

**DETERMINANTS OF SMALLHOLDER FARMERS' PARTICIPATION
IN MICROFINANCE MARKETS IN HUYE DISTRICT,
SOUTHERN PROVINCE, RWANDA**

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ABSTRACT

Microfinance markets play a significant role in enhancing socio-economic development of developing countries. In Rwanda, access to microfinance in financing agriculture is very important for future development. Despite this development, smallholder farmers still have limited access to institutional financial services. This study assessed factors that affect smallholder farmers' participation in microfinance markets in three sectors of Maraba, Mukura and Ngoma in Huye district in Southern province of Rwanda. Primary data were collected using questionnaires and personal interviews. A total of 300 respondents were selected using a simple random sampling technique from participants and non-participants in microfinance markets. Data collected were analyzed through descriptive statistics and Probit regression model. Results from descriptive statistics revealed that major sources of income were farming and business activities. Findings revealed also that each household had an average of about five members with standard deviation of 1.901 and mean value of household land size of 1.87 ha with standards deviation of 0.758. Findings from Probit analysis revealed that household size, education, total annual income, cooperative membership, and household savings had a positive and significant effect on smallholder farmers' participation in microfinance markets. Distance from microfinance institutions negatively influenced participation in microfinance markets. Households that were located far from to the microfinance institutions were less likely to participate in microfinance markets compared to those nearer to the institutions. This study recommends microfinance institutions in Rwanda to expand their financial systems to enable smallholder farmers access affordable agricultural finance. Further, there is need for microfinance institutions to create more awareness programs to help smallholder farmers get key information related to microfinance services. This is expected to influence smallholder farmers' willingness to apply for microcredits for agricultural development. This will in the long-run help the smallholder farmers to adopt new practices and technologies thus increasing their agricultural production.

Key words: Microfinance markets, smallholder farmers, participation, Probit Model, Huye district, Rwanda



INTRODUCTION

Microfinance refers to a form of development that offers a range of financial services that include, microcredit loans, savings, insurance, funds transfers, mortgages and retirement plans [1]. Microfinance institutions have rapidly evolved in the last decade and have been able to create significant income and employment opportunities for the poor in developing countries [2]. Provision of microfinance has changed the quality of life of millions of people in developing countries and has played significant role in enhancing socio-economic development towards sustainable growth. Microfinance institutions have been identified as important tools in improving agricultural productivity through making financial services available to food producers in the agricultural sector [3]. The institutions have been growing and continue to attract sufficient equity, liabilities, deposits and borrowings. Microfinance sector development was considered to be a high priority to expand financial services such as access to credit, savings mobilization and long-term capital investments [4]. In different African countries, microfinance institutions have been considered as policy instruments in poverty eradication and financial markets expansion. They provide credit to communities for improving businesses and investing in health and education. This is expected to eventually cause a positive impact on livelihoods of clients of microfinance institutions [5-8]. Therefore, the availability of credit policies is crucial in supporting farmers to realize the full potential of agriculture as a profitable activity [9]. Meanwhile, banks are still hesitant to provide credit to small and marginal farmers and credit delivery to the agricultural sector continues to be inadequate [10].

In Rwanda after the 1994 genocide, the microfinance sectors have shown a dramatic progress through the support of international and Non- Governmental Organizations with the aim of poverty eradication and socio-economic development of poor communities [11]. Therefore, the National Bank of Rwanda (BNR) is concerned with the safety of public savings and has put in place regulatory framework for financial systems. The development of the microfinance industries in Rwanda is based on the concept that people possess the capacity to implement income-generating activities and also to increase agricultural productivity. In Rwanda, access to microfinance for agriculture is very important for future development. Credit is considered to be a crucial input to increase agricultural productivity mainly from labor and land utilization. It is believed that microfinance access can enhance households' income level and hence, increase economic development [12]. Microfinance would help to generate employment and to diversify sources of income thereby contributing to the improvement of Rwanda's economy in a sustainable manner [13]. The microfinance market is seen as having been an important instrument in the implementation of government programs that are aimed at reducing the number of the people below the poverty line from 60% in 2000 to 30% in 2015. The new Economic Development and Poverty Reduction Strategy (EDPRS) in Rwanda emphasizes the role of microfinance in the fight to reduce poverty and to increase economic growth in the country. In its Vision 2020, the government of Rwanda also points out to the role that the microfinance sector will play in the attainment of the national goals and sustainable development goals (SDGs). This vision is focused on transforming Rwanda from a low



income to a medium income country with dynamic, diversified, integrated and competitive economy [14].

The primary objective of setting up microfinance banks in Rwanda is to make financial services accessible to a large segment of Rwandan population including rural poor communities that usually have little or no access to financial services [15]. Rwanda Financial Stability Report (2015) and the statistics from BNR have established that there was a record of 493 players in the financial sector in Rwanda by the end of June 2015, including 13 limited microfinance institutions, 64 Savings and Credit Cooperatives (SACCOs) and 416 Umurenge-SACCOs. In Rwanda, SACCOs are the main providers of microfinance services in the rural areas [16].

In Rwanda, microfinance policies are set up to (i) contribute to socio-economic development of rural communities, (ii) enhance the productive activities in both urban and rural areas, thereby creating job opportunities and reducing poverty, (iii) to create opportunities for self-employment and self-reliance to low-income groups in the community, (iv) to mobilize domestic savings and promote the banking culture among low-income groups and (v) to strengthen the capital base and broaden the scope of activities of microfinance institutions.

Despite this policy development, rural financial markets and smallholder farmers in Rwanda still have limited access to institutional financial services. Key players such as development practitioners, policy makers, and multilateral and bilateral lenders, however, recognize that providing efficient microfinance services for this segment of the population is important for a variety of reasons. This study, therefore, sought to assess the factors that affect smallholder farmers' participation in microfinance markets in Huye district.

MATERIAL AND METHODS

Study area

This study was carried out in Huye district located in the Southern province, Rwanda. Huye district is generally known as one of the most densely populated areas with basically smallholder farmers. The major economic activities of the people are farm-based, and the major crops grown are food crops such as, banana, beans, maize, sweet potato, cassava, sorghum and coffee.

Data collection

The present study was based on primary data and used both qualitative and quantitative research methods. The data were collected through trained enumerators using a pre-tested questionnaire. Simple random sampling technique was used to select a representative sample of 300 smallholder farmers in three sectors of Huye district namely Maraba, Mukura and Ngoma. The samples were drawn from participants and non-participants in microfinance services. In Maraba sector, of the 149 respondents selected; 75 participated in microfinance while 74 were non-participants, in Mukura (of 85 respondents, 35 participants and 50 non-participants) and Ngoma (of 66 respondents, 26 participants and 40 non-participants) (Table 1).



Data Analysis

To analyze the socio-economic factors affecting smallholder farmers' participation in microfinance markets in Huye district, the Probit regression model was used [17]. Probit regression was well suited for describing the relationships between a categorical outcome variable and one or more categorical or continuous predictor variables. Marginal effects which indicate the percentage change in the probability of the dependent variable taking a certain outcome given a one-unit change in independent variable. Probit model is preferred as binary and takes a value of 1 if smallholder farmers participate in microfinance markets and the value of 0 if small farmers do not participate in microfinance markets [18].

The Probit regression is expressed as:

$$Y_i^* = \sum_{k=1}^k \beta_k X_{ki} + \varepsilon_i \quad (1)$$

$$Y_i = 1 \quad \text{If } Y^* > 0 \quad (2)$$

$$Y_i = 0 \quad \text{If } Y^* \leq 0 \quad (3)$$

Where, participation in microfinance markets estimates has dichotomous realization on Y_i

β_k is parameters of the k^{th} variable to be estimated, X_{ik} is variable determining participation decision in microfinance markets and ε_i is the disturbance term. Dependent variable for the model is determined as: "Participation in microfinance markets" (1= if yes, 0= No). Independent variables used in Probit regression model were socio-economic characteristics of the respondents and included size of household (number of people living in the household), sex of household head, age of household head, education level, land size (in hectares), total annual income, cooperative membership, household savings and distance between the household residence and microfinance institution.

RESULTS AND DISCUSSION

Descriptive statistics

Characteristics of respondents

Table 2 compares the household characteristics of participants and non-participants in microfinance markets in the study sample. There were more women than men in both participant and non-participant categories. Households who were participants in microfinance markets were more educated, had more household members and bigger land sizes compared to non-participants and overall sample average. Table 2 also shows that participants lived closer to microfinance institutions compared to non-participants. Finally, non-participating households had the least of total annual income in comparison with participants.



Sources of income among smallholder farmers in Huye district

Table 3 shows that the main source of income for both participants (15%) and non-participants (14%) in microfinance markets was farming. Besides farming, both participants (7%) and non-participants (6%) also generated their income from business activities. However, more of the non-participating households (10.6%) did farming and business together in comparison to non-participants (5%). The non-participating households were more engaged in off-farm activities (carpentry, self-employment, transportation, teaching and house renting) compared to the participating households. Salary as a source of income was reported more among those households that did not participate in microfinance markets.

Factors affecting smallholder farmers' participation in microfinance markets

Table 4 presents the estimation results of probit model of the factors affecting smallholder farmers' participation in microfinance markets. The model Chi-square value is 77.83 and its p-value is 0.00, which is highly significant. This shows that the considered socio-economic variables have significant effect on participation in microfinance markets. Thus, the overall model is significant. The Pseudo R² is 0.1883, which indicates that 18.83% variation in the level of participation in microfinance markets is explained by the socio-economic variables under consideration. Out of the nine variables included in the model, six variables (household size, education, total annual income, cooperative membership, distance and savings) had a significant effect on participation in microfinance markets (Table 4).

Household size was significant at 5% and positively influenced participation in microfinance markets and this result agrees with the findings of Nouman *et al.* [19]. The marginal effect results show that if the household number increases by one, the likelihood to participate in microfinance markets will increase by 9%. Education level was significant at 10% and positively affected the participation in microfinance markets. This indicates that household heads with higher level of education are more likely to get involved in microfinance markets compared to those with lower education level. The partial effects stated that an increase in the level of education by one year, would increase the probability of participation in microfinance markets by 7.4%. Level of education of smallholder farmers was previously reported to affect participation and access to agricultural credit in Rwamagana and Muhanga districts in Rwanda [20,21] and in Fujian province in China [22]. This is because households with educated members are believed to have more knowledge and improved access on microfinance services [23]. A positively significant relationship was observed between total annual income and participation in microfinance markets (at 5% level). Smallholder farmers with higher income status are more likely to participate in microfinance markets as compared to those with less income. Anang *et al.* [24] reported similar findings, where households with higher incomes in Northern Ghana had more access to credit as compared to the lower income ones. This is because richer farmers have economic advantage and are likely to be trusted by microfinance institutions. The results indicated also that cooperative membership and household savings increased the probability to participate in microfinance markets by 22.2% and 17.9%, respectively.

On the contrary, distance to the nearest microfinance office had a negative effect on the probability of smallholder farmers' participation in microfinance markets. Farmers who resided far from microfinance offices were less likely to participate in microfinance markets than those located nearby, and this attributed to heavy transport costs associated. These findings agree with Anang *et al.* [25] who reported a negatively significant relationship between distance and access to agricultural credit.

CONCLUSION

The microfinance industry in Rwanda has experienced high growth and is becoming an important driver in the socio-economic development. It continues to play a key role as a grassroots financial tool. This study assessed the factors that affect smallholder farmers to participate in microfinance markets in Rwanda. To achieve this objective, the study used the descriptive and Probit regression to assess the factors that affect smallholder farmers' participation in microfinance markets.

The results from descriptive analysis show that the main source of income for respondents was farming. However, off-farm activities also greatly contributed to households' income. Socio-economic factors that affected smallholder farmers' participation in microfinance markets were household size, level of education, size of land, total annual income, total annual expenditure, and distance.

There is evidence that microfinance markets have enabled smallholder farmers to improve their economic conditions in Rwanda especially in Huye district. The study concludes that participation in microfinance markets led to an increase in of the smallholder farmers' income and standard of living. However, there is need for microfinance institutions to create more awareness programs aimed at equipping smallholder farmers with more information and skills related to access of microcredits for agricultural development. The expansions of financial systems are needed to enable greater smallholder farmers' access to affordable services for financing in agriculture. It is important for the policy makers in the government to encourage small farmers to participate in services provided by the microfinance sector in order to enable them to increase their agricultural productivity, thus leading to their socio-economic development.

The Government of Rwanda should put more efforts to improve the performance of financial markets to make smallholder farmers develop willingness to adopt new practices and technologies in order to increase agricultural productivity.

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Table 1: Participation in microfinance services

Sectors	Yes	Percent	No	Percent	Total	Percent
Maraba	75	25	74	24.7	149	49.7
Mukura	35	11.6	50	16.7	85	28.3
Ngoma	26	8.7	40	13.3	66	22.0
Total	136	45.3	164	54.7	300	100

Table 2: Descriptive statistics of some variables used in the study

Variables	Participants (N=136)		Non-Participants (N=164)		Overall (N=300)	
	Mean	Std.	Mean	Std.	Mean	Std.
Sex (1 =Male, 0 =Female)	0.4	0.493	0.38	0.488	0.39	0.489
Education	2.16	0.945	1.86	0.673	2	0.82
HH Size	4.96	1.901	4.52	1.811	4.57	1.882
HH land Size (ha)	1.87	0.758	1.66	0.73	1.75	0.749
Distance to microfinance institution (km)	1.41	0.694	1.71	0.983	1.58	0.876
Total Annual Income (Rwandan Francs)	524,716	795,881	235,927	215,827	366,845	576,304

Table 3: Sources of income of smallholder farmers in Huye district

Sources of income	Participants (N=136)	Non-participants (N=164)	Overall N=(300)
Business	21 (7%)	18 (6%)	39 (13%)
Carpentry	11 (3.6%)	14 (4.7%)	25 (8.3%)
Farming	45 (15%)	42 (14%)	87 (29%)
Farming and Business	15 (5%)	32 (10.6%)	47 (15.6%)
Constructing	19 (6.3%)	11 (3.7%)	30 (10%)
Salary	5 (1.6%)	15 (5%)	20 (6.6%)
Self-employment	5 (1.6%)	9 (3%)	14 (4.6%)
Transportation	5 (1.6%)	10 (3.4%)	15 (5%)
Teaching	5 (1.6%)	6 (2%)	11 (3.6%)
Handicraft	5 (1.6%)	2 (0.7%)	7 (2.3%)
Renting House	0(0)	5 (1.6%)	5 (1.6%)
Total	136 (45.3%)	164 (54.7%)	300 (100%)

Table 4: Factors affecting smallholder farmers’ participation in microfinance markets

<i>Variables</i>	<i>Marginal Effect Coefficient</i> <i>(dy/dx)</i>	<i>Std. Err.</i>	<i>P> t </i>	<i>[95% Conf. Interval]</i>	
Household size	0.09015**	0.0438748	0.040	0.004157	0.176143
Gender	0.061014	0.06553	0.352	-0.1698961	0.4769916
Age	0.0149255	0.03027	0.622	-0.1117538	0.1869088
Education	0.0740864*	0.04246	0.081	-0.0230001	0.3960506
Size land	0.0523578	0.04277	0.221	-0.0792799	0.3429195
Total annual Income	2.80E-07**	0	0.018	1.22E-07	1.29E-06
Cooperative member	0.2229664***	0.06266	0.001	0.2468282	0.8872469
Distance	-0.1169799***	0.0389	0.003	-0.4865846	-0.1024494
Savings	0.1790404*	0.08277	0.051	-0.000231	0.8514651

Note: * significant at 10%; ** significant at 5% and *** significant at 1%

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