

FINANCIAL INCLUSION IN AGRICULTURE: LESSONS FROM ZIMBABWE

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ABSTRACT

Low levels of financial inclusion and high levels of poverty particularly in the agricultural sector motivated this study. The paper sought to investigate the drivers of financial inclusion among the smallholder farmers in Zimbabwe using household-level data. The logistic regression was used to assess the factors that influence the probability of households to demand financial products i.e., a bank account. The results from the log it regression analysis indicated that financial inclusion was influenced by off-farm income, age of the household, distance, transaction costs, agricultural extension service and size of the household. Household size, transaction costs, agricultural extension service (households not participating) had a negative influence on the probability of a household having a bank account. As a result, the government and financial service providers must come together to ensure that farmers do have access to financial products and services through shortening the distances travelled by farmers to financial institutions, intensifying the various financial products provided by various financial institutions through the formation of public-private partnerships as well as increasing extension services where farmers receive financial education.

Keywords: Agriculture, Financial Inclusion, Smallholder Farmers, Zimbabwe JEL G2, G28, G5.

INTRODUCTION

Financial inclusion is among the attractive global topics today. Governments, financial institutions, and policymakers are increasingly developing an interest in understanding it more deeply. The existence of financial exclusion has been acknowledged by many developed and developing nations as one of the socio-economic challenges on the agenda (Sarma & Pais, 2011, Chakraborti & Sanyal, 2015; Wokabi, 2018). The World Bank in its 2020 targets placed universal financial access as one of its objective (Demirguc-Kunt et al., 2018, WBG, 2018a). The World Bank Group (WBG) in 2017 clearly highlighted that many countries are developing National Financial Inclusion Strategies (NFIS) to ensure that resources and actions are put in place to achieve financial inclusion commitments. NFIS can be defined as roadmaps of actions, agreed, and defined at the national or subnational level (WBG, 2016, WBG, 2018b, Chakraborti & Sanyal, 2015;) Wokabi, 2018. This shows how financial inclusion has become an attractive topic globally and more than 50 countries made headline financial inclusion commitments as of the end of 2014 (Louis & Chartier, 2017, Demirguc-Kunt et al., 2018). Financial inclusion has been one of the important elements in the fight against poverty (Mhlanga, 2020). Sarma & Pais (2008) argued that financial inclusion can help to fight poverty by facilitating the efficient allocation of productive resources.

Various studies were conducted in various countries to understand the various dynamics of financial inclusion. For instance, Mhlanga & Denhere (2021), Amoah, et al., (2020), Eldomyaty, et al., (2020); Omar & Inaba, (2020); Ndanshau & Frank, (2021); Ozili, (2020).

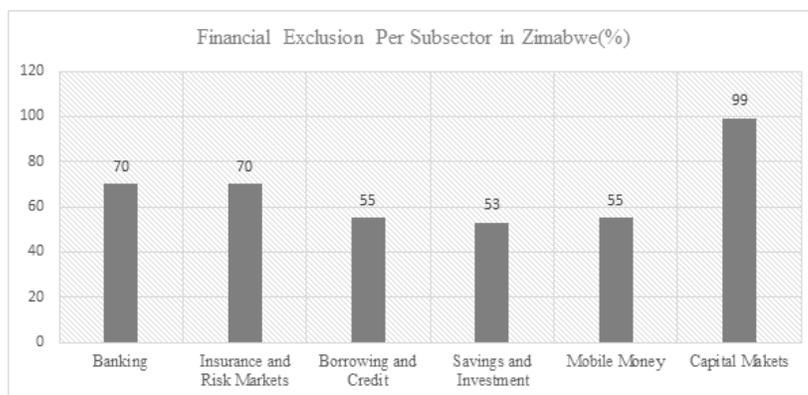
Mhlanga & Denhere (2021) investigated the determinants of financial inclusion in Southern Africa with a direct focus on South Africa. Using logistic regression analysis, the study found out that financial inclusion was driven by income level, population group, gender, marital status, age, and level of education. Amoah, et al., (2020) also examined the factors that drive people to use mobile money in the Greater Accra Region of Ghana. Using the logistic regression, the study found out that being young, availability of phone credit recharge, the level of education and income were the determinants of mobile money use in Ghana. The results by Amoah, et al., (2020) agreed with Mhlanga & Denhere (2021) on the level of income and the level of education on the determinants of financial inclusion. The study by Amoah, et al., (2020) went further to recommend that consistent use of mobile money by the people to have access to social and economic services can help to promote financial inclusion, financial empowerment, and the wellbeing of the people.

Another study by Eldomiaty, et al., (2020) examined the impact of world governance indicators on the improvement of financial inclusion in various world economies. With panel regression analysis, the study found out that when corruption is controlled, government effectiveness is monitored and the existence of political stability, voice and accountability are critical factors that influence world governance indicators on financial inclusion. Omar & Inaba, (2020) also found out financial inclusion is one of the key factors of social inclusion which can help to fight poverty and income inequality. In their study, Omar & Inaba (2020) investigated the impact of financial inclusion in fighting poverty and income inequality. Using the unbalanced panel data analysis, the study found out that age dependency ratio, inflation, income inequality, per capita income and the ratio of internet users were the factors highly influencing financial inclusion. Omar & Inaba (2020) also found out that financial inclusion reduces poverty and income inequality in developing countries. Promotion of usage and access to formal financial services by the marginalized parts of the population can assist to maximize the welfare of the society.

Another work by Ndanshau & Frank (2021) examined the determinants of financial inclusion in Tanzania using the Tanzania Fin scope survey of 2017. Employing the probit model the study found out that being middle-aged, residing in urban areas, being formally employed, being male and having more income and being educated were the drivers of financial inclusion in Tanzania. The barriers to financial inclusion that were revealed by Ndanshau & Frank (2021) were the lack of sufficient financial services and awareness of the available financial services. Ozili (2020) provided a comprehensive review of the recent evidence on financial inclusion from all the regions of the World. Ozili (2020) found out that financial inclusion is influenced by the level of financial innovation, poverty levels, the stability of the financial sector. The state of the economy, financial literacy and regulatory frameworks are different across the different countries in the world. Motivated by the observations, the study considers investigating the drivers of financial inclusion among the smallholder farmers in Zimbabwe.

FINANCIAL INCLUSION IN ZIMBABWE

In Zimbabwe financial inclusion is defined as: “the effective use of a wide range of quality, affordable and accessible financial services, provided fairly and transparently through formal or regulated entities to all Zimbabweans “(Reserve Bank of Zimbabwe, 2016). FSDAfrica (2020) reported that financial inclusion is among the key challenges with all the subsectors of the financial services in Zimbabwe. Figure 1 below shows the percentage of Zimbabwe’s population excluded from each of the subsectors of the financial services in the year 2014.



Source: Author's Analysis Fsdafrika, (2020) Data

FIGURE 1
FINANCIAL EXCLUSION PER SUBSECTOR IN ZIMBA

Figure 1 above is showing financial exclusion per sector in Zimbabwe. The capital markets are the sector with the highest exclusion percentage which was at 99% followed by banking and insurance and risk markets with 70% each. Borrowing and credit market, as well as mobile money, had 55%. Savings and investment had the lowest concerning exclusion with 53%. With 70% of people who are financially excluded in Zimbabwe, it shows that financial exclusion is a major issue in the country. The percentage of the population that is financially included in the banking sector is just 30%. According to Mhlanga (2020), the number of people who are financially included is skewed towards the urban areas, particularly Harare and Bulawayo. The percentage of the population that had access to banking services in the rural areas was 23%. Nationally, 14% of the Micro, Small & Medium Enterprises (MSMEs) while only 1% of the adult population were making use of the capital markets services (FSDAfrica, 2020). Since 2014 there was some progress in financial inclusion mainly driven by technology. The Global Findex in 2017 reported that more than half of the population which was 53% made or received a digital payment in 2016 which shows that the adults had at least taken the first step towards financial inclusion (FSDAfrica, 2020). The proportion of adults with a mobile money account increased from 22% to 49% between 2014 and 2017.

One of the critical points that need to be highlighted is the fact that there is significant variation when it comes to financial inclusion. The gap between the female and males is relatively small which 51% versa is 46%. However, the gap is greater when it comes to education and wealth. The other issue is that the young people in Zimbabwe aged 15-24 have the least probability of having a bank account compared to those aged 25. One interesting fact was that mobile money accounts are more trusted by women. In Zimbabwe, Mobile money is doing well in improving financial inclusion. It is believed that one in three of the poorest 40% of Zimbabweans received a digital payment in 2017 compared to one in ten before 2017. Though fintech is doing wonders in Zimbabwe when it comes to financial inclusion, it is not clear whether it is converted into deeper financial inclusion, the provision of appropriate affordable and accessible tools to facilitate payments, manage liquidity and meet goals as well as building resilience.

LITERATURE REVIEW ON FINANCIAL INCLUSION

Since early 2000 there has been a development of the literature on financial inclusion due to the real problems of financial exclusion facing humanity across the globe (Levine, 2005; Mhlanga, 2020). The other reason for the increase in the literature on financial inclusion is its direct and indirect relationship with poverty reduction, inequality and even food security. The United Nations view financial inclusion as access to financial resources at affordable prices by everyone from sound and safe institutions with proper regulations (Mhlanga et al., 2020; Mhlanga & Dunga, 2020). The UN also states that financial products should be provided in an environment with fair competition so that a variety of affordable products can be offered to the people (Chowhan & Pande, 2014). It is generally believed that the phrase financial exclusion was used for the first time in 1993 by geographers who were troubled by lack of physical access to banking services due to the closure of bank branches. Before the 1990s research on the barriers to the conventional financial system were researched. According to various scholars like Hogarth and O'Donnell (1999); Kempson (2000) debate on the real factors influencing financial inclusion is now being investigated moving from the geographical access aspect. Claessens (2006) stated that the European Commission came up with the various types of exclusion which include saving exclusion, credit exclusion, insurance exclusion and banking exclusion.

Various scholars began to investigate the determinants of financial inclusion, the measurement of financial inclusion, for instance, Omar & Inaba (2020), Kim, et al., (2020), Ouechtati (2020). Other scholars went further to assess the impact of financial inclusion on poverty reduction authors like Erlando, et al., (2020), Omar & Inaba (2020), Inoue (2019), Omar & Inaba (2020) investigated the impact of financial inclusion on reducing poverty and income inequality and the determinants in 116 developing countries. Using unbalanced annual panel data for the period 2004-2016 and the constructed novel index of financial inclusion the study found out that age dependency ratio, per capita income, the ratio of internet users, inflation and income inequality were the significant factors in influencing financial inclusion in developing countries. Omar & Inaba (2020) also found out that financial inclusion significantly reduces poverty rates as well as income inequality in developing countries. The other critical conclusion from the study by Omar & Inaba (2020) was that the promotion and usage of formal financial services by the marginalized population can assist to maximize the overall welfare of the people.

In another study, Kim, et al. (2020) examined the influence of religious and social factors on financial inclusion in Muslim countries. The study was motivated by the fact that may Muslim nations have lower financial inclusion across the globe. The study found out that religious factors, social inequality factors like gender inequality, education level and social opportunity level and work were the determinants of financial inclusion. Ouechtati (2020) also investigated the impact of financial inclusion on poverty and income inequality for a sample of 53 developing countries in the period which span from 2004 to 2017. The results revealed a strong negative relationship between poverty and financial inclusion. The study by Ouechtati (2020) discovered that access to credit and deposit accounts from commercial banks tend to reduce poverty greatly. The other conclusion that was highlighted by Ouechtati (2020) was that high bank penetration is critical in facilitating access to financial services for the poor and ultimately reduces income inequality.

Adil & Jalil (2020) also investigate the process of financial inclusion in Pakistan from the supply side. Using the Autoregressive Distributive Lag (ARDL) and the time-series data from the banking sector of Pakistan the study revealed that the size of the bank, geographic outreach and demographic outreach of the bank contributes a lot to financial inclusion. The other factors

that Adil & Jalil (2020) highlighted were improvement in soft consumer loans and increase in small-sized advances improve financial inclusion process. Irankunda & Van-Bergeijk (2020) investigated the determinants of financial inclusion among the informal sector workers in Rwanda to strengthen Rwandan policies of improving financial inclusion in the informal sector. Using the ordered legit model, the study found out that gender was the significant factor in the use of banking services by informal sector workers. The other factor that was significant in influencing financial inclusion was the presence of the financial institution in the home location of the street vendor which buttresses the importance of good infrastructure in the improvement of financial inclusion.

In Sub-Saharan Africa, Ahmad, et al., (2020) surveyed the literature on mobile money to assess its contribution to the promotion of financial inclusion and development in Sub-Saharan Africa. Zins & Weill (2016) also examined the determinants of financial inclusion in Africa using the World Bank's Global Findex database on 37 African nations. From the probit model estimation, the study found out that being male, being rich and educated as well as being older were discovered to be the determinants of financial inclusion. The factors education and income were the factors viewed as the most important factors in influencing financial inclusion in Africa. Chakraborti & Sanyal (2015) also documented the determinants of financial inclusion in Africa from 2005 to 2014. Using the dynamic panel data approach, the study discovered that per capita income, broad money as a percentage of gross domestic product, literacy rate, access to the internet and Islamic banking presence were the factors influencing financial inclusion in Africa. It was highlighted that policymakers and financial services providers come up with innovative ways to enhance the financial inclusion of the excluded poor people in Africa.

RESEARCH METHODOLOGY AND DATA

Data used in this study was collected using a structured questionnaire developed and approved at North-West University by the North-West University, Management and Economic Sciences, Law, Theology Engineering and Natural Sciences Research Ethics Committee (NWU-EMELTEN-REC) under the ethical clearance number NWU-00354-19-2A. The study also received clearance from the Ministry of Lands, Agriculture, Water, Climate and Rural Resettlement in Zimbabwe. Sources of data were household heads male and female who were practicing agriculture during the time of the survey. The province that was targeted by the survey was Manicaland a province in Zimbabwe. A1 and A2 farm models were those targeted by the survey. In Zimbabwe, A1 is a settlement model in the form of communal subsistence farming in a villagized model or self-contained model variants (Goebel, 2005).

The self-contained variant model is where people settle in self-contained plots where they are responsible for the infrastructure development of the plots while the villagized model is where people settle in villages and the state provide services like infrastructure development (Goebel, 2005; Mhlanga, 2020). On the other hand, A2 has variants of small, medium, large, and peri-urban farm models (Chigumira et al., 2014). In this study, only small-scale farm models were part of this study. The sampling procedure that was used was non-probability convenient sampling. To select the sample for the study a total of 405 households who indicated that were in farming were used for the current study.

ECONOMETRIC MODEL

Dependent Variable

The dependent variable is binary, the dependent variable assumes the values of 1 when the household indicates that he/she has a bank account and 0 otherwise *i.e.*, when the household head does not have a bank. The logit model was used following the works of Sanderson, et al., (2018), Masiyandima, et al., (2017), Demirguc-Kunt, et al., (2018), Honohan (2008).

Empirical Model

The Log it Model

The dependent variable, in this case, is dichotomous which motivated the use of conditional probability models. As a result, logistic regression analysis was employed using the logit model. The equation of the logit model transforms the log-odds of success to a linear component as shown:

$$\log\left(\frac{\pi_i}{1 - \pi_i}\right) = \sum_{k=0}^K x_{ik} \beta_k \quad i = 1, 2, \dots, N \quad 1$$

In equation one, to find parameters where the probability of the observed data is the greatest, we should use maximum likelihood estimation. To proceed with the estimation of the logit model, the first thing is to state the probability that $Y: 1$. the probability that $Y: 0$ is written as $1 - \hat{P}$ Where \hat{P} is the probability? $Y: 1$ & $Y: 0$ only show that the household has access to electricity or not. $Y: 1$. When a household has access to a bank account and $Y: 0$ is when a household does not have access to a bank account. This will drive lead to the following equation:

$$\ln\left(\frac{P}{1 - P}\right) = \beta_0 + \beta_1 X \quad 2$$

To find the expected probability that $Y: 1$ for all the values of X is calculated as shown in equation 3:

$$\hat{P} = \frac{\exp(\beta_0 + \beta_1 X)}{1 + \exp(\beta_0 + \beta_1 X)} = \frac{e^{\beta_0 + \beta_1 X}}{1 + e^{\beta_0 + \beta_1 X}} \quad 3$$

The model with the variables used as the factors influencing the demand for a bank account will be expressed as:

$$\ln\left(\frac{P}{1 - P}\right) = \beta_0 + \sum_i^n \emptyset_i + \sum_j^n \emptyset_j + s \quad 4$$

In equation 4 above $\sum_i^n \emptyset_i$ represents all the factors in the model, while all the covariates are shown by $\sum_j^n \emptyset_j$. Substitution the above equation with Z will make the equation appear as follows:

$$Z = \beta_0 + \beta_1 \text{Education level} + \beta_2 \text{Gender} + \beta_3 \text{Age} + \beta_4 \text{Household size} + \beta_5 \text{Off-farm income} + \beta_6 \text{Land size} + \beta_7 \text{Informal financial market participation} + \beta_8 \text{Agricultural extension service} + \beta_9 \text{Distance} + \beta_{10} \text{Transaction costs} + \beta_{11} \text{Financial literacy} + \beta_{12} \text{Marital status} + s$$

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Table 1		
INDEPENDENT VARIABLES. SOURCE: AUTHOR'S ANALYSIS		
Variable	Unit	Expected Sign
Education level	Number	+
Gender of Household head	Male=1, Female=0	+/-
Age of household head	Number	+/-
Household size	Number	+/-
Off-farm income	Unites States Dollars	+/-
Land Size	Hectors	+
Informal Credit Participation	Dummy Variable: Participation=1 Non-Participation=0	-
Agricultural Extension Service	Dummy Variable: Participation=1 Non-Participation=0	+/-
Transaction cost	Cost of withdrawal, Opening Account	+/-
Distance from the financial institution	Distance in Kilometres	+/-
Financial Literacy	Knowledge about Financial Products	+/-
Marital Status	Married=1 and 0 otherwise	+/-

The table above is giving all the independent variables that were used in the study. The variables were twelve in total which are education level, the gender of household head, age of household head, household size, off-farm income, land size, informal credit participation, agricultural extension service, transaction cost, and distance from the financial institution, financial literacy, and marital status. The following section will give the results of the study starting with the descriptive statistics.

RESULTS AND DISCUSSION

Descriptive Statistics

Table 2		
GENDER COMPOSITION OF THE HOUSEHOLDS IN THE SAMPLE. SOURCE: AUTHOR'S CALCULATIONS		
Female	142	35%
Males	263	65%
Total	405	100%

Table 2 above indicates that from a total of 405 households who successfully participated in the survey, 142 translating to 35% were females while 263 translating to 65% were males. Table 3 is summarizing the financial participation of the households in the sample.

Households with insurance	73	18%
Households without insurance	332	82%
Total	405	100%
Households with a bank account	180	44%
Households without a bank account	225	56%
Total	405	100%
Household who saved	60	15%
Households that did not save	345	85%
Total	405	100%
Households who borrowed	112	28%
Households that did not borrow	293	72%
Total	405	100%

Table 3 is summarising household financial participation in the sample. The information that is presented is the number of households with bank accounts, those with insurance, those who saved with financial institutions and those who saved with formal financial institutions. The logit results are presented in Table 4.

Variable	B	S.E.	Wald	Df	Sig.	Exp(B)
Gender (1)	-0.036	0.231	0.025	1	0.875	0.964
Age	0.06	0.012	26.631	1	.000***	1.062
Household size	-0.289	0.065	19.84	1	.000***	0.749
Off-farm income	0.003	0.001	14.506	1	.000***	1.003
Education level	0.371	0.239	2.409	1	0.121	1.45
Agricultural extension service (1)	-0.768	0.308	6.215	1	.013**	0.464
Distance	0.101	0.061	2.758	1	.007*	1.106
Transaction costs	-0.105	0.023	21.333	1	.000***	0.9
Marital Status (1)	0.273	0.25	1.201	1	0.273	1.315
Financial literacy (1)	0.126	0.224	0.316	1	0.574	1.134
Constant	-2.113	0.93	5.163	1	0.023	0.121

Omnibus test: Step, model, and block: Chi-square (79.961) df (10) Sig (0.000). -2 log-likelihood (478.103a) Cox and Snell R Square (0.179), Nagelkerke (0.240) (significant at 1%***, 5%** , 10%*)

Table 4 is giving us the financial results from the logistic regression analysis. After testing for various tests like multicollinearity, the model proved that it was free from multicollinearity since all the independent variables had a variable less than 0.8 in absolute terms. The results from the logistic regression showed that age of the household head, household size, off-farm income, agricultural extension service, distance and transaction costs were the variables that were significant in influencing household financial inclusion. The variable age was significant at a 1% level of significance with a (P-value, 0.000) and odds ratio of 1.062. The variable had a positive influence on the bank account. The results reveal that age increases the probability of a household to use formal financial services, a unit change in the age of a household the odds of demand for financial services *i.e.*, bank account will change by 1.062. As people grow older, they tend to understand the importance of financial products and services compared to young people. These results were supported by many scholars including Uddin, et al., (2017) who investigated the determinants of financial inclusion in Bangladesh found out that age was among the various determinants of financial inclusion.

The results also revealed that the size of the household was a significant factor influencing financial inclusion. The variable was significant at a 1% level of significance with a (P-value, 0.000) and an odds ratio of 0.749. The results reveal that a unit change in the size of the household will lead to a decline in the odds of demand for financial service and products like a bank account by approximately 0.749. These findings were in line with what other scholars found, where it was argued that households with more members have a greater chance of being poor which can later affect their ability to participate in the financial market. When the family size is big, the likelihood of the income being committed to consumption with little on saving is very high. This could be the reason for the negative influence on financial inclusion (Klebanov et al., 1994; Lanjouw & Ravallion, 1995).

The results also revealed that the amount of off-farm income a household possess can influence financial inclusion positively. The variable was significant at a 1% level of significance with a (P-value, 0.000) and an odds ratio of 1.003. The results imply that a one-unit change in the amount of off-farm income will lead to the change in the odds of demand for financial services and products like a bank account by 1.003. Many other studies support the findings that the amount of income that an individual possesses influences the level of financial participation, for instance, Nwaru, et al., (2011), Musabanganji, et al., (2015), Chandio, et al., (2017), Baiyegunhi & Fraser (2014), Chakraborti & Sanyal (2015). The results also revealed that the variable agricultural extension service was significant at a 5% level of significance (P-value, 0.013) and an odds ratio of 0.464. The variable agricultural extension service had a negative influence on financial inclusion.

The results indicated that households who participate in agricultural extension service have a higher probability of having a bank account compared to the household that is not part of the agricultural extension service. The odds of demand for financial products are 0.464 less for households who were not part of the agricultural extension service compared to the household that was part of the extension service. The fact that households who were not part of the agricultural extension service had less probability of demand for financial products could be because of the education farmers receive from agricultural extension workers. Farmers who receive an education are more likely to participate due to being exposed to various financial products.

The variable distance to the nearest financial institution was also a significant variable at a 1% level of significance (P-value, 0.007) in explaining the determinants of financial inclusion among the smallholder farmers. Distance to the nearest financial institution can influence financial inclusion in two ways, either positive or negative depending on the distance. Shorter distances tend to encourage households to use financial services compared to situations where financial institutions are far from households (Soumaré et al., 2016; Zulfiqar et al., 2016). The results indicated a decline in the distance by a unit, the odds of demand for a bank account will increase by 1.106. The results were supported by many scholars for instance Irankunda & van Bergeijk (2020) investigated the determinants of financial inclusion among the informal sector workers in Rwanda, the study found out that the presence of the financial institution in the home location of the street vendor which buttresses the importance of good infrastructure in the improvement of financial inclusion. Kiiza & Pederson (2001), as well as Oboh & Kushwaha (2009), pointed out that nearness to the financial institution influences the probability of households, especially rural households, participating in the formal financial markets.

Finally, the study found out that transaction costs were significant in influencing financial inclusion. The variable was significant at a 1% level of significance (P-value, 0.000) with an odds ratio of 0.900. Transaction costs can influence financial inclusion in two ways positive and negative. In situations where transaction costs are high, households find it very difficult to access financial institutions like banks and in circumstances where there are low transactions households are motivated to use transaction costs. A unit change in the transaction costs leads to a decline in the odds of usage of financial services by 0.900 for households in farming. The results indicate that transaction costs decrease the likelihood of households participating in the financial market which affects the level of financial inclusion. Many scholars support the findings, for instance, Uddin, et al., (2017), Soumaré, et al., (2016), Oyelami, et al., (2017) who found out that high transactions' costs can act as a barrier to financial inclusion.

CONCLUSION AND POLICY RECOMMENDATIONS

Financial inclusion is among the attractive global topics today. Governments, financial institutions, and policymakers are increasingly developing an interest in understanding it more deeply. The existence of financial exclusion has been acknowledged by many developed and developing nations as one of the socio-economic challenges on the agenda. The study intended to assess the determinants of financial inclusion among the smallholder farmers in Zimbabwe. Using a logit model, the results revealed that age of the household head, household size, off-farm income, agricultural extension service, distance and transaction costs were the variables that were significant in influencing household financial inclusion. From the results, it is generally important to ensure that the government and financial service providers shorten the distances to the nearest financial institutions through establishing access points near the households for instance at growth points, filling stations and major supermarkets. This can help smallholder farmers to be able to access formal financial services. It is also critical for financial service providers to review their charges periodically because it is one of the variables that can prevent households from using financial services.

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