Cayenne pepper that consumers usually use to meet their daily needs such as cooking. These consumers come from inside and outside the village of Limpakuwus. The distance between collecting traders and wholesalers is approximately 5 km.

Distribution Channel III. In distribution channel III, farmers sell cayenne pepper to collectors and then resell to wholesalers after which they are sold or marketed to city markets such as the Wage market in Purwokerto, Cilongok market, Karanglewas market and Ajibarang market. The distance between wholesalers and the market is approximately 30 km. The amount according to the distribution channel used in distributing cayenne pepper in Limpakuwus, among others.
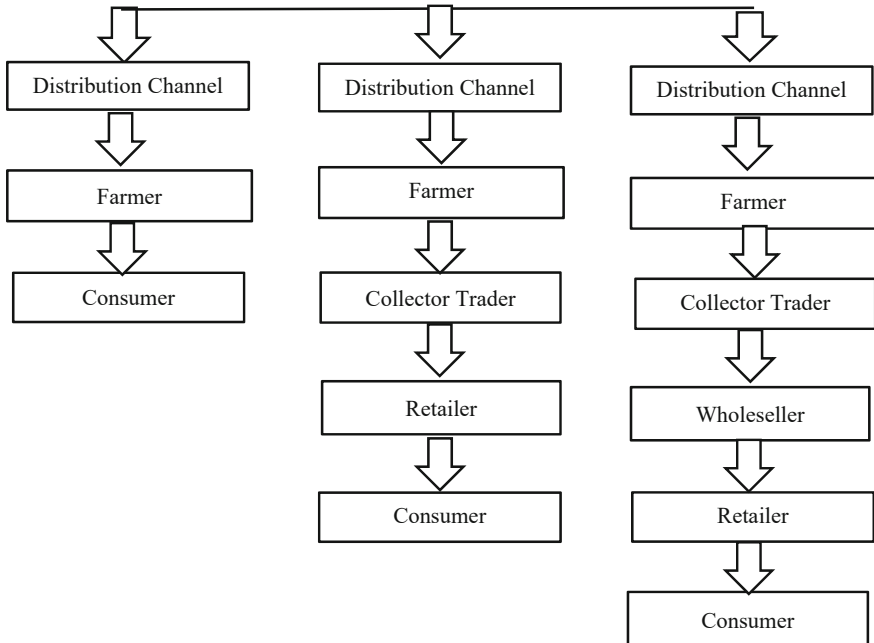
Fig. 1. Cayenne Pepper Distribution Channel Pattern in Limpakuwus.

Table 1. Number of Distribution Channels of Cayenne Pepper in Limpakuwus

No.	Distribution Channel	Farmer	Percentage (%)
1.	Saluran I	5	8,62
2.	Saluran II	16	27,58
3.	Saluran III	37	63,80
	Total	58	100

Table 1 shows that distribution channel III is the channel that is widely used by farmers, which is 63.80% or used by 37 cayenne pepper farmers, for distribution channel I and II, each consists of 5 and 16 cayenne pepper farmers. Distribution channel III is widely used by farmers because farmers prefer to sell their cayenne pepper directly to collectors because it is easy and close to where they live. Besides that, there is no need to bargain anymore because they are used to selling these traders.

The second distribution channel is widely used by farmers, which is 23.3% or used by 7 farmers. This is due to the close distance between collecting traders and their residences, so there is no need to incur transportation costs. In addition, what causes farmers to choose this channel is that farmers do not need to sort the cayenne pepper so it does not take much time.

Table 2. Function of Distribution Institutions Performed by Distribution Channel II

Agency	Exchange Function		Physical Function			Facility Function			
	A	B	C	D	E	F	G	H	I
Collector Trader	+	+	+	-	+	-	+	-	+
Retailer	+	+	+	-	+	-	+	-	+

Distribution channel I is the channel that is least used by farmers, amounting to 8.62, consisting of 5 cayenne pepper farmers. This is because the chili farmers in Limpakuwus have been shaded by several large collectors or several other retailers, because in this way it becomes easier for farmers to sell their cayenne pepper because there are already collectors who are ready to accommodate any amount of cayenne pepper. Will be sold by farmers. In addition, farmers do not need to bargain anymore because they have entrusted them to the big traders.

3.2 Duties of Cayenne Pepper Distribution Agencies

The function of the distribution agency basically aims to facilitate the flow of goods from producers to consumers. Besides that, it can increase the selling value of goods. The functions of distribution agencies that occur from each institution involved in the distribution of large cayenne peppers are clearly different. Each distribution agency has a different routine of activities, tailored to the needs of each distribution agency. According to the theory proposed by [15] Sudiyono (2002), the function of the existing distribution must facilitate the process of delivering goods or services (Table 2) .
　　Description:
　　A = purchasing function,
　　B = sales function,
　　C = storage function,
　　D = processing function,
　　E = transportation function,
　　F = gradding and standardization function,
　　G = financing function,
　　H = risk-taking function,
　　I = market information,
　　+ = doing activities,
　　- = not doing activities.
　　The table above shows the distribution functions carried out by distribution agencies in distribution channel III, which are carried out by collecting traders including the exchange function, namely buying from farmers and selling to wholesalers. The physical function is transportation to transport chilies from shelters to wholesalers in the Wage market, Purwokerto. Facility function, namely financing which includes the cost of transportation, loading, packaging, levies and depreciation. Risk coverage to reduce the

Table 3. Function of Distribution Institutions Performed by Distribution Channel II

Agency	Exchange Function		Physical Function			Facility Function			
	A	B	C	D	E	F	G	H	I
Collector Trader	+	+	-	-	+	-	+	-	+
Wholeseller	+	+	+	-	+	-	+	-	+
Retailer	+	+	+	-	+	-	+	-	+

risk of greater losses. Market information is to find out the current prices and find out the buying prices made by wholesalers.

Distribution functions carried out by wholesalers include the exchange function, namely the purchase of chili from collectors and sales to retailers. The physical function is storage because sometimes it is not sold out. The length of storage is two to three days, if more than that the chili will rot. The function of the facility, namely the function of financing for labor, retribution, and unloading. The function of covering the risk of damage due to loading and unloading of vehicles.

The function of market information is to determine the selling price of chili to collectors. The price of chili is seen from the number of requests and seen from the number of goods (chili) so if there is a lot of demand, the goods are few, the price goes up. The distribution function carried out by retailers includes the exchange function, namely the purchase of chilies to wholesalers and sales to consumers.

The physical function is storage because sometimes it is not sold out. The length of storage is two to three days, if more than that the chili will rot. The financing functions are depreciation, retribution, transportation, and loading and unloading. The risk-bearing function is to replace the cost of buying rotten chilies. Retailers also carry out market information to find out prices at the consumer level and selling prices at wholesalers.

Description:

A = purchasing function,

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F = gradding and standardization function,

G = financing function,

H = risk-taking function,

I = market information,

+ = doing activities,

- = not doing activities.

Table 3 shows that it shows the distribution functions performed by distribution agencies in distribution channel II. Distribution functions carried out by collectors include the exchange function, namely buying from farmers and selling to retailers. The physical function is transportation to transport chilies from the shelter to retailers in Limpakuwus

Table 4. Distribution Margin of Cayenne Pepper in Limpakuwus, Kembaran

No.	Agency	Margin					
		Channel I		Channel II		Channel III	
		Rp/Kg	%	Rp/Kg	%	Rp/Kg	%
1.	Farmer	9,000	100	-	-	-	-
2.	Collector Trader	-	-	3,750	48.38	3,800	38,77
3.	Retailer		-	4.000	51.62	2,000	40,82
4.	Wholeseller		-	-	-	4,000	20,40
		9,000	100	7,750	100	9,800	100

Village. The function of the facility is standardization to determine which chilies are worth buying and selling. Financing is the cost of transportation, loading and unloading, containers and shrinkage. Risk coverage to reduce the risk of greater losses.

Market information is to find out the current prices and find out the selling prices made by retailers. The distribution functions carried out by retailers include the exchange function, namely the purchase of chilies to collectors and sales to consumers in various areas such as the Purwokerto market which includes the Wage market, Sweet Market, Cerme Market, Sweet Market and some are in the market. Purbalingga.

The physical function is storage, because sometimes it is not sold out. The length of storage is two to three days, if more than that the chili will rot. The financing functions are shrinkage, transportation, loading and unloading and retribution. The risk-bearing function is to replace the cost of buying rotten chilies. Retailers also conduct market information to find out prices at the consumer level and selling prices at collectors and wholesalers.

Margin Analysis. The distribution margin can be analyzed by using two components, namely the selling price and the purchase price which are set aside at the distribution agency where the selling price is reduced by the purchase price. There are three distribution channels of cayenne pepper in Limpakuwus, namely channel I (farmers-consumers), channel II (farmers-collectors-retailers-consumers), and channel III (farmers-collectors-big traders-retailers-consumers). The distribution margin of cayenne pepper in Limpakuwus, is presented in Table 3.

Table 4 shows that the distribution agency in channel I is the farmer. The distribution margin for channel I is Rp 9,000 per kg from the average selling price at the consumer level. Channel I is the shortest distribution channel among the three channels.

In channel II, there are two distribution institutions, namely collectors and retailers with a total margin of Rp. 7,750 per kg and each margin of Rp. 3,750 or 48.38 percent at the collector level and Rp. 4,000 or 51.62 percent at the retailer level.

The distribution margin in channel III is the longest channel, with 3 institutions namely collectors, retailers and wholesalers with a total margin of Rp 9,800 per kg and each margin of 3,800 or 38.77 percent at the collector level, at the retail level the distribution margin is Rp 2,000 or 20.40 percent and at the wholesaler level, the margin is

Table 5. Farmer's Share, Distribution Costs and Benefits of Cayenne Pepper Distribution Institutions in Limpakuwus

	Distribution Pattern					
	Chnl I	%	Chnl II	%	Chnl III	%
Farmer's share (Rp/Kg)	39.000	97,5	29.938	76,76	30.750	77,52
Distribution Cost (Rp/Kg)	80	2,01	406,66	5,97	473,33	4,04
a. Transportation	80	-	-	-	566,66	4,83
b. Labor		2,01	9,37	0,13	177,85	1,51
c. Depreciation			500	7,34	620	5,29
d. Packaging			29,30	0,43	75,00	0,64
e. Retribution			945,33	13,89	1.500	16,32
Sub Total I						
Agency Profit (Rp/Kg)	3.900	97,99	-	-	-	-
a. Farmer	-	-	2.804,67	41,21	2,300	32,44
b. Collector	-	-	-	-	1,500	17,07
c. Wholeseller	-	-	3.054,67	44,89	2,834	34,15
d. Retailer			5.139,34	86,1	6,634	-
Sub Total II						83,66
	3.980	100	6.804,67	100		100

Rp. 4,000 or 40.82 percent. Channel III is a distribution channel with the highest margin level from other distribution channels. The results showed that channel II is the channel that contributes the smallest distribution margin and can be said to be efficient in the distribution of cayenne pepper in Limpakuwus because the level of net profit obtained in channel I is smaller than channel II and III.

Farmer's Share, Cost and Profit Percentage. One of the useful indicators in looking at distribution efficiency is to compare the share received by the farmer (farmer's share) with the price paid by the final consumer. The larger the share received by the farmer, the more efficient the distribution channel will be. The difference in the share received by 58 farmers can be seen from each margin on the distribution channel pattern of cayenne pepper in Limpakuwus by comparing the costs incurred and the profits received (Table 5).

Farmers Share. Based on the table above, the farmer share in channel I is 39,000 per kg or 97.5 percent because in channel I, farmers sell without intermediaries to consumers. In channel II the farmer share is 29,938 per kg or 76.76 percent, while in channel III the farmer share is 30,750 or 77.52 percent. The most profitable distribution for cayenne pepper farmers is distribution channel I because in this channel farmers can determine their own selling price.

Cost Percentage. The percentage of costs is obtained by comparing the costs of distribution agencies with prices at the producer level minus prices at the consumer level. The

Table 6. Analysis of Cost Share and Profit Sharing Distribution of Cayenne Pepper

No.	Description	Channel I	Channel II	Channel III
1.	Share Cost (%)	0,88	10,43	21,45
2.	Share Profit (%)	43,33	56,71	66,89

Table 7. Efficiency Analysis of Cayenne Pepper Distribution in Limpakuwus

No.	Description	Marketing Cost (Rp/Kg)	Marketing Efficiency (%)
1.	Channel I	80	0,20
2.	Channel II	945,33	2,42
3.	Channel III	1.500	3,62

distribution costs of cayenne pepper include transportation costs, labor costs, depreciation costs, packaging costs, and retribution costs. The table above shows that the largest cost is in channel II, which is 10.87 percent of the total margin.

Profit Percentage. The profit of the distribution agency is obtained by comparing the profit of the marketing agency with the price at the producer level minus the price at the consumer level. In table 14 the biggest profit received by channel III is Rp 9,800 and a percentage of 83.66% of the total existing margin.

Table 6 shows that the cost share and profit share in channel I are 0.88 percent and 43.33 percent if the profit share and distribution cost share of each institution is related to the distribution percentage with equal conditions in the sense that the profit share received is higher than costs incurred, the distribution can be said to be efficient.

Profit is the result received by the marketing agency for the activities carried out in conveying cayenne pepper to the final consumer. The marketing activities of cayenne pepper in Limpakuwus Village have different benefits received by producers and marketing institutions. Profits are obtained from the difference between marketing margins and marketing costs.

3.3 Distribution Efficiency of Cayenne Pepper

Marketing efficiency occurs when marketing costs can be reduced so that marketing profits can be higher. Marketing efficiency can be interpreted as a comparison between marketing costs and the value of products sold and expressed in percent (Table 7).

Based on the efficiency analysis of cayenne pepper in Limpakuwus channel I can be said to be the most efficient because channel I has the lowest efficiency value of 0.20 percent.

Efficient marketing can be seen from comparing distribution costs with prices at the retail level. Efficiency in channel I is 90.91%, in marketing channel II is 85.72%, and in marketing channel III is 66.67%. Marketing channel II is more efficient than marketing

channel III and marketing channel I is more efficient than marketing channel II because the margin value is the lowest, which is Rp. 29.99 per kg. Apart from being seen from the marketing margin, marketing efficiency can be seen from the farmer's share, the channel that has a high farmer's share is channel I with a value of 90.91% meaning that this channel is the most economically efficient cayenne pepper marketing channel.

4   Conclusion

Based on the results that have been obtained and the discussion that has been described in the previous chapter, this research concludes that: a) Distribution Channel I: Farmer – Consumer, b) Distribution Channel II: Farmer– Collectiong Traders – Retailer – Consumer, c) Distribution Channel III: Farmer – Collecting Traders – Wholeseller – Retailer – Consumer. The functions and duties of the marketing agency are as follows:

Wholeseller. The functions and duties of wholesalers in Limpakuwus are to collect and market cayenne pepper from collecting traders to consumers. Collect Traders. The functions and duties of collectors in Limpakuwus are to collect and market cayenne pepper from farmers or producers to wholesalers and consum-ers. Retailers. The functions and duties of retailers in Limpakuwus are to accommodate and buy cayenne pepper from farmers to consumers. Cost share and profit share in channel I pattern are 0.88 percent and 43.33 percent. The cost share and profit share in channel II are 10.43% percent and 56.71 percent. The cost share and profit share in channel III are 21.45 percent and 66.89 percent. If viewed from the efficiency of the distribution of raw chili peppers in Limpakuwus, the distribution channel I is the most efficient with a value of 0.20 percent.

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