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An Analysis of the Factors Influencing Marketing Channel Choice by Paddy Rice Farmers in Myanmar

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Rice industry is vital for food security and the economic development of Myanmar as its economy relies on agriculture sector. Promoting the marketing capability of farmers especially the smallholders is the key challenge of increasing farm investment. The rice farmers generally have channels selling to (1) the brokers or commission men who come and collect at the farm gate, (2) the collectors or traders at the farm gate, and (3) selling directly to the rice mills nearby towns. Assessing from different channels is central for exploiting the potential to increase production, farm income and investment. However there are restrictions in channel choices because of poor infrastructure, lack of marketing facilities, insufficient credit and up to date market information. Moreover, due to the oligopsony market structure and without organization, individual marketing practices exposes them to high transaction costs with low bargaining position. The majority of farmers unable to receive a fair price as they have to sell their products soon after harvest when the price is generally low because of the immediate cash need for repayment. So, the farmers cannot maximize profit which in turn affects the future investment of paddy farmers. This paper investigates the factors determine the marketing channel choice using the Multinomial Logit Model. The results show the probability of selling at the farm gate is increase with the distance to market. The farmers who possess storage, transportation, larger quantity and access of market information are more likely to sell the remunerative direct marketing channels to the rice mills directly. The result underscore the importance of forming the farmers' cooperative, development of marketing infrastructures, accessibility of up to date marketing information in order to support farmers bargaining power to develop farm's profit and investment.

Key words: Marketing Channels Choices, Investment, Bargaining Power, Farmers' Organization

INTRODUCTION

Marketing plays a critical role in meeting the overall goals of food security, poverty alleviation and sustainable agriculture, particularly among smallholder farmers in developing countries (Altshul, 1988). For the marketing of agricultural products, channel decisions are among the most critical decisions facing an organization and the chosen channels intimately affect all other marketing decision (Berry, 2010). Marketing channel defined by (Stern *et al*., 1996) is a set of interdependent organizations involved in the process of making a product or service available for consumption or use. Makhura (2001) inspected that the marketing of smallholder farmers was constrained by poor infrastructure, distance from the market, lack of own transportation and inadequate market information. Lack of bargaining power along with various credit bound relationships with the buyers has led to farmers being exploited during the transaction where most of the farmers become price takers. The majority of farmers are smallholders and hence, unable to obtain a fair price for their produce and resulting not being able to sustain their livelihood (Xaba, 2012). The evidence found by Fafchamps and Hill (2005) that the crop price received by farmers varies between channels for sales, and this has implications for the welfare impact of commercialization. For the rural rice producers, marketing channel choice is one of the key ingredients to successful marketing of their products as different channels are characterized by different costs and profitability. Selling to brokers or collectors at the farm gate often less remunerative, but may be the only option for farmers who cannot carrying their crops to the rice mills near by town or who may be time constrained and thus prefer to conduct a single transaction at the farm gate, instead of several transactions to going farm gate to nearest town.

In this research, we especially focus on paddy rice which remain the dominant food crop and contribute the higher percentage of agricultural GDP. Myanmar paddy rice market is moderately oligopsony condition where the farmers have less bargaining position (Soe, 2015). The majority of rice farmers are small holders running their business less than 4 hectares. They also have difficulties in transportation and storage facility and cannot store long time. In addition, most of them have to sell soon after harvest in order to payback loan used in production while the price is generally low at the farm gate. Selling at the farm gate may be more convenient for the household, but may entail a more limited choice of buyers (Cazzuffi, 2012). The buyers, both middlemen and collectors, offer volatile price and discriminate the buying price between small and large farmers. In addition, the buying practices for buyer are less favorable especially the small scale rice farmers. The paddy buyers usually use volume measures or scales that are prone to adjust-

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ments where farmers are not allowed to verify their measurements. The buyers effectively pay the prices lower than the fair prices, and combined with cheating on measurements, this effectively reduces the profits of small scale rice farmers.

Choice of marketing channels is one of the important factors for producers because different channels are characterized by different profitability and cost. Understanding the factors influencing the channel selection and how the restrictions associated with these factors can be alleviated is also essentials not only in marketing channel development but also in increasing farm income and investment condition especially for small scale's rice production. This paper was therefore aimed at identifying the factors affecting the marketing channels choices of rice farmers in Myanmar so as to be able to point out the necessity of paddy rice farmers for increase production and investment and also formulate the strategic plans and policies for the development of small holder marketing abilities.

The paper begins with the introduction of the research which highlights the background information of rice marketing, the problem statements, objectives and rationale and scope of the study followed by various literature reviews for the farmers' market participation and the factors influencing the farmers' choice of marketing channels. Section two describes the methodology and data used for the study and Section three highlights the results and discussions of the study, while the Section four gives conclusions and recommendations based on the findings of the study.

LITERATURE REVIEW

The liberalized agricultural markets of developing countries are characterized by asymmetric information (with prices not publicly announced), highly differentiated goods without formal standardization systems sometimes with informal contract (Fafchamps *et al*., 2001). Farmers are typically small scale and geographically dispersed and hence the smallholder farmers deal with a variety of traders with varying degrees of relationships and trust, with differentiated enforcement mechanisms (Kherallah *et al*., 2000). The choice of marketing channels among farmers therefore can be understood within framework of transaction costs, contracts and contract enforcement (Chirwa, 2009). Moreover, Nwokoye (1981) found that the other factors which influence the channel selection depends on producer characteristics, buyer characteristics, market structure and product characteristics and the service level of the marketing channel.

Many studies have been carried out to indentify the factors influencing the marketing channel choices by producer for agricultural products. Fafchamps and Hill (2005), studies the choice of selling at the farm gate and travelling to market for Ugandan coffee farmers. In their study, the farmers must walk to the coffee market when public transport is not available and the wealthier farmers want to sell at the farm gate, especially the quantity sold or distance to market is large because of their opportunity cost of time is higher. The result is reverse when the cash constraints and public transport are introduced in their model as they can afford to pay for transport. Wealthier farmers are more likely to sell at the market when they have large quantities of sale and they are more likely to travel to the market.

Nyaupane *et al*. (2010) studied the producers' marketing decision in the Louisiana Crawfish Industry and found that most of producers choose wholesale markets compared to the selling directly to the consumers and retailers as this channel is most convenient and also offers the high returns. In their study, the channel choice is influence by demographic characteristics of famers and market characteristics. Jari (2009) expressed that the institutional factors such as transaction costs, access of market information and the institutional environment which covers the formal and informal channel rules, the use of grade and standards could reduce the transaction costs in marketing. The technical factors including the physical infrastructure constraints, storage facilities, market infrastructure, transportation infrastructure and value adding contribute towards providing good quality products to consumers (Mzyece, 2011)

Ogunleye and Oladeji (2007) mentioned in the study that the choice of market channels for the cocoa farmers based on time and mode of payment, price and grading of products, and distance from farm and transportation cost. Delay in payment discouraged farmers from the choice of an outlet and increase in transportation cost with increased distance and condition of road.

The factors of credit availability, cooperatives, government policy related interventions and membership to agricultural farmers' group are the determinants of smallholder dairy farmers' adoption of various milk marketing channel in Kenya (Mburu *et al*., 2007). Gong (2007) expressed that not only the transaction cost the influencing factors cattle farmers marketing channel choices but it also influenced by the socio–economic characteristics of the farmer or farm.

The availability of market information enables farmers to make informed marketing decisions related with supply and demand conditions of markets, potential of buyers, bargaining and negotiation, enforcing contracts and monitoring (Jari, 2009). The essential market information includes information on consumers' preference, market demand, prices, quality, market requirements and opportunities (Ruijs, 2002).

Farmers' organization or cooperatives is important for the collective action of producers which can reduce transaction cost and increase bargaining power. Individual marketing of small quantities of produce weakens smallholder's bargaining position and often exposes them to price exploitation by traders (buyers) (Mzyece, 2011). The formal institutional development of a society has a considerable influence on the transaction costs according to Minot *et al*. (1997). So, an appropriate legal framework may prompt farmers to produce and sell to market by reducing the risk of loss.

As mentioned above, there are many studies related with marketing channel choices. But there is no study on

the determinants of marketing channel choices among the paddy rice farmers in Myanmar under oligopsony condition while buyers have market power. And most of the study based on the perishable nature of products which is different from rice that can kept over long time and can still be sold at good price when the price higher up. Therefore, this study is an attempt to fill the knowledge gap identified especially locally.

MODEL SPECIFICATION AND DATA

Conceptual framework and econometric specification

The choice of marketing channel is fundamental and important decision for the farmers where many factors and conditions have to be considered as a basic for precise decision. In our study, the model of farmers' marketing channel selection is based on the random utility theory (Greene, 2002). Hence, for the i^{th} paddy rice farmers faced with j alternative marketing channels for selling their products, the utility of choosing marketing channel j can be represented as:

$$U_{ij} = \beta' x_{ij} + \varepsilon_{ij} \quad (1)$$

where, U_{ij} is the utility derived from choosing channel i, x_{ij} is the vector of attributes of the channel choice and farmers' demographic and marketing characteristics, β is the vector of parameter coefficients and ε_{ij} is the error term.

If the paddy rice farmer i chooses the channel j, then U_{ij} is the largest among other j utilities. So, it is statistically necessary the probability of that specific channel j will be chosen by paddy rice farmers as;

$$Prob\ (U_{ij} > U_{ik}) \text{ for all other } k \neq j \quad (2)$$

If the J disturbances are independent and identically distributed, we can specify the Conditional Logit or Multinomial Logit Model of the probability of choosing marketing channel. Both Multinomial Logit and Conditional Logit can be used to analyse the choice of an individual among a set of J alternatives. But the central distinction between the two can be put simply: Multinomial Logit focuses on the *individual* as the unit of analysis and sues the individual's characteristics as explanatory variables; in contract, Conditional Logit focuses on the set of *alternatives* for each individual and the explanatory variables are characteristics of those alternatives (Hoffman, 1988).

In our study, Multinomial Logit (MNL) Model is employed to quantify the determinants of factors influencing marketing channels (1: Selling to the brokers or commission men at the farm gate, 2: Selling to the collectors or traders at the farm gate and 3: Selling directly to the rice millers nearby town) by paddy rice farmers in five main rice producing areas. MNL model also standard method for estimating multi category dependent variables assumes independence across the choices, it does not allow correlation or substitution between them (Wooldridge, 2008). The probability of marketing channel choices strategies among farmers from the alternative is shown below:

$$Prob = (Y_i = j) = \frac{\exp(\beta'_j x_i)}{\Sigma_{j=1}^{3} exp(\beta'_j x_i)} \quad for\ j = 1, 2, 3 \quad (3)$$

Where Y_i is the probability of rice farmers chooses market j, $Pr(Y_i = j)$

Market j: 1 means selling to the brokers or commission men at the farm gate, 2 means selling to the collectors or traders at the farm gate, and 3 means selling directly to the rice mills nearby town.

x_i is the vector of household, production and marketing variables

β_j is the vector of coefficients associated with the market choice j

Setting $\beta_3 = 0$, probability of market choice for 1 and 2 change as below and we can estimate specified coefficients.

$$Prob = (Y_i = j) = \frac{\exp(\beta'_j x_i)}{1 + \Sigma_{j=1}^{2} exp(\beta'_j x_i)} \quad for\ j = 1, 2 \quad (4)$$

Estimated coefficients measure the estimated change in the Multinomial Logit Model for a one–unit change in the predictor variable while the other predictor variables are held constant. A positive estimated coefficient implies an increase in the likelihood that a paddy rice farmer will choose the alternative marketing channel. A negative estimated coefficient indicates that there is less likelihood that the farmers will change to alternative channel.

Data

The primary data were collected through the use of face to face interview with farmers with the aid of structured questionnaire considering both open and close–ended questionniare. The data for this paper was collected in the 5 main rice producing area in Myanmar between 2013 December and 2014 January. The survey data including demographics, land use, access to credit, production, marketing practices etc. of rice producing household by face to face interview. A two stage random sampling procedure was used to draw sample of 200 farmers where 4 sample with incomplete information and we used 196 samples in our study.

The channel 3 of selling directly to the rice millers nearby town is set as reference category in our analysis. The explanation of dependent variables and independent variables are expressed detailed in the following table. In our study, we assume the expected sign for the model result are the same for both channel 1 selling to the brokers at the farm gate and channel 2 selling to the collectors or traders at the farm gate. We expect the longer distance (*Disnt*), high experience in farming (*Exp*), farmers who have to sell soon after harvest immediately (*Selsoonharv*) variables are positively influence to sell at the farm gate compare with the reference category.

Table 1. Variables of the determinants of paddy rice farmers' marketing channel choice

Dependent Variable			
Variables	Description	Measurement	
Marketing channels through paddy are sold	Selling at the farm gate or directly sell to the rice mills nearby town	1=selling to brokers at the farm gate; 2= selling to collectors at the farm gate; 3=selling directly to the rice millers nearby town	
Independent Variables			
Variables	Description	Measurement	Exp Sign
1. Disnt	Distance to market in km	Kilometer	+
2. Edu	Category last attend	1–primary; 2–middle; 3–high school; 4– graduate	–
3. Exp	Farming years experiences	Years	+
4. OthJob	Participating other jobs	Yes = 1, No = 0	–
5. SellAmt	Production and selling of paddy	Ton	–
6. Sto	Possession of storage facility	Yes = 1, No = 0	–
7. Selsoonharv	How it is important for selling your product for marketing	1=not at all, 2=little, 3= normal, 4=important, 5= very important	+
8. Qty	How the quality of your product is important for marketing	1=not at all, 2=little, 3=normal, 4=important, 5=very important	–
9. Trans	Possession of own transport	Yes = 1, No = 0	–
10. RoadCond	Condition of road to market	Good =1, Bad = 0	–
11. Gen	Male or female household head	Male = 1 , Female = 0	–
12. Mktinfo	Getting up to date market information or not	Yes = 1, No = 0	–

Source: Own survey of 196 rice farmers

On the other hand, the variables of Education (*Edu*), having other job or business (*OthJob*), the amount of selling (*SellAmt*), possession of storage (*Sto*) quality of product (*Qty*), possession of transport (*Trans*), road condition (*RoadCond*), Gender (*Gen*) and availability of market information (*Mktinfo*) are expecting negatively affect on the probability selling at the farm gate compare with the reference category of selling directly to the rice mills.

RESULTS AND DISCUSSION

This section explains characteristics of the paddy rice farmers followed by the results of the determinants of the choice of marketing channel whether they sell at the farm gate or travelling to the rice mills nearby towns.

Marketing characteristics of the paddy rice farmers in study area

In our study area, most of the paddy rice farmers participating in the rice market sell both to brokers or collectors and to the rice mills directly. These are the three channels on which we focus our analysis; (1) selling to the brokers or commission men at the farm gate, (2) selling to the collectors (large scale farmers) or traders at the farm gate, and (3) selling directly to the rice mills nearby town. In our sample, 79% of the rice farmers sell their products at the farm gate (64.8% to brokers and 14.3% to collectors) and only 21% of farmers who bring and sell directly to the rice mills nearby town. The price receive at the farm gate selling is 4% to 6% lower than what farmers selling directly to the rice mills excluding the transportation cost (survey results).

This section presents a number of marketing characteristics collected in our survey which are practicing by paddy farmers in Myanmar. The following marketing characteristics of farmers including transport facility, storage facility, distance to market, road conditions to market, selling amount, channels sell by paddy rice farmers, getting market information.

Model Results for the Factors Determining Farmers Channel Choice Decision

The table below shows the Multinomial Logit Model results of the factors that influence the paddy rice farmers' marketing channel choice in Myanmar. In the model, we grouped the marketing channels into three categories or outcomes depending on the number of channels that the farmers choosing in the study areas. These channels are; (1) to the brokers who come and collect at the farm gate, (2) to the large scale farmers (or) traders at the farm gate, and (3) to the rice millers nearby towns as a reference category. The parameter estimates of the Multinomial Logit Model provide the direction of the effect of independent variables to the dependent variables (various channel choice by farmers). The coefficient values measure the expected change in the model for a unit change in each independent variable, all other independent variables kept constant (Gujarati, 2007). The

Table 2. Marketing characteristics of paddy rice farmers in study area

Variables	Description	Percent (n = 196)
Marketing Channel J	**Marketing channels sold by farmers**	
	1: to broker (at the farm gate)	64.80
	2: to collector or large scale farmers (at the farm gate)	14.29
	3: to the rice mills nearby town (reference category)	20.92
1. Disnt	**Distance to market**	
	distance between 2 to 12 km	21.43
	distance between 13 to 22 km	36.22
	distance between 23 to 32 km	25.51
	distance between 33 to 42 km	12.76
	distance between 43 to 52 km	4.08
2. Edu	**Education**	
	Illiterate	0.51
	Primary education	25.51
	Secondary education	35.20
	High school	25.51
	Graduate level	13.27
3.Exp	**Farming experience**	
	less than 10 years	13.27
	10–20 years	25.00
	21–30 years	25.51
	31 years and above	36.73
4. OthJob	**Participating other jobs or business**	
	Yes	14.80
	No	85.20
5. SellAmt	**Selling amount**	
	From 0.5 to 5 ton	48.47
	Above 5 ton 10 ton	44.39
	Above 10 ton	7.14
6. Sto	**Storage Facility**	
	Having storage facility	33.16
	No storage facility	66.84
7.Selsoonharv	**Importance of selling soon after harvest in receiving price**	
	1: not at all	13.78
	2: little	23.98
	3: normal	20.41
	4: important	15.31
	5: very important	26.53
8. Qty	**Importance of product quality for marketing**	
	1: not at all	18.37
	2: little	27.55
	3: normal	31.12
	4: important	19.9
	5: very important	3.06
9. Trans	**Transport Facility**	
	Own transport	26.02
	Public (or) hired transport	73.98
10. RoadCond	**Road condition to market**	
	Good	23.98
	Bad	76.02
11.Gen	**Gender of household head**	
	Male	79.59
	Female	20.41
12. Mktinfo	**Getting market information**	
	Yes	40.82
	No	59.18

Source: Own calculation from interview with 196 farmers

sign of the coefficient value indicates the direction of the influence of the variable of the model meaning that positive value indicates the increase in the likelihood that the paddy rice farmers will choose in the specific channel used as independent variables as opposed to the alternative. The negative value, on the other hand, indicates the less likely that the farmers will consider the alternative. The significance value (i.e. p–value) show whether a change in the independent variable significantly influences the model at a given level. And the standard error measures the standard deviation of the error in the value of a given variable (Gujarati, 2007).

The chi–square χ^2 distribution is used as the measure of overall significance of a model in Multinomial Logit Model estimation. From the result of the model, the probability of the chi–square distributions is less than the tabulated counterpart which is 0.0000, less than 1%. So, we can conclude that, the variables which explain the marketing channel choice of paddy rice farmers fit the model well. This implies that the null hypothesis of the coefficients of all explanatory variables included in the model can be rejected at less than 1% significant level.

In our model results, the distance to selling place is significant at 10% to sell the brokers or commission men and at 1% to sell to the collectors or traders at the farm gate which means that the probability of farmers from the longer distance to nearest rice mills are more likely to sell (1) to the brokers or commission men and (2) to the collectors or traders at the farm gate and less likely to sell to the rice mills nearby town.

The selling amount of paddy rice farmers is an importance determinant of market channel choice among farmers. The selling amount is negatively significant at 1% level in selling to the brokers or commission men at the farm gate and to the collectors or traders at the farm gate. The result shows that the farmers more likely to sell their products at the farm gate and less likely to sell directly nearby town while is selling amount is decrease.

The possession of storage facility is found to be negatively related to both choice of marketing channel. The result expresses that the possession of storage facility is significant at 10% in selling to the brokers or commis-

Table 3. Factors determining marketing channel choices of paddy rice farmers

Variables	(1) Selling to brokers or commission men at the farm gate			(2) Selling to collectors or traders at the farm gate		
	Coefficient	Wald	Exp (B)	Coefficient	Wald	Exp (B)
Intercept	11.48*** (3.39)	11.36		17.50*** (3.94)	19.74	
1. Disnt	0.074* (0.39)	3.56	1.08	–0.23*** (0.08)	8.30	0.79
2. Edu	–0.41 (0.37)	1.21	0.66	–0.63 (0.48)	1.76	0.53
3. Exp	0.01 (0.03)	0.08	1.01	0.03 (0.33)	0.57	1.03
4. OthJob	1.28 (0.98)	1.69	3.58	1.77 (1.24)	2.03	5.87
5. SellAmt	–0.74*** (0.16)	22.01	0.48	–0.68*** (0.16)	17.27	0.51
6. Sto	–1.24* (0.65)	3.60	0.58	–2.24*** (0.95)	5.54	0.11
7. Selsoonharv	0.60** (0.29)	4.10	1.81	–0.01 (0.34)	0.02	0.99
8. Qty	–0.23 (0.30)	0.59	0.79	–0.49 (0.41)	1.41	0.61
9. Trans	–1.46*** (0.41)	12.53	0.23	–1.71*** (0.47)	12.94	0.18
10. RoadCond	–1.26* (0.65)	3.79	0.28	–1.28 (0.85)	2.25	0.28
11. Gen	–1.19 (0.80)	0.79	0.31	0.37 (1.04)	0.13	1.45
12. Mktinfo	–0.10 (0.66)	2.26	0.37	–2.26** (0.91)	6.20	0.10

Source: Own analysis from 196 paddy rice farmers in Myanmar

Note: (1) Cox and Snell R squared =0.592; Nagelkerke R squared =0.713;McFaden R squared =0.506; –2loglikelihood = 171.69; Chisquare = 175.79; df =24 ; p =0.000 ,

*(2) *** Significant at 1% , **5% and *10% ; Figures in parenthesis are standard error*

(3) The referenced group is (3) the farmers who directly sell at the rice mills nearby towns.

sion men at the farm gate and is significant at 1% in selling to the collectors or traders at the farm gate. The negative relationships explain that if the farmer has storage facility, the probability of intention of selling at the farm gate is decrease.

The possession of transportation is another variable found to influence the decision of the channel choice. It is negatively significant at 1% level in both channel of selling to the brokers or commission and to the traders or collectors at the farm gate. The negative relationship hence indicates that if the farmer has no transportation facility, the probability to selling at the farm gate is higher that of selling at the rice mills nearby town directly.

The variables of the road condition the producers have to sell soon after harvest in order to meet their cash need immediately are negatively significant at 10% and positively significant at 5% respectively. From the result, we can explain that the probability of selling at the farm gate to the brokers or commission men is increase if the road condition in bad. And the probability of selling to the brokers or commission men is increase if the farmers want their cash need immediately compare with the channel of direct sell nearby town.

The availability of market information is also influence on the channel choice decision of farmers. In our study, the result shows that it is negatively significant at 5 % level in selling to traders or collectors at the farm gate. The farmers who do not get sufficient market information are more likely to sell at the farm gate and less likely to sell the channel of direct sales.

CONCLUSION

This study set out to explore factors that determine the marketing channel choices among the paddy rice farmers in Myanmar from the sample of 196 farmers from 5 main rice producing areas. At the village level, about 76% of the road to the rice mills nearby town is not at good condition. The distance to the nearby town varies from 2 km up to 52 km. From the sample farmers about 49% of the farmers can only sell 0.5 to 5 ton and the farmers who can sell above 10 ton is only 7%. The majority of producers are small scale with poor infrastructure proved by 67% of farmers have no own storage facility, 74% of farmers have no own transportation facility. Concerned with availability of market information; 59% can get market information formally and informally through friends and relatives while 41% still cannot get market information. There are 3 to 5 brokers, commission men, collectors and paddy traders come and collect the paddy rice at the harvesting season.

With respect to the decision to travel or to sell at the farm gate, we find that the larger scale of production and short distance significantly increase the probability of selling to the brokers or collectors at the farm gate. Large scale farmers who have own storage and transportation infrastructure are less likely to sell at the farm gate and more likely to sell direct channels which is consistence with the results of Fafchamps and Hill (2005) as the wealthier households are more likely to sell to traders (farm gate), because of the shadow value of their time is higher; however, as the quantity sold increases, they become less likely to sell this channels possibly because they are better able to pay for transportation costs in order to sell through more remunerative channels of sales. So, the availability of marketing infrastructure such as storage and transportation strongly decrease the probability of selling at the farm gate, suggesting that the farmers may prefer slightly remunerative channel (i.e directly sell to the rice mills) when the options exists and they can effort it. It is opposite finding of Cazzuffi (2012), the local availability of market infrastructure appears to facilitate at the farm gate.These finding suggest the important role played by marketing infrastructure which determines the channel selections.

The variable of farmers have to sell soon after harvest, which shows less bargaining power of farmers as they have to sell soon after harvest to need their immediate cash need to pay back loan for production and household expenses, can identify the one of the major determinants of channel choice by rice farmers. The remoteness and the bad condition of rural road to market is the another determinants factors affecting the channel choice. The next important factor is the availability of up to date market information which can also decide the channel choice by farmers. In our study, the farmers who do not receive the accurate and up to date market information are more likely to sell at the farm gate.

Differences in education levels of farmers did not influence the paddy rice farmers' channel selection although it is one of the important variables determining the channel selection in the previous research (Anteneh, 2011; Chira, 2009 and Bardhan, 2012). In our study area, 63.3% of the respondents attended the secondary school level which affect their attitude to access and accept up to date market information and the capacity of bringing and selling directly the rice mills that require higher level of knowledge and information. These results suggests a need to improve the paddy rice farmers' marketing ability and capacity to access and use of accurate and up to date production and market information to compete with buyers when negotiation.

This study found that the paddy rice farmers' choice of marketing channels as a strategy to protect the optimal level of their investment and maximize their profits by identifying the determinants factors. The rice farmers can choose the more remunerative direct channel show that their potential to increase their profit, which should be reinforced. This could be attained through providing the marketing infrastructure, technical and organizational assistance and support to improve the farmers' bargaining power and capacity, access to inputs, markets and credit and the establishment of farmers' organizations or cooperatives. The study does not include and investigate the marketing and transaction costs of the different channels. As the choice of marketing channels is mainly relies on different respective costs and prices, it is recommend to add the empirical evidence of cost related area to catch the detailed understanding of marketing channel choices by farmers. So, further research may

overcome this limitation of our study.

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