(IJDSSH) 2019, Vol. No.8, Jul-Dec **e-ISSN: 2455-5142; p-ISSN: 2455-7730**

DETERMINANTS OF SMALLHOLDER FARMERS' RICE MARKET PARTICIPATION IN LIBO KEMEKEM WOREDA, AMHARA REGION

Endesew Eshetie
University of Gondar
College of Business and Economics
Department of Marketing Management

ABSTRACT

Cultivation of rice in Ethiopia is generally a recent phenomenon. Rice has become a commodity of strategic significance across many parts of Ethiopia for domestic consumption as well as export market for economic development. This study was conducted in Libo Kemekem Woreda, Amhara Region. The main purpose of this study was to analyze the determinants of smallholder farmers' participation in rice market. In this study three representative Kebeles were selected using multistage sampling technique. Then, sample household farmers were drawn by random sampling technique. Thus, 215 smallholder rice producer farmers were selected to the study, and through questionnaire and interview data were gathered. The collected data then be analyzed using SPSS and the results were interpreted and presented using descriptive statistics. Hence, the result revealed that 91.2% were male headed households and 8.8% were female headed. The minimum ageof participants were 29 and the maximum age was 70. About 94.9% of respondents were married, 3.3% were divorced, and 1.9% was separated; the major reason for growing rice was mainly for market. The result also identified about 98.1% smallholder farmer heads were members of cooperatives. On the contrary, farmers faced lack of improved seed and fertilizer, fear of crop failure due to unexpected rains and existence of different diseases. Based on the research findings the possible recommendations forwarded. Improving the extension services, strengthening capacity building and fulfilling infrastructure in the study area are crucially important to help farmers to actively participate in the rice market.

Key words: Agricultural marketing, Smallholder, Market participation, Rice production

BACKGROUND OF THE STUDY

Agriculture is the basis of the Ethiopian economy which accounts for nearly 46% of GDP, 83% of employment, and nearly 80% of foreign export earnings. Ethiopian agriculture is characterized by small-scale and 90-95% of agricultural output comes from small-scale subsistence household each owning, on average, about 0.89 ha of land (CSA, 2014). Rice is one of the market oriented and strategic crop in the rice producing areas of Ethiopia. It was first introduced in Ethiopia in the 1970s and has been cultivated in small pockets of the country today (Yemane, 2014). Although rice was introduced

to the country very recently, it has proven to be a crop that can assure food security in Ethiopia. It is reported that the potential rice production area in Ethiopia is estimated to be about thirty million hectares (MoA, 2017).

Rice is called to be "millennium crop" which is expected to contribute to ensuring food security in Ethiopia; the area under rice production in Ethiopia is estimated to have increased from 5,400 ha in 1993 to about 46,832 ha in 2014 (FAOSTAT, 2017). The number of farmers engaged in rice production has also increased from about 53 thousand in 2006 to about 284 thousand in 2009 (MoARD, 2017).

The production of rice started in Amhgara Region at Fogera plain (Astewel, 2017). Fogera plain contributes about 32% of rice production in the country (EIAR, 2011). In spite of the huge potential of the country to produce different rice types, the crop is not under cultivation in many parts of the country.

Now a days, rice cultivation is concentrated only in few areas such as *Pawe, Gambella, Fogera, Libo Kemkem, Dera, Denbia, Alfetakusa Woreda, Mizan Tefri, Jimma (Gojeb area), Melkaworrer, Arbaminch, North Shewa, South Wollo (Chefa), Dangila-Jewi, Bichena, Quora, Metema and Armachiho* (Welelaw, 2005). Fogera and Kemkem Woredas in South Gondar and Metema Woreda in North Gondar are the major rice producing Woredas in the region (MoARD, 2017).

Access to markets and moving from subsistence to market oriented farming can bring about economic growth, low food prices, food security, bridging of the nutritional gap and improvement in the standards of living (MAAIF, 2010, Osmani et al., 2015, deHaas, 2016). However, in recent years smallholder farmers are also taking part in market to sell some portion of their products. Thus, smallholder farming has an important role in transforming agriculture from subsistence to market oriented production or commercial agricultural production.

Through commercialization, smallholder farmers can earn more profit which increases their family income and promotes standard of living. Because commercialization of agriculture is not only just making a shift from subsistence to market oriented farming but also making better welfare outcomes for farmers in the form of increasing consumption of basic and high valued food. Moreover, higher expenditure on education, healthcare, non-food consumption and durable goods for the smallholder farmers can be achieved by commercializing agriculture (Gebreselassie and Sharp, 2007) cited by (Md. Ataul Gani Osmani, Md. Khairul Islam, Bikash Chandra Ghosh, Md. Elias Hossain, 2016).

Libo Kemkem Woreda farmers benefited from planting of rice on water logged land where other cereals couldn't be grown. They obtained more yield than they would get from other crops of the same area. In the Libo Kemkem district (where this research was conducted) its production in hectare has

been increasing year to year (Libo Wereda Rural and Agricultural Office, 2018) and Libo Kemkem plain has a potential of 11,130 hectare for rice production.

Efforts have made to boost production and productivity of rice for the last decades, however still different production and marketing factors hindered and limited its production. Hence, the researcher was interested to study the determinants of smallholder farmers' making decision to produce rice market over other types of cereals.

Statement of the Problem

Participation of smallholder Ethiopians' farmers in markets remains low. Limiting constraints faced by smallholder farmers is linked to poor market access, high transaction costs, Poor infrastructure and weak institutions cause transaction costs to rises, which considerably alter production and market-participation decisions (Barrett C. B. 2008). These problems also results in poverty. The important route to reduce poverty in rural areas is to enhance the market participation of smallholder farmers, as this can increase the net returns to agricultural production.

The importance of market participation to economic growth and poverty reduction arises from the fact that market participation leads to market-oriented production where the household specializes in the production of those goods for which it holds comparative advantage (Njeri and Kim, 2016). Market participation is the ability of an entity to participate in a market efficiently and effectively. It is the transitions by farmers from subsistence farming to a market engagement mode, where by inputs are increasingly purchased and farms outputs sold to traders (Nigel, 2017)
The transition from subsistence, or from a lower to a higher level of market participation, is influenced by the ability of farmers to produce products which meet market expectations in terms of quality, standards, and ability to deliver products on time for sale at a viable price.

In Ethiopia rice is not a widely cultivated crop, but there are vast paddy fields which have the potential for cultivating rice. Rice has sufficient nutritional content and if the cultivation is expanded in various parts, it could play crucial role in easing food insecurity (Abebe, 2017). However, in addition to the limited availability of agro-ecologically suitable areas for rice production and productivity in the country, smallholder farmers' production and marketing participation is not as such satisfactory (Yassin, Adam, Mengistu, 2016). That is, even in the agro-ecologically suitable areas for rice production smallholder farmers' participation is far below the available potential.

For example, in Libo Kemkem Woreda, there is suitable agronomic condition for growing rice and there is high potential arable land to do so. This is an opportunity for smallholder farmers in this area,

since rice seed is an export potential cash crop. However, there are external and internal (household specific) factors that constrain some households from participation in the marketing activities. In addition, the extent to which participant farmers vary significantly and the overall participation is incomparable with the available potential. According to Libo Kemkem Woreda Agriculture and Rural Development Office (2019), rice producers are faced with limited access to formal markets which prevents them from increasing the quantity and quality of rice produced.

Similarly, according to the researcher's own observed experience, producer farmers' face a numbers of problems which influence the income from rice sale. The rice marketing system in Libo Kemkem has been identified as one of the major constraints to increase production by the smallholder farmers.

So far, some studies were undertaken regarding rice production and marketing in Ethiopia by different researchers. For example, studies by Takele (20100), Gebremeskel (2010), Tilahun Gebey (2012) and Meron (2016) were focused on rice value chain analysis though the value chain analysis has mainly focused on production and agricultural aspects. Similarly, Tesfaye (2009)**,** Afework & Lemma (2015), Teshome & Dawit (2015), Abraham (2016), Astewel (2017) and Hadush Hagos, Eric Ndemo & Jemal Yosuf (2018) have mainly focused on general production and trade arrangement problems, the manner of farmer to farmer experience sharing and the pattern of the use of modern technology and its impact. In addition, these researchers also focused on adoption of rice technology which is only external to individual households and common to all farmers in the area.

Generally, majority of these studies findings were reported on the common rice production related problems which all were about the off household level, ignoring rice market participation decisions at household levels. However, identifying household specific factors, which are responsible for limiting some households from rice marketing participation, is imperative.

The current study was, thus, designed to analyze the determinants of smallholder farmers' rice marketing participation in Libo Kemkem Woreda.

Research Questions

Based on the above information, the study was intended to answer the following questions:

1) What are the determinants of smallholder farmers' rice market participation?
2) Which factors have a greater derive for smallholder farmers' rice market sale?
3) What are the major constraints that obscure smallholder farmers in employing their maximum potential to rice market production?

Objectives of the Study

This study has both general and specific objectives.

a) General Objective

The general objective of this study was to analyze the determinants of smallholder farmers' participation in rice market rice in Libo Kemekem Woreda, Amhara Region.

b) Specific Objectives

The specific objectives of this study were:

1. To identify the factors that influence smallholder rice farmers' decision to participate in the rice market
2. To explore the factors that motivate farmers to cultivate rice over other agricultural products
3. To examine the factors that affect the intensity of market participation of smallholder rice farmers.
4. To recommend the possible solutions that could help farmers to benefit from rice sale at large.

Significance of the Study

The findings of this study will help to the following two parties. First, it provides important information to smallholder rice farmers in improving their rice production decision and market participation. And this is possible if studies, like this, used as an input to support the Woreda Agricultural and Rural Development experts and stakeholders access of data on such issue. Second, it assists as an input for future researchers who are interested to study on a similar topic.

Scope of the Study

The research was delimited selecting Libo Kemkem Woreda for its long year experience in rice production. Since the research was focused on rice marketing, rice producer Kebeles were the major target areas for sample selection. This had been done by taking a list of household heads from Kebele Agriculture and Rural Development Centers.

In Kebele level agriculture extension personnel were taken in the research. The research focused only on major household level determinants of smallholder farmers' rice market participation. Thus, this research focused only the rice crop and the market participation by Libo Kemekm Woreda smallholder farmers.

(IJDSSH) 2019, Vol. No.8, Jul-Dec **e-ISSN: 2455-5142; p-ISSN: 2455-7730**

REVIEW OF RELATED LITERATURE

Smallholder Commercialization

Commercialization is often viewed as an avenue to improve household food security due to its comparative advantages over subsistence production. Household commercialization as defined by household participation in input (fertilizer and seed) and crop output markets affects food security position (Kirimi *et al*., 2013). Economic liberalization has given opportunities for smallholder farmers to diversify their products and take their surplus to nearby markets (Asfaw *et al*., 2010). Removing trade barriers and discouraging local monopoly helped smallholder farmers to choose their markets both inputs and harvested products (Shiferaw *et al.,* 2008). Such participation is expected to have a positive impact on their incomes and thus enhance their livelihoods (Jagwe *et al.,* 2010).

Marketing of rice

Most small holder operations are ordained with the family as the center of planning, decision-making and implementation. The marketing decisions are taken by the farmers in terms of whether to sell or not to sell and the quantity to be taken to the market. These decisions determine their market participation. Policies for commercial transformation of smallholder agriculture are often aimed at promoting household market participation (Gebremedhin and Jaleta, 2013). Salami *et al.* (2010) states that improved market participation is a key precondition for transformation of the agriculture sector from subsistence to commercial production. Commercialization is often viewed as an avenue to improve household food security due to its comparative advantages over subsistence production (Kirimir *et al*., 2013). Such a transformation can help address the poverty and income challenges that confront many smallholder producers (Alene *et al*., 2008).

Market participation

Various definitions of market participation have been suggested by different authors. Some authors consider market participation as any market related activity which promotes the sale of produce (Key *et al*., 2000; Holloway & Ehui, 2002; Lapar *et al*., 2002). Market participation can be referred to as commercialization (Latt & Nieuwoudt, 1988). It can also be described as an individual's or household's economic transactions with others, in cash or kind (Von Braun *et al.*, 1991).

Staal *et al*. (1997) mentioned that a low proportion of products exchanged in the marketreflects limited market participation. With the three possible states of buying, selling or not trading, Goetz (1992) defines market participation using household purchases and sales. Volumes of produce traded are used to determine market participation. In an agricultural market economy, market participation or commercialization occurs mainly when farmers stop being mostly subsistence farmers and become profit-oriented.

(IJDSSH) 2019, Vol. No.8, Jul-Dec **e-ISSN: 2455-5142; p-ISSN: 2455-7730**

Market participation is in that case defined as earnings from market activities (Makhura *et al.*, 1997; Makhura, 2001). The various market participation definitions and measurements do not rule out quantity or produce sold or sales volumes. In this study, both the presence of sales and the volume of sales will be used as a measure for market participation. This is because market participation for subsistence smallholder farmers is directly related to generation of a marketable surplus, which in turn depends on productivity levels.

Factors that influence participation

Numerous factors are believed to have an influence on farmers' market participation decision. Such factors range from social-economic factors, institutional factors, market factors and external factors. Social-economic factors include age, gender, off-farm income, level of education, years of farming, household size, farm size and output level. Institutional factors entail membership to a group, access to extension services, access to credit, land tenure, infrastructure, contractual arrangements and, policies and law.

Market factors such as access to market information, prices of output, distance to the market place, means of transport and other external factors such as natural calamities that result in crop failure also determines market participation by the crop farmers.

The analysis of socio-economic factors that influence participation in indigenous fruits trade identified household size, gender, form of employment and distance to the market as significant variables (Mwema *et al*., 2013). In his study, Awotide *et al*. (2013) found that gender of the household, contact with extension agents' educational level, area cultivated and use of improved varieties to be positively and statistically significant in determining market participation by smallholder rice farmers in Nigeria. Mathenge *et al*. (2010) explains that the age of the household head normally acts as a proxy for experience in farming, and therefore can significantly influence participation.

Gender of the household head has an influence on household decision making and therefore significantly affects market participation. The female headed households participate more in trade of indigenous fruits (Mwema *et al*., 2013). Compared to males, females have a lower probability of selling beans to traders and cowpeas to consumers, but they have a higher probability of selling to retailers (Boadu *et al*., 2013). On the other hand, Guiterrez (2003) stated that female headed households are more likely to be resource constrained hence affecting production of marketable surplus that limits their participation in the market.

Household size can be viewed both in terms of family labour and the number of mouths to feed. Education is a key factor in making informed decisions, and therefore can influence market participation. In his analysis of the beans market in Zambia, Boadu *et al*. (2013) found

that education is not a significant factor in determining market participation. Contrary to this finding, education level of smallholder farmers has been found to be a significant determinant of market participation (Davis *et al*., 2013). Consistent with the positive relationship between education level and market participation is the finding by Ondieki (2013) where an additional year of schooling also increased the likelihood of participating in the French beans market. Distance from the farm to the market is noted as a major constraint to the intensity of market participation by the smallholder farmers (Bardhan *et al*., 2012).

Ownership of transport means can significantly determine participation in relation to the distance to the market place. This can be attributed to poor access to transport facilities due to high transaction costs. This provides a need to upgrade both rural access roads and roads in peri-urban areas, strengthen delivery systems and encourage market integration (Omiti *et al*., 2009; Jagwe, 2011; Awotide *et al*., 2013). Boadu *et al*. (2013) found that geographic location of smallholder farmers has a larger impact on market participation than gender and education. Market integration provides a sure market for the farmers.

Review of Empirical Marketing Studies in Rice and Related Crops

Many studies conducted in analyzing the market participation and volume of sale in different crops. Abay (2005) and Rehima (2006) studied the market participation of vegetables and pepper marketing at Fogera and Siltie Zone, respectively.

Their studies indicate that both where used Heckman two step model to identifying the factors that affect the market participation and volume of sales. The results show that distance from main road, frequency of extension contact and number of oxen were found significant for onion while experience of the farmers and distance from road were significant for tomato. The identified variables found in pepper marketing study were pepper production, crop yield of the households and extension contacts. Similarly, Makhura (2001) determined the effect of transaction costs on market participation in the four commodities horticulture, livestock, maize and other field crops in South Africa. He estimated by following Heckman two-step procedure (heckit). The variables were household endowment, access to information, household characteristics and interaction factors. He also used Tobit model to answer the two questions by identifying the factors affecting the decision to participate and the level of participation at the same time.

In connection to the above studies Gebremedhin and Hoekstra (2007) identified determinants of household's market participation of three crops (teff, wheat and rice) from three districts of Ethiopia (Ada, Alaba and Fogera). For analysis, they used community level and household level data. At the household level, Probit model was used to analyse the determinants of household choice to produce these market oriented crops. Also Heckman two-steps estimation was applied for the two crops (due

to data availability rice result was not given) and the result shows that distance to market place didn't have effect on market orientation, there was a Ushaped relation between age of household head and market orientation of household in the cereal crops, availability of cultivated land, traction power, and household labour supply, are important factor that induces households to be market oriented.

A survey by Tesfaye *et al*. (2005) identified the challenges of the rice production, utilization and marketing of rice at Fogera, Dera and Libokemke districts. The studies pointed out both production and market constraints and more recommendations were forwarded. On the same area, Wolelaw (2005) identifies the main determinants of rice supply at farm level. The study uses Cobb Douglas production function model to estimate the limiting factors. The result that identified were, the current price, one year lagged price, actual consumption in the household, total production of rice in the farm, distant to the market and weather variables were significant to influence the supply of rice. A similar study on production part, Moses and Adebayo (2007), examined the factors determining rainfed rice production in Adamawa state (Nigeria). Production function analysis was used to analyze the factors. The result shows that two of the variables used (farm size and seed) were significantly affect the production. Also resource productivity analysis revealed that seed was over utilized, while land and herbicide were underutilized. Decreasing the quantity of seed use and increasing the size of land and quantity of herbicide respectively could increase efficiency.

Duc Hai (2003) also studies the organization of the Liberalized rice market in Vietnam. The result shows that the major rice market places were competitive. That is (1) no barriers to entry are detected that influence the formation of prices; (2) there is no concentration of market shares in the hands of private companies; (3) product differentiation is not a major issue in the market; (4) information is accessible for traders. However, in the case of large scale millers/ polishers, important barriers to entry concern access to capital, an unstable output market and proper milling technology. The study by Harahep (2004), Rice chain study in farmers' community in North Sumatra/Indonesia, shows that paddy/rice distribution was one factor that determines rice supply in consumer level. Main actors in conventional rice chains were the capital owner both in village level (small rice chain owner, and paddy retailer) and in outside village level (whole seller and big rice mill owner). These owners controlling the chains implement strategies such as a) giving credit to peasant for production and even living cost, and (b) developing human relationship with peasant. Within these strategies, the owner of chain structurally, made peasant in a high dependency to them.

RESEARCH DESIGN AND METHODOLOGY

(IJDSSH) 2019, Vol. No.8, Jul-Dec **e-ISSN: 2455-5142; p-ISSN: 2455-7730**

Research Approach

Qualitative and quantitative approaches were chosen as the design of this research because these approaches enable the researcher to address the objective of the study and to answer the research questions posed. For qualitative data the researcher employed key informant semi-structured interview whereas for quantitative data the researcher applied household questionnaire.

Research Design

This study was aimed to explore the determinants of smallholder farmers' rice market participation in Libo Kemekem Woreda, Amhara Region. The study was employed both explanatory and descriptive research design by using cross sectional survey strategy. The explanatory was employed to describe the characteristics of variables and at the same time to determine cause and effect between dependent and independent variables of the research topic.

Description of the Research Area

Libo Kemekem Woreda is one of the 106 Woredas of the Amhara Regional State and found in South Gondar Zone. Addis Zemen is the administrative center of this Woreda. It is found 645 km from Addis Ababa and 82 km from the Regional capital, Bahir Dar. This town is away from rice producing Kebeles on average of 13km. The Woreda is bordered by Ebnat Woreda in the North, Fogera Woreda in the South, Gondar Zuria Woreda in the West and Farta Woreda in the East. The Woreda has 29 rural and 6 urban Kebeles (Libo Kemkem Communication Office, 2019).

This Woreda has a latitude and longitude of 12°07′N 37°47′E and an elevation of 1975 meters above sea level. The study area is characterized by plain land bordering to Lake Tana and a highly rugged topography predominated by mountainous terrain with an altitude ranging from 1800 meter to 2850 meter above sea level. The district constitutes 95%, 4.1% and 0.9% midland, highland and low land agro ecological sites respectively. The maximum and minimum average temperature of the district is 27.9^0c and 11.1^0c respectively. The district cropping systems is manly using Meher rains with a supplementation of irrigation with 75% and 25% production of major crops contribution, respectively (Libo kemkem DoA, 2017).

The study conducted in rural Kebeles situated in this Woreda and focused on smallholder farmers' rice market participation.

Sample Size and Sampling Technique

(IJDSSH) 2019, Vol. No.8, Jul-Dec **e-ISSN: 2455-5142; p-ISSN: 2455-7730**

There are a total of 22 Kebeles with rice potential in Libo Kemkem Woreda from the total of 29 kebeles found. However, the researcher considered farmers producing large volume and significant number of engagement of participation in the rice market. Based on this, the researcher employed non-probability sampling. Hence, purposive sampling method was drawn to select the sample respondents. This sampling technique was selected due to the fact that the area of interest would be well addressed by the chosen sampling technique. Accordingly, Libo Kemkem Woreda was purposefully selected due to its rice production potential in Amhara Region.

From the 8 Kebeles, three Kebeles namely Bura, Shina Tsion and Gendawa were purposely selected based on the relative similarity of farmers' knowledge and skills towards rice cultivation and market participation. The selected study areas also represent the major regional and agro-ecological zones as far as rice production is concerned.

Finally, about 72 sample rice producer households from each Kebele and a total of 215 sample households were selected and considered for the study. The numbers of selected respondents at each Kebele were equal and it was due to the rice producers' homogenous nature in terms of farming practice, rice production and source of income.

Sources of Data

The sources of data used in this study were both primary and secondary. The secondary data were extracted from books, journals articles, different resources from websites and other relevant materials. Primary data for this study was collected from smallholder farmers who have experience in rice market production as well as Kebele level agricultural extension workers.

Data gathering instruments

For this research the researcher designed questionnaire and interview. These instruments used to triangulate the information and increase credibility of the study.

Methods of Data Analysis

The collected data from the sample respondents were analyzed using appropriate tools such as regression, mean, percentages and frequency. The statistical significance of the variables was tested using inferences.

a) Descriptive statistics

Descriptive statistics has been employed to analyze data that related to demographic profile of respondents, household asset, rice production factors and institutional support response of respondents. To analyze these frequency tables and percentage were used.

b) Inferential statistics

A. Correlation Analysis

Pearson correlation coefficient has been employed to show the interdependence between three independent variables (demographic variables, asset and institutional support) and dependent variables (production factors) (Malhotra, 2015). The higher the correlation coefficient indicated the stronger the relationship between the predictor variables with the dependent variable.

B. Regression analysis

Regression analysis was used to test the significance contribution of each independent variable to the dependent variable. This statistical technique was helped research to explain whether the variation in rice market participation of smallholder farmers could be accounted for by explanatory variables.

DESCRIPTIVE RESULTS OF VARIABLES

The descriptive analysis made use of tools such as mean, percentages, and frequency and econometric analysis was used. For this study, data were collected from 215 randomly selected respondents.

In the following table the demographic characteristics of participants is presented. Thus, the sample households in the study area and their variables including gender, age, marital status, family size and education level were discussed.

Demographic characteristics

Table 4.1 Distribution of respondents by gender, marital status, education, age and family size (n=215)

Variable	**Category**	**N**	**%**
Gender	Male	196	91.2
	Female	19	8.8
	Total	215	100.0
Marital status	Married	204	94.9
	Divorced	7	3.3
	Separated	4	1.9
	Total	215	100.0
Education	Not formal education	61	28.4
	Primary education	101	47.0
	Junior education	48	22.3
	Secondary school	5	2.3
	Total	215	100.0

Age	Minimum	Maximum	Mean	N
	29	70	45.97	215
Family size	1	11	6.27	215

Source: Survey of 2019 data

As shown in Table 4.1, among participants 91.2% were male headed households and 8.8% were female headed. This implies that gender distribution among farmers in is skewed highly towards male. Furthermore, rice production in the study area was carried out by male. Male headed households could also be wealthier than their female headed counterparts and this could allow male headed households to own more marketable surplus. Rayes (2012) found that the gender of the household head positively influenced the probability of market participation. Therefore, the study clear that male headed household had a positive influence market participation of rice producers in Libo Kemkem.

In addition, the finding in Table 4.1 shows that 94.9% of respondents were married, 3.3% were divorced, and 1.9% was separated. Marital status contributes for the benefit of the household especially if he/she is a married, it has positive impact in the form of labor division generally and for rice production activities specifically compared unmarried, divorced and separated. Hence marriage serves as a means of generating family labour.

Table 4.1 highlights that 47% of the respondents had primary education, 28.4% of the farmers had no formal education, and very few (2.3%) had secondary education. This implies that majority of the farmers were literate. This means that high proportion of respondents were in a better position of being aware in markets.

Concerning age, the minimum age of participants were 29 and the maximum age was 70. The mean age of respondents was 45.97 years. This means that there was a relatively high proportion of middle age among the respondents. The average age in years among participants was 41 years. The largest proportions of respondents were within the age range of 40-60 years, followed 60 years. Age is often considered to be an indicator of motivation to market participation. The results imply that a proportion of the respondents were mature persons for decision of rice market participation.

In the study area, as it can be noticed from Table 4.1 the average family size was 5.06 with a minimum of 1 and maximum of 11. A larger household may have more family labour for production compared to a smaller one and the family was the main labor source for rice production.

Regression Analysis

The multiple regression analysis was conducted to investigate the influence of independent variables demographic aspects (age, marital status, sex, educational level, family size), household asset (land size, fertile land and efficiency of cattle) and institutional support (expertise support, manner of

support, information access and cooperative membership,) The proposed hypotheses were tested using multiple regression analysis.

Table 4.2 Regression analysis for variables predicting rice market production

Variables	B	SE	P
Age	.014	.010	.148
Sex	.040	.391	.919
Marital status	.031	.340	.928
Educational level	.064	.114	.015
Family number	.076	.054	.166
R^2		**0.026**	
F		**1.120**	

Source: Survey of 2019 data

Table 4.13 indicates that the independent variables (age, sex, marital status, education level, and family number) explain 2.6% of the variance rice market production. Among the demographic variables family number is the most important predictor followed by education level.

Table 4.3 Regression analysis for variables predicting rice market production by asset

Variables	B	SE	P
Efficiency of cattle	.446	.194	.022
Adequacy of land	.169	.185	.364
Fertile land for rice	.393	.389	.313
R^2		**0.034**	
F		**2.504**	

Source: Survey of 2019 data

As Table 4.14 shows that the independent variables (efficiency of cattle, adequacy of land and fertile land) predict 3.4% of the variance rice market participation of farmers. Among the asset variables efficiency of cattle is the most important predictor followed by fertility of land.

Table 4.4 regression analysis of institutional supports of smallholder farmers rice market participation

Variables	B	SE	P
Expertise support	.452	.173	.010
Manner of support	-.154	.093	.100
Type of service	-.063	.077	.415
Information access	.654	.212	.002
R^2		**.081**	
F		**4.536**	

Source: Survey of 2019 data

From Table 4.15 we can draw out that the independent variables for institutional support of farmers for rice market participation predict 8.1% of variance. Thus, among the variables expertise support is the most important predictor.

CONCLUSION AND RECOMMENDATIONS

Conclusion

Based on the descriptive statistics which is obtained, the result of each independent variable has been measured.

- ✓ According to the regression analysis of standardized coefficients of **Beta** and **Sig** values for the three independent variables were revealed that with sig. value .002 and .010 respectively which is less than .05. In addition, efficiency of cattle was the other contributing variable and statically significant contributing hypothesis accepted with sig. value 0.22. however, there was no correlation among variables.
- ✓ The descriptive statistical analysis results show that one of the most determinant factors influenced the smallholder farmers rice participation was the demographic variables. Regarding this 91.2% were male headed households and 8.8% were female headed. Concerning age, the minimum age of participants were 29 and the maximum age was 70. The mean age of respondents was 45.97 years.
- ✓ Farmers in the study area had a positive involvement in cooperatives and 98.1% smallholder farmer heads were members. Further, market participation was positively influenced by size of land owned, access to credit, quantity of output produced, access to price information prior to selling and being a member to a farmer organization. However, there was no adequate credit access.
- ✓ Lack of improved seed and fertilizer, fear of crop failure due to unexpected rains and existence of different rice diseases (which currently become a common problem in the Wereda), were also found as the major determinant factors which negatively influence smallholder farmers

from rice marketing in the study area. The sample smallholder farmers reported that they face milling.

Recommendations

Based on the above findings the following recommendations have been given.

- As the result revealed smallholder farmers were lack education. Therefore, upgrading the knowledge of the households through education and trainings is a paramount important.
- The level of farmers' engagement in cooperatives was very low. Farmers should be oriented on being a member of farmers' organization has huge advantage like reducing transportation costs, acquiring information about markets and access of extension services.
- Sampled farmers complained about lack of improved rice seed in the area. In this regard, farmers require immediate intervention and support. Therefore, providing improved rice variety either from government or among themselves is one possible solution**.**
  Because rice production entails high working capital throughout its production processes, availability of credit access to credit should be enhanced as it facilitates farmers to access inputs and other productive assets which increase output produced leading to more sales.
- This service can help farmers to participate in a significant amount.

REFERENCES

Aaebabay Kebede, Addisu Bitew, Tewodros Bimrew, Asresu Yitayew, Yihalem Denekew, Yeshiwas Ferede and Getinet Zeleke (2013), comparative evaluation of the fattening performance of fogera and adet old oxen at andassa livestock reseach center, Ethiopia, *Int. J. Pharm. Med. & Bio. Sc. ISSN 2278 - 5221 www.ijpmbs.com Vol. 2, No. 4 access date?*

Abera, Goitom; Commercialization of Smallholder Farming: Determinants and Welfare Outcomes" A Cross-sectional study in Enderta District, Tigrai, Ethiopia, M.Sc. thesis, Haramaya University, 2009.

Adeoti, A. I., Soliu, R.O. and Oluwatayo, I.B. (2014). Determinants of market participation among maize producers in Oyo State, Nigeria. *British Journal of Economics, Management & Trade* 4(7): 1115-1127

Alauddin, M. and Nghiem, H. (2010). Do Instructional Attributes Pose Multicollinearity Problems?: An Empirical Exploration. *Economic Analysis and Policy:* Vol. 40 No. 3, December 2010

Awlachew (2010); "Integrated Rain Water Management Strategies in the Blue Nile Basin of the Ethiopian Highlands", Addis Ababa, Ethiopia.

Barrett, C.B., (2008). Smallholder market participation: Concepts and evidence from eastern and southern Africa. *Food Policy* 33, 299-317

Barrett, C.B. (2007). Smallholder Market Participation: Concepts and Evidence from Eastern and Southern Africa. FAO workshop on Staple Food Trade and Market Policy Options for Promoting Development in Eastern and Southern Africa, Rome, March 1-2, 2007.

Bultossa and Adeba.2016. Determinants of market participation and financial profitability of smallholder dairy farming in Bako Tibe, West Showa, Ethiopia.

Boughton D., Mather.D, Barrett.C, Benfica R., Abdula D., Tschirley.D and Cunguara. B, (2007); "Market Participation by Rural Households in a Low-Income Country: An Asset-Based Approach Applied to Mozambique;" *Faith and Economics* Vol 50: 64-101

Burke, William (2009), "Triple Hurdle Model of Smallholder Production and Market Participation in Kenya's Dairy Sector," M.sc. thesis.

Cadot, O., L. Dutoit and M. Olarreaga (2006); How Costly Is It for Poor Farmers to Lift Themselves Out of Subsistence? World Bank Policy Research Working Paper 3881

Chamberlin, J. (2008). It's a Small World After All: Defining Smallholder Agriculture in Ghana.

CSA (Central statistical agency). 2015. The federal democratic republic of Ethiopia central statistical agency key finding agricultural sample surveys.

CSISA annual report 2018, page 17-18. (http://csisa.org/wp content/uploads/sites/2/2018/01/CSISAIII-BD-NP-USAID-annual-report_2017_for-DEC.pdf)

Dawit Alemu Novembert, 2015 Rice in Ethiopia: Progress in Production Increase and Success Factors. 6th CARD General Meeting

FAO (Food and Agriculture Organization). 2018. Ethiopiaat glance.

IFPRI Discussion Paper No. 00823, November 2008. Chauvin, Nicolas (2012); More cash from cash Crops: Giving Farmers a Better Deal in Africa, African Centre for Economic Transformation, http://acetforafrica.org/

http://emlab.berkeley.edu/reprints/mcfadden/quantal.pdf Retrieved on 21 June 2019

Http://www.granthaalayah.com ***International Journal of Research – GRANTHAALAYAH retrieved January 21st 2018***

http://www.fao.org/ethiopia/fao-in-ethiopia/ethiopia-at-a-glanc e/en/.

Nigel, P. 2017. Smallholder agriculture and market Participation. Published by food and agriculture organization of the United Nations and Practical Action Publishing.

Njeri and Kim (2016). Review of smallholder market participation in Kenya: Barriers and determinants. *African Journal of Science and Resource* (5) 3: 50-56.

Nov 22, 2018 - Farmers' Market Participation: Case of Rice Producers .... What could be the key factors impacting smallholder lowlands rice producers' ..... online: https://ageconsearch.umn.edu/bitstream/113240/2/Paper4.pdf (accessed on 8 May 2019

Siziba, S., Nyikahadzoi K., Diagne A, Fatunbi A.O, and Adekunle A.A. (2010). Determinants of cereal market participation by Sub-Saharan Africa smallholder farmer. *Learning Publics Journal of Agriculture and Environmental Studies*, 2, 180-193.