

Factors affecting market efficiency of unhusked rice in Central Java

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Abstract. The purpose of this study was to analyze marketing distribution, factors affecting marketing, and margins of unhusked rice in Undaan Sub-District, Kudus Regency. The survey was conducted from October to November 2018 in Undaan Sub-District, Kudus Regency. The data of marketing margin and marketing efficiency were descriptively analyzed using multiple linear regression analysis. The result showed that there were two patterns of marketing channels of unhusked rice; first, farmers' → rice mills and second, farmers' → middleman → rice mills. The marketing margin of the first pattern was Rp. 0.00, while the marketing margin of the second pattern was Rp. 525.93 at the middleman level. The marketing efficiency of the two patterns was efficient in term of farmers' share. The result of the multiple linear regression showed that the channel pattern and the selling price as independent variables were the factors influencing marketing efficiency.

1. Introduction

Paddy that produce unhusked rice is one of the leading commodities from the Indonesian agricultural sector [1]. The characteristics of Indonesian farmers who are subsistence make planting paddy is a priority strategy because it will secure the condition of their households. The main reason for farmers in Indonesia to grow paddy is for family food safety and easy to sell [2]. A large number of marketing institutions causes farmers to feel they don't have to worry about selling their crops anywhere. There is at least 6-7 actors involved, that cause striking price differences at the producer and consumer levels [3, 4].

Indonesian habit that do not feel like eating if they do not consume rice also encourage farmers to always produce rice. Moreover, rice is a political and strategic commodity. Rice consumption in Indonesia in 2017 reached 81.6 kg/capita/year and continue to increase [1]. Central Java could even be the third contributor to rice production nationally amounted to 11.3 million tons [1]. Rice production in Central Java is spread in 29 regencies and 6 cities, but the regency with the largest rice production is in Kudus Regency. Undaan is one of the regions in Kudus Regency that make Kudus as the largest rice production in Central Java.

The high increase in production will not mean anything when there is no efficient marketing system. There has been a striking disparity between the price of unhusked rice at the farm level and the price of rice at the consumer level [5-9]. This price difference is also triggered by the length of marketing channels [10].

From these various phenomena, the writer would like to examine the factors that influencing the effectiveness of unhusked rice marketing in Central Java, especially in Kudus Regency. Considering that all this time existing research has only examined the marketing pattern without considering factors



that affect the effectiveness of unhusked rice marketing activities. This research was expected to contribute in increasing farmers income. In line with some research that mentioned in the farmer level the price of rice should be transmitted well to the consumer level, and vice versa [11].

2. Material and Methods

Research on the factors that affect the efficiency of unhusked rice marketing is conducted in Undaan Sub-District, Kudus, Central Java, Indonesia from October to November 2019. The location was deliberately chosen because Kudus is one of the rice barns in Central Java and there is a relatively huge price gap between farmers and consumers. The survey method was used to obtain primary data (channels, margins, and factors that influence marketing efficiency) by interviewing and observing 74 respondent of farmers, 13 middlemen and 7 rice mills. Secondary data were obtained using documentation and literature study methods from Ministry of Agriculture and Village Institution. The analysis used in this study includes:

1. Descriptive analysis to explain marketing channel patterns.
2. Marketing Margin

$$MP = Hk - Hp$$

where:

MP = Marketing Margin (Rp/kg)

HK = Price at the consumer level (Rp/kg)

HP = Price at producer level (Rp/kg)

3. Marketing efficiency that calculated used farmer share value

$$F = (1 - Mp/Pr) \times 100\%$$

where:

F = Farmer share

Mp = Marketing margin (%)

Pr = Price at the consumer level (Rp / kg)

If the portion received by farmers is less than 50%, then marketing is inefficient, whereas if the portion received by farmers is more than 50%, then marketing is efficient [12].

4. Multiple Linear Regression to analyze factors that affecting efficiency of unhusked rice marketing

$$Y = \alpha + b_1X_1 + b_2X_2 + b_3X_3 + e$$

where:

α = Constant

b_1, b_2, b_3 = Coefficient of variables

X_1 = Channel pattern

X_2 = Number of production (Kg)

X_3 = Selling price (Rp)

Y = Marketing efficiency (%)

e = Standard error

3. Results and Discussion

3.1 Marketing channel

A marketing channel is a route that is passed by agricultural products when the product moves from the farm gate, namely farmers as producers to the last users or users [2]. Distribution pattern or distribution channels of unhusked rice in Undaan Sub-District, Kudus Regency id described in figure 1.

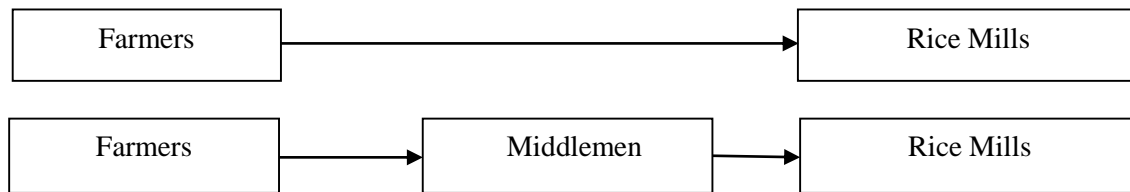


Figure 1. Unhusked Rice Marketing Channels in Undaan Sub-District

Figure 1. shows that there are 2 unhusked rice marketing channels available in Undaan Sub-District. For the first channel, begins with farmers selling their crops to rice mills directly without intermediaries. In channel II, farmers will sell unhusked rice to middlemen, then middlemen sell it to the rice mill. The middleman's own purchase scheme will buy rice directly in the rice fields, not at the farmer's house. Middlemen here become speculators because they do not know the exact amount of production [13]. Farmers are also accustomed to selling their crops to middlemen who are already their customers.

Table 1. Unhusked Rice Sales Volume and Number of Farmers that Using the Channel Pattern

Pattern	Sales Volume (ton)	Number of Farmers	Percentage (%)
Channel I	128	20	27,1
Channel II	383	54	72,9
Total	511	74	100

Data in table 1 shows that most farmers preferred channel II to sell their unhusked rice rather than channel I. The farmers know and realize that selling directly to rice mills have a good benefit like increasing their revenue. Farmers choose the first channel because of differences in prices, so they feel more benefited because they will get more income. They know that if they use this channel their income will be greater. Consequently for channel II, unhusked rice marketing was relatively long causing the price received by farmers was low, while the price at the consumers' level was high. As a result, the unhusked rice marketing system was inefficient. In fact, the shorter the marketing pattern, the higher the producers get benefits [14].

The reason is that farmers do not want to be troubled by incurring additional costs for post-harvest until transportation to the mill. In contrast to channel 2 where all costs are borne by the middleman. All additional costs are the responsibility of the middlemen. The differences in price in marketing channels and the choice of marketing channels from farmers occurred due to transportation access problems [13,15]. Marketing costs including transportation, packaging, storage, loading and unloading, and retribution [16]. The cost of warehouses even occupies a relatively high portion, as a result farmers tend to sell their crops as soon as possible because they do not have a warehouse and avoid the risk of losing the volume of the crop [13].

Another reason why farmers prefer to sell their rice to middlemen is that middlemen have a dual role. Aside from being a place to sell their harvests, middlemen also provide capital for farmers. Good for farming activities and for daily activities. So, when farmers sell their rice to middlemen that is the effort made by farmers to maintain social relations with middlemen. The majority of farmers sell the harvest to middlemen with a slash system, ie farmers sell harvest yields in rice fields without knowing the amount of unhusked rice production [9]. This is certainly contrary to some research that stated the longer the channel, the smaller the marketing efficiency will be [17]. But this is precisely the choice of farmers.

3.2 Marketing Margin

Marketing margin is the difference in price received by market participants from the purchase price and selling price of the product being marketed [18]. In this study, the marketing margins received between marketing institutions in the unhusked rice marketing chain vary, as shown in table 2.

Table 2. Analysis of Unhusked Rice Marketing Margins in Undaan Sub-District

Institution	Description	Pattern I		Pattern II	
		Cost (Rp)	Percentage (%)	Cost (Rp)	Percentage (%)
Farmers	a. Selling Price	4,580	100	4,322.22	89.15
	a. Purchasing Price	-	-	4,322.22	89.15
	b. Marketing Cost	-	-	77.16	1.58
Middlemen	c. Marketing Margin	-	-	525.93	10.84
	d. Profit Margin	-	-	448.77	9.25
	e. Selling Price	-	-	4,848.15	100.00
Rice Mills	a. Purchasing Price	4,580	100	4,848.15	100.00

Table 2 describes that the price paid by rice mills in channel II pattern was higher than that of channel I, as the marketing margin caused the rice mills paid higher. This finding was similar to the finding that stated the higher price received by consumers affects the number of marketing margins and result in higher prices that consumers must pay [19]. The difference in market margins occurs because there is no market information service [20]. Price information only flows to several farmers, their bias are rich and have high social status. The solution to the asymmetric problem of information between farmers and traders can be overcome by the use of media such as mobile phones because it does not require a lot of costs and easy operation [21]. But it is also feared that the use of mobile phones between traders can cause collective trader behavior. Traders have communicated with each other to determine prices before they go to the farmers. The high prices in the market occur due to collusive behavior among traders [22].

With the middlemen, farmers' information seeking behavior decreases because there is a dependency side there. Middlemen cause changes in farmer's behavior both individually and socially [23]. The massive use of mobile phones and the internet has caused significant changes in social life [24]. Farmers are increasingly mediated, weakening social relations, and individualistic.

3.3 Marketing Efficiency

Marketing efficiency here shows the level of marketing efficiency of each marketing institution. Marketing efficiency can be calculated using the farmers' share approach. The marketing efficiency of each marketing channel is described in table 3.

Table 3. Analysis of Unhusked Rice Marketing Efficiency in Undaan Sub-District

Channel Pattern	Description	Amount Taken (Farmers)	Marketing Margin (Rp)	Farmer Share (%)
I	Short Pattern	20	0	100
II	Long Pattern	54	525.93	89.1

Table 3 shows that both, pattern I and pattern II were efficient, as the margin value percentage of the farmer share was > 50%. So, both of them are classified as efficient, but channel I is considered more efficient when compared to channel II. The evaluation is that channel I has a shorter marketing channel and farmers get a deeper share in the marketing channel. Marketing activities are

economically efficient if the value of marketing margins is low and the farmer's share is more than 50% or equal to 50% [25]. Meanwhile, some scholar argued that farmer share has an inverse relationship with marketing margins, the greater the farmer share, the greater the positive share received by farmers and the more efficient the marketing [26]. Therefore, farmers would be more profitable to use channel I pattern, as the price received by farmers was higher and the price received by consumers of rice mill is lower.

3.4 Factor Affecting Marketing Efficiency

Factors or variables affecting unhusked rice marketing efficiency in Undaan Sub-District were channel patterns, selling prices, and production quantities, as exhibited in table 4.

Table 4. Results of the Determination Coefficient (R²) and Test F Value

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson	F	Sig.
1	0.694 ^a	0.482	0.455	4.06109	1.975	17.677	0.000 ^b

Table 4 shows that the coefficient of determination (R²) is 0.482, which means that the selling price, the number of production, and the pattern of channels influence marketing efficiency by 48.2%, while the rest is influenced by other variables.

Table 5. Results of Multiple Linear Regression Analysis of Factors Affecting Marketing Efficiency

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	-173.448	100.722		-1.722	0.090
Channel Pattern	-6.638	1.136	-0.571	-5.841	0.000
Production	0.422	0.227	0.177	1.855	0.069
Selling Price	31.998	11.988	0.261	2.669	0.010

The analysis of the T test results suggested that the efficiency of unhusked rice marketing was significantly influenced by variable of channel pattern (X₁) and selling price (X₃), whereas variable number of production (X₂) did not have a significant effect on unhusked rice marketing efficiency. Based on Table 11, the multiple linear regression equation gained is as follows:

$$Y = -173,448 - 6,638X_1 + 0,422X_2 + 31,998X_3 + e$$

The above equation could be explained that the higher the selling price was, the higher the marketing efficiency would be. In contrast, the shorter the channel pattern was, the higher the marketing efficiency would be. Selling price variable influenced the choice of channels and the higher the selling price at the farm level is, the more profitable and efficient it would be [27].

4. Conclusion

Based on the results and discussion, it can be concluded that the distribution patterns or unhusked rice marketing channels in Undaan Sub-District are Farmers → Rice Mills and Farmers → Middlemen → Rice Mills. The marketing margin in pattern I is Rp. 0.00 and the marketing margin in pattern II is 525.93 at the middlemen level. Marketing efficiency in marketing channels I and II are included in the efficient category by looking at the economic value of the farmer's share. Multiple linear regression analysis concluded that the independent variables of channel pattern and selling price are factors influencing marketing efficiency. Farmers are required to actively study market information related to the price of unhusked rice in the market so that more profitable marketing channels can be chosen to increase the income generated.

5. References

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