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Collective action for improved market access among smallholder maize farmers in Masindi District, Uganda

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Smallholder farmers dominate maize production in Uganda. They produce limited quantities of the crop and market individually. Collective action offers an opportunity of reducing transaction costs, increasing bargaining power thus making it possible to contract with large buyers for better prices. Masindi Seed and Grain Growers Association Limited (MSGGL) with help from Uganda Development Trust (UDET), African Development Bank (ADB) and Masindi District Local Government constructed a 3000 metric tons store to help farmers bulk and get better prices. However, the store has been underutilized since 1999 leaving out farmers on the benefits of collective marketing. A survey of 253 maize famers forming two strata of participants and non-participants was employed. Descriptive statistics are used to explain preference for each marketing option while the Tobit model analyzed factors for intensity of participation. Lack of trust, stringent requirements, delayed payments, absence of groups, lack of information, high costs of marketing, lack of interest, low price incentive and time consumption explain poor participation in collective marketing. Better prices, reliable markets, availability of training and extension, availability of credit and availability of input loans encourage collective marketing. Price of maize offered at the collective centre, distance to the marketing centre, land size, income of the farmer and age of the farmer influence the intensity of participation in collective marketing. There is need to establish more collection centres, improve road networks and quality regulation to ensure price incentives for better quality maize grain.

Key words: Collective action, market access, smallholder maize farmers.

INTRODUCTION

Marketing is a prime mover and stimulator of production as it gives point and purpose to the production process. The provision of secured market outlets gives an incentive to increased and diversified production and also a shift from subsistence to market oriented farming (Bibangambah, 2002). Thus, the opportunity for smallholder farmers to increase their incomes from agricultural undertakings, natural resource management

and other enterprises largely depend on their ability to fully participate in the marketplace exchanges. However, several internal and external challenges are encountered by smallholder farmers making it complicated for them to participate in these market place exchanges. These challenges include pervasive imperfections that characterize markets in the developing countries, lack of information on technologies and prices, high transaction

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costs, credit constraints, the rising numbers of free trade arrangements affecting both national and international commodity markets and competition not only from local cohorts but also from farmers from other countries together with domestic and international agribusiness ventures (Markelova and Meinzen, 2006).

Smallholder farmers are usually isolated from markets, have limited selling alternatives, lack contact with downstream buyers, are unable to enter into contractual relationships due to lack of trust and are usually obliged to accept the price offered by the buyers (UNCTAD, 2015). These challenges can be addressed by use of collective action in agricultural markets by helping these farmers reduce transaction costs for their market exchanges, obtain necessary market information, secure access to new technologies and tap into high value markets which would offer them a competitive advantage over large farmers and agribusinesses (Markelova and Meinzen, 2006). Collective action offers a practical solution to smallholder framers' marketing challenges. If well -coordinated, it would help smallholder farmers to meet quality and quantity requirements in modern markets through effective use of post-harvest technologies and mobilization of the majority smallholder farmers to participate thus enhancing access to better markets (Mango et al., 2017).

However, collective action has a problem of inherent contradictions that exist between members in the group and between the groups themselves ranging from trust problems and opportunistic tendencies within the groups which pose sustainability challenges (Ton, 2008). It has been reported that among the reasons as to why farmers do not act collectively include; lack of knowledge about who to collaborate with (29%), difficulty to agree as a group and thus collaboration being seen as a waste of time (22%) (Archambault, 2004). In a well-functioning rural market, smallholders like their better endowed peers, can opt to sell their produce in various forms of market exchanges such as local, emerging urban, regional and international, but smallholders encounter quite many entry barriers into any of these markets. Thus collective action is increasingly becoming an important production and marketing strategy for smallholder farmers in developing countries especially in ensuring that they are better placed and remain competitive in the agricultural sector (Mukundi et al., 2013). Farmer groups are important for capacity development, information sharing and rural innovation among smallholder farmers (Raya, 2014). Group contract arrangements help to improve smallholder market power and ensure more equitable distribution of benefits. Also peer pressure through farmer groups may reduce the likelihood of opportunistic behavior in contracting such as side-selling. However, farmer groups are not always successful and there is need to understand the conditions that make collective marketing more useful and viable (Fisher and Qaim, 2011).

Collective marketing has been reported among farmers of potato, coffee, barley, sunflower, rice and maize among the many other crops in Uganda (Mwendya, 2012). However, in most of these enterprises, the group functions are still at a very low level with majority of the farmers still preferring to market individually. Among the maize farmers, for example, progress of group marketing is still very minimal and in one case of supply to WFP which is the largest maize buyer in Uganda, smallholder farmers have only managed to contribute an average of 7% to the total maize procured by the organization yet the organization targets 20-30% in the next five years. It is argued that collective marketing would help farmers increase their market access (Markelova and Meinzen, 2006) and income by about 60% when they collaborate in groups (Naven, 2012). Masindi Seed and Grain Growers Association Limited (MSGGL) with help from Uganda Development Trust (UDET), African Development Bank (ADB) and Masindi District Local Government constructed a 3000 metric tons storage facility to help farmers bulk their produce and sell at better prices (Mwendya, 2012). However, since 1999, the facility has been underutilized with the maximum produce ever received from the farmers just filling slightly more than a half of the facility thus leaving out farmers on the benefits of bulking and collective marketing. Substantial research has been done on enhancing maize productivity, warehouse receipt system and its benefits to maize marketing, market opportunities for maize, institutional arrangements and collective marketing as a form of bulking for better market access by smallholder farmers (Archambault, 2004; UNCTAD, 2015; Mwendya, 2012). However, there is limited research on the determinants of the smallholder maize farmers' choice to market collectively. This study therefore seeks to assess the determinants of the farmers' choice to bulk their produce and market collectively in the maize growing district of Masindi. Specifically 1) To understand why facilities that are sought to be of benefit for collective action are underutilized. 2) To examine farmers' preferences for collective and individual maize marketing. 3) To identify factors that influences the intensity of participation in collective marketing.

LITERATURE REVIEW

For effective performance of smallholder farmer groups, there must be adequate capacity building, realistic demands on the group, voluntary group formation, good internal cohesion and a facilitative legal environment (Ampaire et al., 2013). Group support services from external agents should recognize the changing and diversified needs of smallholder famers in their different locations (Nyikahadzoi et al., 2013). There is also need to promote greater role of farmers themselves in decision making and implementation of group activities rather than

public and private sector partners' roles exceeding farmer participation levels (Ampaire et al., 2013). Therefore, successful smallholder farmer groups require a strong business rationale and relationship with the private sector that the demands placed on such groups do not exceed the existing group management skills and financial capacities, the right internal cohesion and group dynamics and a supportive legal framework. Group dynamics include issues like small sized groups, homogeneity, face to face contact and accountability among members (Naven, 2012; Ampaire et al., 2013). Farmer groups have a greater role to play in smallholder agricultural production but do not provide an easy institutional response to the pressures facing smallholder famers in a liberalized economy and they should not be seen as a panacea for rural development (Naven, 2012).

Collective marketing can help reduce barriers of entry into lucrative agricultural markets by lowering transaction cost of accessing input and produce markets especially for smallholder farmers who are characterized by producing small quantities of the output (Markelova and Meinzen-Dick, 2009). This form of marketing that involves bulking and collective marketing of the produce improves the share of the consumer price received by smallholder farmers through increased bargaining power and also reducing the share of profit that is available to other market chain players (Giuliani, 2006; Komarudin et al., 2006). According to Nyikahadzoi et al. (2013), smallholder farmers produce unsorted and ungraded outputs in small quantities which attract low prices from buyers who usually prefer large quantities of sorted and graded outputs. These small volumes of output together with transport costs limit smallholder farmers from accessing wholesale buyers and limit the bargaining power of smallholder farmers leaving them at the mercy of itinerant traders who are found of picking the produce from the homes of these farmers at low prices. This is because wholesale buyers are not willing to incur transaction costs that result from buying from many uncoordinated small sellers. Thus such smallholder farmers are caught up in a vicious cycle of semi-subsistence production characterized by low output, low incomes, low savings and low investment. This, therefore, requires smallholder famers to seek new and innovative ways of competing and surviving in these present day markets which are characterized by borderless economic environment to improve their incomes through utilization of such opportunities (Dorward et al., 2004).

Collective marketing helps reduce cost of getting the product to the market and increases bargaining power of smallholder farmers (Ampaire et al., 2013). It also helps reduce transaction costs and enables smallholder farmers' access services that private sector and government may not be providing or are hard to access in their unitary state (Markelova and Meinzen-Dick, 2009). Collective marketing is one of the institutional arrangements that can help farmers access production enhancing technologies and investment, agricultural and market information thus increasing their competitive advantage in markets that are increasingly becoming integrated and commercial especially through enabling smallholder farmers to produce the required quantity and quality for a specified market and also helps reduce the share of profit that is available to other market chain players in both output and input markets (Narrod et al., 2009). This plays an important role in increasing the profit that smallholder farmers can earn from their production activities through collective marketing.

Theory of collective action

Collective action results from the need for people to collaborate, work and make decisions together so as to achieve a result that is of common interest and wellbeing (Ampaire et al., 2014). Collective action problems are usually of the nature of interdependency among the participants since the efforts of one individual influences the efforts of the other individuals in the group. This calls for the cooperation of all members otherwise if each seeks to maximize their own narrow interests the benefits are not realized and they all remain worse off (Kirsten et al., 2009). The economic theory of collective action is concerned with the provision of services that are collectively consumed. Despite many instances in which individuals would be better off if they worked collectively, the same does not usually emerge mainly because of free-rider problem. The theory of collective action is a useful tool to analyze how to overcome free-rider problems and come up with cooperative solutions for proper management of common use services (Ton, 2008; Kirsten et al., 2009). Local institutional arrangements such as customs and social conventions can help overcome the difficulties of collective action. Important determinants of success in collective action include group characteristics such as size, homogeneity and purpose (Ostrom, 2005). According to Gaspart and Plateau (2002), collective action depends on the characteristics of the people concerned which include; size of the group, the extent of heterogeneity in the group and the social capital of the group and on the characteristics of the environment which include; technical characteristics, economic characteristics and political characteristics. Transaction costs economics is useful in evaluation of collective action through assessing monitoring and enforcement costs together with the aspects of market power (Kirsten et al., 2009).

Factors that influence farmers' participation in collective marketing

Several factors have been reported to be responsible for

the farmers' choice on how to market their produce. These include; distance from household to the collection center, group cohesiveness, size of the executive, size of the group, training of leaders, availability of market at group level and time taken to receive the money after delivery (Fischer and Qaim, 2011; Ampaire et al., 2013). Also transaction costs charged on each farmer for marketing in a group has implications on collective marketing (Mwendya, 2012). Farmers' characteristics like age, level of education, gender, availability of credit and extension, off-farm income, experience in farming, land owned, area under the crop enterprise and distance to the market have also been reported to influence collective action (Omiti et al., 2009; Fischer and Qaim, 2011; Onoja et al., 2012; Mukundi et al., 2013; Raya, 2014).

According to Onoja et al. (2012), gender is a major determinant for the market strategy. The study found out that female farmers have higher chances of taking up new marketing channels because of their availability to attend training sessions that are specific subject oriented. However, Fischer and Qaim (2011) found out that more men embrace group marketing than women because of the fact that men always want to control all the finances from the sale of crops and other businesses. In the study on smallholder farmers and collective action: what determines the intensity of participation, age was found out to be inversely related to the choice of collective marketing. This was because older farmers come with more experience in the marketing process thus come with a lot of mistrust and skepticism towards other group members (Fischer and Qaim, 2011).

According to Omiti et al. (2009), education of the household head influences the decision to market the produce and how to market the same. This is because as education of the farmers increase, the level of commercialization also increases. However, Fischer and Qaim (2011) found out that as education increases, probability to sell under collective arrangement reduces due to increased mistrust and skepticism towards group members. Chirwa (2009) also found that the higher the level of education, the higher the chances of the farmer using more than one marketing channel. This is likely to be as result of the fact that such farmers are more willing to wait for more time in case money for the produce is not paid promptly as is the case for group marketing.

Distance has a profound effect on farm decisions. The distance to the marketing centre limits the choice of any marketing channel to be used by the farmer. Distance is inversely related to the decision to sell in the channel. When the distance to the centre is longer, farmers are discouraged from using the same centre for marketing and market outlets which are nearer to the farmers tend to get more farmers selling their produce to the same outlet (Onoja et al., 2012). According to Fischer and Qaim (2011), short distances to the marketing center lead to higher chances of participating in collective marketing.

This is because closeness to collective marketing center reduces transaction costs and results in better incomes for the enterprise.

Land area planted with the crop influences the decision to market collectively. Very large and very small producers are less likely to sell through groups. This is because very small producers find it not worthwhile to transport their produce to the marketing centers while very large farmers may have more profitable alternatives to sell (Fischer and Qaim, 2011). Time taken to pay for the produce after delivery influences the decision of the farmers to participate in collective marketing. This is because of the time value of money which makes farmers prefer money today rather than another day (Omiti et al., 2009).

Extension services create awareness about the existence of the different marketing strategies that farmers can choose from and the farmers assess which of the alternatives best suit their preferences and circumstances. According to Onoja et al. (2012) access to extension increases the probability of the farmer to participate in collective marketing because such farmers are much more informed about the benefits of collective marketing and the precautions needed to be taken into account. The size of the group is positively related to the level of participation in group marketing because of the higher expected benefits through economies of scale and the expectations of some members to free-ride and benefit from the activities of the group without losing much (Fischer and Qaim, 2011).

METHODOLOGY

Study area

The research was carried out in the major maize producing district of Uganda which is Masindi. In this area farmers have been trained on group marketing and a collection centre at MSGGL established with modern storage facilities to collect and store maize from farmers. However, despite all these efforts by the government and other development partners to get smallholder maize farmers market collectively and take advantage of large buyers and processors, like WFP, a majority of the farmers still market individually with the capacity of the storage facility not fully utilized. The district of Masindi is from mid-western Uganda. It is located in the Western Region of Uganda and lies between 1°22'2°20'N and 31°22'32°23'E. The district borders Buliisa in the North, Kiryandongo in the East, Nakasongola in the Southeast, Kiboga in the South, Hoima in the Southwest and the Democratic Republic of Congo in the West. The district lies at an altitude range of 621 to 1,158m above sea level and comprises a total area of 9,326 sq km, of which 8,087 sq km is land, 2,843 sq km is wildlife-protected area, 1,031 sq km is forest reserves, and 799.6 sq km is water. The district is divided into three major climatic (rainfall) zones: high rainfall (>1000 mm), medium rainfall (800-1000mm) and low rainfall (<800 mm). On average, the district receives about 1,304 mm of rainfall annually with annual average temperature of 25°C and soils are favorable for agriculture (Masindi District Environmental Policy, 2009). The district has a diverse ethnic composition of 55 tribes with a total population of 469,865 (50.1% males and 49.9% females), which is about 7.3% of the Western Region's population. The

annual population growth rate is estimated at 5.05% with a population density of 56 persons per sq km, which is much lower than the regional average of 129 persons per sq km. Masindi is relatively poor compared to other districts in Uganda. It is characterized by low household incomes and limited revenue base and agriculture is the core economic activity, with 73.1% of the population engaged in smallholder agricultural activities. About 6.2% of the total farmland is under large scale commercial farming. The district is the leading producer of maize in the region and the third after Iganga and Kapchorwa in the country. Maize also is the major cash crop. Traditional cash crops include tobacco, coffee and cotton (UBOS, 2017).

Sample size determination and sampling method

The sample size was determined using Cochran (1963) formulae;

$$n = (Z^2pq)/e^2 \qquad (1)$$

Where n = Sample size; Z = the standard normal deviate at the selected confidence level which is 1.96 for 95% confidence interval. P = Proportion in the target population estimated to have characteristics being measured which is 0.8 for this study (80% of the farmers are smallholders in the district)

q = 1 − 0.8= 0.2

e = the desired level of precision (5 to 10%); n= $(1.96^2*0.8*0.2)/0.05^2$;n= 245
However, during the interview, more participants were encountered and interviewed resulting in a total sample of 253 smallholder maize farmers. The respondent selected was a household head in the family that produced and marketed maize either collectively or individually. Stratified sampling procedure was used to obtain the sample. The sampling frame was obtained from Masindi Seed and Grain Growers Limited which comprised farmers that were marketing collectively and those marketing individually. From the sampling frame, a sample was then obtained using pairwise matching technique of sample selection. The respondents were paired by virtue of collective and individual marketing. For every farmer selected for interview from the list of farmers participating in collective marketing with MSGGL, another farmer who markets individually would be obtained and interviewed using pairwise matching.

Data collection

Primary data were collected using questionnaires which were administered to selected smallholder maize farmers. The questionnaire was first pre-tested among smallholder maize farmers from Mirya Sub County in Masindi District to ensure that it captures reliable and relevant data. The final revised questionnaire was developed to collect the data required for the survey. The data were collected on farm and farmer characteristics, asset holding, income, marketing channels, forms of marketing and bulking, sale price per kilogram and many other variables at farm level between the months of August and September 2014. Close ended questions were used to capture numerical and quantitative data that link theory to research (quantitative method) and this also enabled the researcher to describe the magnitude of the findings statistically.
Open ended questions were used to record observations and qualitative attributes (qualitative method) also referred to as interpretive research methods, according to Erickson (1986). Qualitative data provided deeper meanings of the statistical data generated by quantitative methods thus enabled the researcher to better understand subjective realities of respondents. Additional data were also obtained from key stakeholders, farmer organizations and other development organizations especially on collective maize marketing by smallholder farmers. Furthermore, according to Hejase and Hejase (2013), "descriptive statistics deals with describing a collection of data by condensing the amounts of data into simple representative numerical quantities or plots that can provide a better understanding of the collected data." Therefore, this study analyzed data collected with descriptive statistics such as frequencies and percentages supported with data tables for clarity. This is followed by inferential statistics.

Review of analytical model

Econometric models that have been used in the study of two-step approaches include; Heckman's sample selection model, the Two-stage/double hurdle models and switching regression model (Olwade and Mathenge, 2012). This study settled for the two-step sample selection model due to the fact of it being a relatively simple procedure for correcting sample selectivity bias and the comparison of participants and non-participants in collective marketing randomly to reduce selection bias. The Tobit model was then regressed to determine the factors that influence the level of participation in collective marketing. The model is appropriate when the dependent variable which in this study is the proportion of maize marketed collectively is censored at some upper or lower bounds as a product of how the data are collected. The first stage of the model assumes that the errors are homoscedastic.
Variables in the model are treated differently because initially such models were estimated using the Tobit model which would account for clustering of Zeros due to non-participation. However, a major limitation of the Tobit model is the assumption that the same set of parameters and variables determine both the probability of participation and the level of participation. A Tobit model relaxes the above assumptions by allowing different mechanisms and variables to determine the level of participation using the proportion of maize marketed collectively as the dependent variable of the censored Tobit model (Olwade and Mathenge, 2012).
The dependent variable (y) in the model is mixed in a sense that those who are selling all their produce individually and thus, having no produce sold collectively would have a value of zero (0) while those who are marketing all their maize collectively through a group would take up highest value of one. The model assumes normal distribution with constant variance (Greene, 2000). Thus, the dependent variable (proportion of maize marketed collectively) is censored with lower limit as 0 and upper limit as 1. According to (Greene, 2000), a generalized 2 tailed Tobit model is specified as;

$$y^* = \alpha x_i + \varepsilon \qquad (2)$$

Where y^* is a latent variable (unobserved for values smaller than 0 and greater than 1), α is a vector of coefficients to be estimated and ε is a vector of independently normally distributed error terms with 0 mean and constant variance δ^2, x is the vector of explanatory variables and i is the number of explanatory variables. Denoting y (proportion of maize marketed collectively) as the observed dependent censored variables we have:

$$y = 0 \text{ if } y^* \leq 0 \qquad (3)$$

$$y = y^* \text{ if } 0 < y^* < 1 \qquad (4)$$

y = 1 if y^* ≥ 1   (5)

As indicated y^* is the unobserved latent variable with y as the proportion of maize surplus marketed by the smallholder farmers collectively, α is a vector of coefficients to be estimated, x_i is the vector of explanatory variables and ε is the error term. A zero value of y is observed when the smallholder maize farmer is not marketing any surplus produce collectively and y^* = 1 if the smallholder maize farmer markets all his surplus maize collectively. Specifically, the explanatory variables in the model will be;

x_1 = Gender of the farmer (Male = 1, Female = 0)

x_2 = Age of the farmer (measured in years)

x_3 = Education of the farmer (measured in years of schooling)

x_4 = Distance to the collection center (measured in kilometers)

x_5 = Land area farmed (measure in hectares under maize production)

x_6 = Land area owned (measured in hectares)

x_7 = Price per kilogram of maize offered at the collecting centre
x_8 = Access to extension services (number of trainings attended about maize production)

RESULTS AND DISCUSSION

Farmers' preferences for collective and individual maize marketing

Farmers showed varied preferences for collective marketing and individual marketing (Table 1). The reasons advanced by the farmers for not participating in collective marketing and thus continued embracing of individual marketing included; delayed payment (73%), lack of trust (10%), costs involved in group marketing and time consuming group activities like meeting and disagreements (5%), stringent quality and quantity requirements (4.5%), high cost of business especially due to activities like cleaning and re-bagging that finally reduce the price to a figure close to that offered in the open market (4.5), lack of groups and interest in group formation (1%), lack of information on existence of group marketing and the benefits associated (1%) and lack of privacy in group activities that can result in insecurity (1%). The findings also are in agreement with the findings of the survey done by Food and Agriculture Organization of the United Nations which revealed that only 13% of farmers were involved in collective marketing, with most farmers not involved in collective marketing due to lack of knowledge of who to collaborate with (29%), difficulty to agree as a group (23%) while 22% claimed collaborating for collective marketing is a waste of time (Naven, 2012). However, according to Robbins et al. (2004), farmers have to be willing to co-operate and work together with the help of service providers in a relationship where farmers themselves realize the need to work together and achieve better prices for their products. This means that farmers also should have a role to play in looking for fellow farmers to collaborate with and achieve mutual objectives of the collaboration.

According to Table 2, farmers who were participating in collective marketing also gave reasons for their preference for this marketing arrangement which included the following; better prices (42%), training and extension services (16%), credit for ploughing and inputs (14%), reliable markets (26%), improved quality of the maize that attracts diverse markets (1%), availability of storage facilities (1%), and availability of money at the center for immediate needs when maize is brought to the store (2%). According to Ampaire et al. (2013), collective marketing helps farmers to invest in costly facilities, acquire specialized services such as training and storage in addition to enjoying the economies of scale. This, therefore, makes collective marketing a useful tool in overcoming majority of the challenges faced with the smallholder maize farmers in the region as regards to market access. There has also been a general belief that the future belongs to the organized since such organization helps farmers with small quantities of output to market at better prices and access services like storage. This, however, disagrees with Wennink et al. (2014)'s findings that collective marketing institutions in most developing countries lack beneficial and attractive services like those facilitating access to extension, credit, marketing and evidence based advocacy and lobbying which services are very beneficial to the farming process.

According to Mwendya (2012), the facility of collective marketing in the case of Masindi has helped farmers to earn a price that is 450/= higher than the prevailing market prices especially from World Food Programme in addition to training and credit from their partners especially Masindi District Farmers Association and the Saving Credit Co-operative. Naven (2012) also found out that farmers who collaborate in groups have incomes that are about 60% higher than non-collaborators. These findings, therefore, are largely in agreement with the reasons for farmers' participation in collective marketing. Ton et al. (2010) also noted that collective marketing in form of bulking provides additional services such as input provision, savings and credit and extension in addition to reliable markets and better prices that are achieved by ensuring a bigger voice that comes with higher bargaining powers. However, the above findings disagree with those of Wennink et al. (2014) who reported that farmer organizations in developing countries lack capacity to generate and analyze data as supportive evidence to enable them lobby, advocate and negotiate to influence policies and structures; thus providing conducive environment for the survival of smallholder farmers. Such environment should among others ensure stable prices and access to credit for farming activities such as ploughing, planting, input buying and harvesting

Table 1. Farmers reasons for preferring individual marketing.

Reason	Percent response (n=120)
Delayed payment	73
Lack of trust	10
Costs involved and time consuming	5
Almost same price	4.5
Requirements (Quality and Membership)	4.5
Lack of groups and interest	1
Lack of information	1
Lack of privacy	1

Source: Field data (2014).

Table 2. Farmers reasons for preferring collective marketing.

Reason	Percent response (n=133)
Better prices	42
Reliable markets	26
Training and extension services	16
Credit for ploughing and inputs	14
Availability of money for part payment	2
Improved maize quality	1
Availability of storage facilities	1

Source: Field data (2014).

Table 3. MASSGL activities that benefit farmers.

Activity	Percentage farmers' response (n= 133)
Training	96
Marketing	96
Bulking	92
Credit facility	87
Storage facilities	7
Input supply	3
Value addition	1

Source: Field data (2014).

among others.

Group activities

Farmers who belonged to the group reported different activities carried out at the group level to help in market access of maize as shown in Table 3. From the study, the activities of these groups were found out to include; marketing, bulking, training, storage, savings and credit, value addition and provision of inputs such as fertilizers on credit. These, according to Ton (2008), are important attributes of a farmer group if the group is to ensure survival of the members in the liberal economy. The author further explains that savings and credit is an important ingredient since it helps the organization get immediate source of money for members who may require money to meet their immediate expenses

Table 4. Model estimates of determinants of the intensity of participation in collective marketing: A Censored Tobit.

Variables effects	Coefficients	Marginal
Land owned (Hectares)^	-0.075 (0.038)**	-0.075
Gender of the farmer (Male/Female)	0.117(0.065)*	0.118
Age of the farmer (Years)	0.009 (0.002)***	0.009
Years of schooling (Years)	-0.015(0.009)	-0.015
Area under maize (Acres)^	-24.458(22.968)	-24.458
Distance to the marketing center (Kms)	1.234(0.246)***	1.234
Number of extension visits (Number)	0.004(1.641)	0.004
Price offered at the collective centre (Uganda Shs) 0.002(0.0003) ***	-2335.4	0.002
Constant		
A censored Tobit		
Number of observations	186	
LR chi^2(9)	140.28	
Pseudo R^2	0.1009	
Prob> chi^2	0.0000	

*, **, *** Represents significance at 10, 5 and 1% levels respectively, in parentheses are standard errors and ^ shows transformed variables.
Source: Field data (2014).

especially medical and school fees.

Factors that influence the intensity of participation in collective marketing

In order to identify factors affecting the intensity of participation in collective marketing, the data on the proportion of maize sold under collective marketing were analysed using a censored Tobit Model. The model results indicated that 10.09% of the variations in the censored dependent variable of the proportion of maize marketed collectively was explained by the model. The price offered at the collective centre, distance to the marketing centre and land size significantly influenced the intensity of participation in collective marketing at 1% level significance and income of the farmer and age of the farmer significant at 10% (Table 4).

Results showed that a unit increase in the price of a kilogram of maize in the previous season at the collection centre increased the proportion of maize marketed by the participating farmer by 2 kilograms. This was due to the fact that farmers want to maximise profits from the maize production business. Thus when prices increase farmers who would sell some of the maize to individual traders rather take a loan and then sell the whole maize to the collection centre at better prices. The study further found out that the price of maize was Ugx 716.32 at the collection centre and Ugx 516 for farmers that sold individually in the previous season. These findings are consistent with Mwendya (2012) who found out that the price offered by Masindi Seed and Grain Growers limited

was above the prices offered by other traders especially when the group succeeds in getting a supply order with World Food Programme which usually gives the farmers good prices.

Results also showed that a one year increase in the age of the farmer, the proportion of maize supplied by the farmers to the collection centre increased by 48 kg of maize. This was because old age comes with experience and more asset base that can help the farmer supply his maize and wait for the payments at better prices which is usually the case with the Masindi Seed and Grain Growers limited. These findings are consistent with those of Yenealem (2006) who also found that age of the farmers is proportional with the asset base and both influence the decision of the farmers to take up a new strategy to improve on their income.

Consistent with the results on the factors that influence the choice of the marketing mode, the income of the farmer was also found to influence the intensity of participation in collective marketing. Income of the farmer was found to significantly influence the proportion of maize marketed collectively. The findings showed that a one shilling increase in income reduced the quantity of maize marketed collectively by 3 kg which is the logarithm of the marginal effect of 1092 kg. This was because as incomes increase, farmers tend to shift from subsistence farming to commercial farming which involves opening up more land and producing large quantities of maize which can be marketed individually at good prices without going through the hurdles of bulking with smallholder farmers. This is in agreement with the findings of Chirwa (2009) that the increase in farm

income prompts the farmer to use various marketing channels which may reduce the quantity of maize marketed collectively.

Results also showed that distance to the collection centre positively influenced the proportion of maize marketed collectively. It was revealed that a unit increase in the distance to the nearest marketing centre increased the quantity of maize marketed collectively by 123.4 km. This was because averagely all farmers who participated in collective marketing were getting transport to the collective centre at subsidized prices from Masindi Seed and Grain Growers Limited which made more sense for farmers from distant places to take advantage of the transport in order to benefit from the better prices offered at the collective centres. This is in agreement with Mwendya (2012), that after harvesting groups, of smallholder maize farmers bulk their maize and together choose the cheaper means of transport to the store from either private means or using the association to collect the maize.

Quantity of maize produced by the farmers was also found to negatively influence the proportion of maize marketed collectively. The findings showed that a unit increase in the quantity of maize produced by the farmer decreased the proportion of maize marketed collectively by 0.1 kg. The findings are consistent with Fischer and Qaim (2011) that farmers who produce more output have the opportunity of enjoying the economies of scale by marketing through many marketing channels thus reducing the chance of taking part in collective marketing and thus reducing the quantity of maize marketed collectively.

CONCLUSIONS AND RECOMMENDATIONS

Reasons like lack of trust, stringent requirements, delayed payments, lack of groups, lack of information, high costs, lack of interest, almost same price and time consuming were found to be responsible for continued reluctance of farmers to participate in collective marketing. On the other hand, reasons like better prices, reliable markets, availability of training and extension, availability of credit and availability of input loans were motivation to farmers' participation in collective marketing. Factors like age of the farmer, quantity of maize produced, income of the farmer, distance to the collective center and the price were found to significantly influence the intensity of collective marketing. It is thus recommended that central and local government should give priority to build and maintain a good rural road network that will reduce costs of transport for the farmers and traders and improve on the prices offered to farmers for their different products. In addition, collective marketing agencies should aim at building central collection and storage points in each participating sub-county or any other strategic point as nearer as possible to the farmers. It is recommended that agencies

that are involved in collective marketing should offer premium prices for good quality maize which in turn would encourage other farmers to get involved in bulking and collective marketing.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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