

European Journal of Business and Management ISSN 2222-1905 (Paper) ISSN 2222-2839 (Online) Vol 4, No.21, 2012



# Socio-Economic and Institutional Constraints to Accessing Credit

# among Smallholder Farmers in Nyandarua District, Kenya

Muiruri, E. J.<sup>1</sup>, Nyangweso, P. M.<sup>1</sup>, Kipsat, M. J.<sup>1</sup>, Ndambiri, H. K.<sup>2</sup>, Ritho C.<sup>3</sup>, Ng'ang'a, S. I.<sup>4</sup>, Kefa C.<sup>4</sup>, Ogada J. O.<sup>4</sup>, Omboto P. I.<sup>4</sup>, Kubowon, P. C.<sup>4</sup> & Cherotwo F. H.<sup>4</sup>

- 1. Department of Agricultural Economics, Moi University, P.O. Box 3900, Eldoret, Kenya.
- 2. Centre for Environmental Economics and Policy in Africa, University of Pretoria, 0002, Pretoria, RSA
  - 3. Department of Agricultural Economics, University of Nairobi, P.O. Box 30197, Nairobi, Kenya.
  - 4. School of Business and Economics, Karatina University College, P.O. Box 1957, Karatina, Kenya.
  - 5. Department of Quantitative & Entrepreneurship Studies, Moi University, P.O. Box 3900, Eldoret.
    - \* E-mail of the corresponding author: <a href="mailto:ndambirihk@yahoo.com">ndambirihk@yahoo.com</a>

#### **Abstract**

Amongst the challenges faced by smallholder farmers in production is inaccessibility to credit. This study sought to identify household socio-economic and institutional constraints influencing access to credit among smallholder farmers in Nyandarua District. The study used a Logit model. Both quantitative and qualitative data were acquired from primary and secondary sources. Primary data was collected using questionnaires through a survey design. A sample of 164 smallholder farmers was selected using stratified, multi-stage random sampling techniques. Data was analyzed using descriptive statistics and maximum likelihood method using Statistical Package for Social Sciences (SPSS). The study established that socio-economic constraints such as age, gender, household size, farm income, collateral and awareness are critical determinants of access to credit. The study also established that institutional requirements such as costs involved in operating / maintaining bank accounts, loan requirements and transaction costs involved in the credit process influenced access to credit. The study concludes that household socio-economic characteristics and institutional requirements influence access to credit. Key recommendations made include the need by government to deal with bureaucracies involved in land registration to benefit majority of smallholder farmers who remain insecure in the land they use without proof of ownership and also to make easier the registration of lease certificates for those who do not own land and use land on leasehold tenure system. Financial institutions should also put in place less stringent credit requirements and reduce credit costs especially interest rates to make credit more affordable.

Keywords: socio-economic and institutional constraints, credit access, smallholder farmers, logit model.

#### 1. Introduction

The agricultural sector is a major contributor to Kenya's economic development and one of the major stakeholders in this sector is the smallholder farm sector. In 2008, agriculture was predominantly practiced by small scale farmers who accounted for 75 percent of the total output (Ochango, 2008). There are about three million smallholder farms of which 80 percent are less than two hectares (CBS, 1996). Attempts have been made by the government, the private sector and the civil society to empower the small scale farmer but the impact is yet to be felt both on the local and the global scene. Most of the attempts have only helped in raising awareness and a little capacity building but there is still lack of a conducive policy environment, adequate infrastructure, institutional innovations and public-private sector partnerships (Ochango, 2008). Most small scale farmers in Kenya today are aware of the availability of improved agricultural



production technologies but only a few use them. That could be attributed to a number of reasons such as inaccessibility to credit and rampant poverty among smallholder farmers in the rural areas. It is therefore essential to empower small scale farmers with a view to addressing these two issues. Sustainable economic growth is central to poverty reduction but then this may not be the way to empower smallholder farmers. In any case, smallholder farmers should form some of the fundamental dynamics of sustainable development and growth. This calls for a bottom-up approach where the key issues concerning smallholder farmers are addressed. In affirming this, Asenso (1993) revealed that promotion of efficient, sufficient and widely accessible credit is key to achieving pro-poor and poverty reduction goals. Access to credit plays a critical role in helping smallholder farmers widen their economic opportunities, increase their asset base and diminish their vulnerability to external shocks. However, that is not just about it. Whereas it may be a necessary condition to promote efficient, sufficient and widely accessible credit, the sufficient condition will be establishing the obstacles and stumbling blocks that stand in the way of uptake of this credit among the smallholder farmers.

Nyandarua is the second largest district of Central Province. According to the district's development plan for 2002-2008, it has 11 financial institutions, both formal and informal, comprising of banks, Micro Finance and others (GOK, 2002). These financial institutions have branches spread out across every division in the district. It is, however, intriguing to note that while these financial institutions exist in the district, access to credit among the smallholder farmers remains a major constraint and prospective borrowers are locked out of credit markets. In a constituency development report on poverty, Namunane (2008) noted that poverty levels increased in Nyandarua District. The district's Development Plan for 2002-2008 indicates that poverty afflicts nearly a third of the district's residents with the urban areas registering 56 percent and the rural areas recording 34 percent. This has also been attributed to inadequate access to credit among other factors. The high levels of poverty in the district, as corroborated by the poor poverty indicators, hinder majority of farmers from using recommended agricultural inputs. In cases where some inputs are used, they do not apply optimal levels due to financial limitation. With the abundance of financial institutions in the district, it would be expected that farmers would access credit from such institutions to ease their financial distress. However, this does not seem to be the case. This study, therefore sought to address the issue by establishing the socio-economic and institutional constraints hindering credit access and come up with policy recommendations for improving access to credit among smallholder farmers in the district.

#### 2. Materials and methods

#### 2.1 Study area

Nyandarua District has an area of 3,380 square kilometers. It comprises of six administrative divisions namely Ndaragwa, North Kinangop, South Kinangop, Ol Kalou, Ol Joro Orok and Kipipiri. Altitude drops from 3,999m in the Aberdare Ranges to 1,828m on the floor of the Rift Valley. Precipitation is bimodal and decreases rapidly from east to west with annual rainfall varying from 1,400 mm in the Aberdare Ranges to about 700mm in the Valley of Malewa River. Temperatures are moderate but can get as low as 7.1°C in the cold seasons of July, resulting in frost (CBS, 2003).

#### 2.2 Theoretical framework



The study was guided by the theory of the firm. In the theory, a firm (also a farmer in the context of this study) is seen as a production unit whose main aim in production is to maximize profits. A firm engages various factors of production which include land, labour, capital and management (Doll and Orazem, 1978). In this study, the factor of production that was of concern was capital. According to Milgrom and Roberts (1992), capital consists of assets, resulting from past human effort, available to earn future income. These assets can be produced on the farm or can be purchased outside the farm. Capital is also used in the creation of goods and services that are not themselves significantly consumed in the production process. Capital therefore includes buildings, equipment, machinery, livestock, land improvements and liquid cash among others. It is hence divided into three broad categories which are: long-term capital which consists of permanent durable assets which are fixed, medium-term capital which is partly fixed and consists of capital invested in movable assets which are income earning, and finally short-term capital (working capital) which consists of assets used quickly to produce a regular flow of income in one production period and in running day to day activities on the farm (Doll and Orazem, 1978). Creation of capital means giving up current consumption possibilities and hence the need for saving. Capital increases productivity of land and labour and that is the reward for sacrifices made to create capital. More often than not, money is used to acquire capital items (Milgrom and Roberts, 1992). Consequently, there is a possibility that increased amount of money is tied up in capital goods. That is likely to give rise to liquidity problems. In some cases, such as cultivation, capital is used before any production can take place and therefore, any shortage of capital can lead to lower profits. Should the firm face liquidity problems, then it has to look for external financing. That is where credit comes in. Given the economic status of smallholder farmers such as those in the study area, it is imperative that credit be assured in the presence of liquidity problems. Moreover, capital is vital in any business venture and hence the need for its assurance especially for those who rely entirely on farm income such as smallholder farmers.

# 2.3 Study design, data collection and analysis

The study based on a sample of 164 smallholder farmers picked through stratified, multi-stage random sampling. Data collection exercise was done between June and August, 2009. Data was collected using questionnaires. Information was also collected from key informants who included credit officers from AFC Nyahururu branch and those from Equity bank and Faulu Kenya branches in the district, Nyandarua District Agricultural Officer, Nyandarua District Crops Officer and Nyandarua District Livestock Officer. Oral interviews were conducted to collect information from the key informants. A voice recorder and note taking were used simultaneously to record the interviews. To achieve reasonable content validity, questionnaires were subjected to a pre-test which involved giving 12 questionnaires to smallholder farmers in the study area who were not part of the selected sample. Data was analyzed both descriptively, using measures such as mean, mode, frequencies, range and standard deviation, and inferentially using logit regression analysis. Questionnaires were scrutinized, coded and analyzed using Microsoft Excel and Statistical Package for Social Sciences (SPSS). Greene and Browne (2005) procedure was used in data management and analysis for information collected from key informants. In this case recorded interviews were transcribed word for word and then translated appropriately and used where required.

#### 2.4 Model specification

Logit model was fitted on household data. The major focus of the study was the likelihood of the outcome, that is, whether the respondent has access to credit or not. The binary response in this study was whether the respondent had



access to credit from financial institutions ("Success") or had no access to credit from financial institutions ("Failure"). If Y is the random variable (dichotomous), it is then assumed that  $Y_i$  takes on the values 0 or 1, where 0 denotes non-occurrence of the event in question and 1 denotes occurrence of the event in question (Maddala, 1983). If  $x_1, \dots, x_p$  are the characteristics to be related to occurrence of this outcome, then the Logistic model specifies that the conditional probability of event (that is, that Y = 1) given the values of  $x_1, \dots, x_p$  is as follows.

$$\mathbf{Prob}\ (y) = \frac{1}{1 + \exp^{-(\alpha + \sum \beta_i X_i)}}$$

In order to linearize the right hand side, a Logit transformation is applied by taking logarithm of both sides. The logarithmic transformation stabilizes the variance if the standard deviation in the original scales varies directly as the mean. This results into:

$$\textbf{Logit Prob}(y) \ = \ \alpha + \sum \beta_i \, X_i \, + \, u_i$$

where:

y<sub>i</sub> = 1 if success (respondent has access to credit)

0 if failure (respondent has no access to credit)

 $\alpha = Constant term$ 

 $\beta_i = \text{Logistic coefficients for the independent variables}$ 

 $\mu_t = Error term$ 

 $x_1$  = Independent variables as described in table 1 (appendix).

#### 3.0 Results and discussion

Results are presented in table 1 (appendix) and table 2 (appendix). Table 1 shows a summary of the logit model regression analysis while table 2 is a summary of the descriptive statistics for the significant quantitative variables.

Over 70 percent of respondents were 25 - 45 years of age. However, 16 percent, 11 percent and 2 percent of the respondents were over 60 years, 46 - 60 years and under 25 years of age respectively (appendix – table 3). It was observed that the sample was composed mainly of young people followed by the group of above 60 years of age. That



could be attributed to the fact that most of the youths who do not find employment in urban centers relocate to the rural areas to join the older generation to carry out farming activities. The findings here indicate that generally the sample was composed of mature smallholder farmers and hence putting them in a better position to make independent decisions on the most appropriate ways of utilizing land. There was a positive and significant relationship between credit access and the age of respondents.

Age was significant at 5 percent. A unit rise in age led to an increase of log-of-odds in favour of credit access by 9.766 (appendix – table 1). The positive relationship implies that older people were more likely to access credit from financial institutions than younger people. That was expected because, though the younger people were found to be more engaged in agriculture followed by the older people in the district, the younger people were possible defaulters compared to the older people since the older people owned most productive assets and hence had a better asset base as they accumulate assets with age. Therefore, financial institutions would prefer to lend to older generations than to younger ones. That was confirmed by most of the younger respondents who cited age as working against them in as far as credit accessibility was concerned. They were of the opinion that financial institutions overlooked them claiming that the younger people were not credit worthy. Moreover, the younger people farmed on small parcels of land either allocated to them or bequeathed to them by their parents which still limited their chances of accessing credit due to lack of proof of ownership. Since most agricultural activities are carried out by youthful people, it is necessary to ensure that age does not hinder them from accessing credit. The youth should therefore be encouraged to acquire property to boost their asset base and thus improve their credit worthiness. They should also ensure that any property bequeathed to them is accompanied by the requisite documentation.

About 87 percent of the households were headed by men, 8 percent by children / guardians while 5 percent of the households were headed by women. That implied that majority of the household heads in the sample were men. This is a common characteristic in many households. Usually, the household head is assumed to be the principle decision maker within the household and he or she is thus expected to influence decisions regarding the household. In the African set up and more so in the rural areas, it is the men who play the role of the household head mostly because they own land and majority of other productive resources within the household. By extension, that implies that it is the men who are likely to have more access to credit than the women since the ownership of property that financial institutions hold as collateral for credit rests upon men.

Gender of the household head was significant at 1 percent. Regression analysis indicated that an increase in the number of female smallholder farmers into the sample was found to decrease log-of-odds in favour of credit access by 5.916 (appendix – table 1). That implies that women had a lower access to credit compared to men. That could be due to the fact that productive assets in the rural areas are owned by men and hence financial institutions prefer to disburse credit to men rather than women since women are deemed to be more risky to lend money to. Therefore, resource access imbalances in favour of men deny women opportunities for credit. There is, therefore, need to empower women by extending credit to them so as to accelerate production in agricultural and micro-enterprise sectors that are run by women and to also improve livelihoods. This could be achieved by way of encouraging women to form their own credit and saving groups and take viable economic forms of income generation so as to attract lenders. They should also endeavour to own property to make themselves more competitive as credit seekers. In addition, there should also



be clear legislation and reforms in policy that make it easier for women to not only acquire property but also have protected rights to own the property especially within marriage.

The average household size was 5 people with minimum and maximum household sizes of 1 and 11 respectively (appendix - table 2). About 64 percent of the surveyed households had family size ranging from one to five members while about 36 percent had a family size ranging from five to eleven. That is a common feature among the rural households whereby the household size is usually large as opposed to the urban setting.

Households' size regression coefficient was significant at 5 percent and negative implying that a unit increase in the household size reduces log-of-odds in favour of access to credit by 1.915 (appendix – table 1). That implies that those with larger families are more likely to face difficulties in accessing credit as opposed to those with smaller families. That could be explained by the fact that the total size of a household has financial implications in that larger families consume a lot of finances to smooth out their consumption expenditure. Consequently, many financial commitments are likely to threaten the credit worthiness of a household. With large household sizes being a common feature among rural households, it is necessary to take measures to enlighten them on ways of having manageable family sizes that do not put a strain on their finances and threaten their credit worthiness. Such measures can be by way of having campaigns on effective family planning and its benefits in print and electronic media, particularly radio, which is a major source of information for rural people.

The mean farm income was Kshs 42,896.34 per year. The minimum annual farm income was Kshs 10,000 while the maximum was Kshs 300,000 (appendix - table 2). About 66 percent of respondents had average annual farm income ranging from Kshs 10,000 to Kshs 45,000 while 34 percent had an average annual income ranging from Kshs 45,001 to Kshs 300,000. It was difficult to establish off-farm income of respondents since many were unwilling to reveal such details. Moreover, most of the respondents concentrated on on-farm activities and hence most of their income was generated from these activities. Consequently, it was assumed that smallholder farmers in the district earned more from their farms than they did from other income generating activities.

The relationship between farm income and credit access was found to be positive and significant at 5 percent. A unit increase in average annual farm income would lead to an increase in log-of-odds in favour of credit access by 7.999 (appendix – table 1). The coefficient was positive implying that those smallholder farmers in Nyandarua District with a larger farm income outlay would access credit much easily than those whose income was low. Given that majority of the sampled smallholder farmers in Nyandarua District had an annual farm income below the sample average of Kshs 42,896.34, smallholder farmers had difficulties accessing credit from financial institutions due to low farm incomes. That was expected because Nyandarua District is characterized by poor product prices for farm produce hence farmers do not benefit much financially from their agricultural produce. It is important for farmers to diversify their agricultural activities so as to increase their farm income. Diversification of enterprises will ensure that farmers fetch more income and in turn repay their loans without difficulty. However, as it was observed in the field, majority of farmers fail to diversify their farming activities due to credit / capital challenges and inability to increase their land acreage. It is therefore important that extension services be enhanced and effectively linked to research activities and farmers so as to facilitate smooth flow of advanced technological innovations that are beneficial to farmers. That will ensure that



farmers are engaged in successful and profitable enterprises and reduce chances of enterprise failures thereby giving value to credit through the improvement of performance of assisted enterprises. In addition, the government and market players should ensure that farmers obtain competitive prices for their farm produce so as to make their agricultural activities lucrative enough. That will also help increase their income margins significantly.

Results indicated that there were three main forms of land tenure systems among the respondents. These were; communal land ownership, private land ownership and leasehold. About 73 percent of the respondents fell under private land ownership, 16 percent on leasehold while 11 percent had communal land (appendix – table 4). The main item considered as collateral / security by the financial institutions for agricultural loans is land. That implies that farmers must provide proof for land ownership to ascertain collateral. Results revealed that 50 percent of households did not have title deeds / registered lease certificates to act as tenurial security as well as collateral. The scenario indicates that smallholder farmers without a title deed / registered lease certificate faced a great challenge in accessing credit since they did not have anything to prove ownership of land. That stifles development among such farmers. The lack of title deeds / registered lease certificates would be attributed to the cumbersome process and costs involved in land survey and registration.

Presence of collateral as evidenced by title deed / registered lease certificate ownership positively influenced access to credit. The variable was significant at 5 percent implying that an increase in acquisition of title deeds / registered lease certificates by one unit would lead to an increase in log-of-odds in favour of credit access by 6.073 (appendix – table 1). That was expected since title deeds / registered lease certificates served as security / collateral for credit lent by financial institutions. Therefore, a farmer who possesses a title deed / registered lease certificate would find it easier to access credit. With collateral being a major factor in accessing credit, it is necessary that land ownership issues are addressed especially among smallholder farmers. That could be facilitated by ensuring that the government deals with any bureaucracies and red-tapes involved in land registration to benefit majority of smallholder farmers who remain insecure in the land they use without proof of ownership. Registration of lease certificates for those smallholder farmers who don't own land and use land on leasehold tenure system should be made easier so as to give them an opportunity of using such land as collateral to obtain credit from financial institutions.

About 80 percent of respondents were aware of the availability of credit while 20 percent were not aware. That could imply that most of the financial institutions existing in the area had tried to reach out to the farmers in a bid to make more loans to farmers. Awareness of credit availability had a positive and significant effect on access to credit at 1 percent level. An increase in the awareness level was found to lead to an increase in log-of-odds in favour of credit access by 0.304 (appendix – table 1). That implies that those individuals who were aware of the availability of credit from financial institutions had a better chance to access credit than those who were not aware. It is imperative for credit institutions to engage in awareness campaigns to inform smallholder farmers about the kinds of credit available from the institutions so as to revitalize access. Such campaigns should include print and electronic media campaigns, extension services and public forums to let people know all details about credit. There should also be legislation that requires financial institutions to disclose credit information to their potential borrowers, particularly concerning the costs involved, so that borrowers would have the right information rather relying on personal judgements and hearsay. Moreover, such legislation should be made known to the public so that would be borrowers know their rights regarding



accessing information on credit and lending. That would go a long way in ensuring that matters to do with credit are demystified and thereby eliminate exploitation of borrowers and the negative perceptions by many borrowers that credit is expensive.

Descriptive statistics and secondary data were used to assess the institutional constraints to accessing credit from financial institutions. The major institutional constraints that were identified included conditions set by financial institutions as pre-requisites for credit access, transaction costs involved, interest rates and costs involved in running bank accounts. Results (appendix - table 5) showed that the major conditions that smallholder farmers are required to meet to access credit are provision of guarantors, collateral (title deed / registered lease certificate) and charges in form of application and legal fees. About 30 percent of respondents reported that they were required to provide guarantors, collateral, application fees and legal fees, 14 percent were required to provide guarantors and collateral, 4 percent noted that they were only required to meet the condition of collateral, application fees and legal fees, 1 percent were required to provide collateral only and 1 percent were required to provide guarantors, application fees and legal fees. Only 1 percent was required to provide guarantors as the only condition to access credit. The results indicate that most financial institutions needed the requirement of collateral, application fees and legal fees fulfilled for one to access credit. For those who had not accessed credit, these conditions were a major constraint as they were not in a position to meet them. Financial institutions should therefore ensure that there are less stringent credit requirements in place to ensure easier and more affordable access to credit by smallholder farmers.

An analysis of data on costs incurred by smallholder farmers to maintain / operate bank accounts was done and the results (appendix - table 6) showed that the three major costs involved were ledger fees, withdrawal charges and minimum balance. Among those who operated bank accounts, 35 percent of respondents cited a combination of minimum balance, withdrawal charges and ledger fees as the costs they incurred to maintain / operate their accounts, 21 percent said that the costs they incurred to maintain / operate their accounts were a combination of withdrawal charges and ledger fees, 12 percent cited a combination of withdrawal charges and minimum balance as the costs they incurred while 6 percent cited withdrawal charges as the only cost they incurred to maintain / operate their bank accounts. Secondary data showed that other than the three costs aforementioned, other costs involved were closure of account charges and interim statement per page charges (CBK, 2007). With respect to the costs involved in operating a bank account, 77 percent of the respondents felt that the costs were high, 11 percent were of the opinion that the costs were very high, 10 percent felt the costs were fair, 1 percent said the costs were low while about 1 percent said that the costs were very low (appendix - table 7). The results imply that most of the sampled respondents felt that the costs were high. The costs involved in operating bank accounts were therefore some of the institutional constraints experienced by smallholder farmers in Nyandarua District in accessing credit. Financial institutions should therefore make these costs more affordable especially to small scale entrepreneurs such as smallholder farmers. That could be achieved through such measures as coming up with products that are specifically tailored to suit small scale entrepreneurs such as accounts that do not require opening charges and have affordable operational costs.

Transaction costs namely application fees, legal fees and interest rates, were also established as costs incurred in the credit process. Results indicated that about 68 percent of respondents cited interest rates and charges (application fees and legal fees) as the major costs associated with credit while 32 percent reported interest rates as the major cost



associated with credit. The sampled farmers had the perception that these costs were high. Therefore, the transaction costs involved in the credit process were also a major institutional constraint to accessing credit among smallholder farmers in Nyandarua District.

#### Conclusion and policy recommendations

This study established that there are both socio-economic and institutional factors which influence credit accessibility among smallholder farmers in Nyandarua District. The social factors identified were age, gender of the household head and the household size. For economic factors, collateral and farm income were the major characteristics influencing credit access. Awareness was an extraneous variable which was also found to be influencing credit access. With regard to institutional constraints, it was established that the major institutional hindrances to credit access were in the form of conditions / requirements set by financial institutions as pre-requisites for credit access, transaction costs involved, interest rates and costs involved in running bank accounts. Based on these findings, it is recommended that financial institutions should device ways of ascertaining the credit worthiness of the youth since they (the youth) are also resource owners and have various productive assets to their name. The youth should also be encouraged to acquire property to boost their asset base and at the same time ensure that they seek ownership for the same to serve as security. In this regard, they should ensure that ownership of land subdivided or bequeathed to them is transferred to them and documented appropriately. On the other hand, women should be encouraged to form their own credit and saving groups and take viable economic forms of income generation so as to improve their chances to access credit and improve their capacity to efficiently utilize the credit. With regard to collateral, government should deal with any bureaucracies and red-tapes involved in land registration to benefit majority of smallholder farmers who remain insecure in the land they use without proof of ownership. Registration of lease certificates for those smallholder farmers who don't own land and use land on leasehold tenure system should be made easier so as to give them an opportunity of using such land as collateral to obtain credit from financial institutions. Collateral should also not be considered as the main requirement for credit access especially among credit worthy smallholder farmers who do not have title deeds or registered lease certificates as evidence of collateral. Financial institutions should consider other ways, such as credit referencing, where a borrower with a good repayment record is able to access credit even without collateral. Finally, financial institutions should consider putting in place less stringent credit requirements to ensure easier and more affordable access to credit by smallholder farmers. That could be achieved through such measures as coming up with products that are specifically tailored to suit small scale entrepreneurs such as accounts that do not require opening charges and have affordable operational costs.

#### References

Asenso – Okyere, K. "Poverty and Strategies for Poverty Alleviation in Ghana." Institute for Statistical, Social and Economic Research. University of Ghana, Accra: Technical Publications, No. 57, 1993.

Central Bank of Kenya. Legal and Regulatory Framework. Power Point Presentation at the Strathmore University Micro finance Conference, 23 – 24 November 2007.



Central Bureau of Statistics. Geographical Dimensions of Wellbeing in Kenya: Who and Where are the Poor? Volume 1. Nairobi: Government Printers, 2003.

Central Bureau of Statistics. Welfare Monitoring Survey II, 1994 Basic Report. Nairobi: Government Printers, 1996.

Doll, J. P. and Orazem, F. Production Economics: Theory with Applications. New York: McGaw-Hill Book Company, 1978.

Government of Kenya. Nyandarua District Development Plan, (2002-2008). Effective Management for Sustainable Economic Growth and Poverty Reduction. Nairobi: Government Printers, 2002.

Green, J. and Browne, J. Principles of Social Research. Berkshire: Open University Press, 2005.

Milgrom, P. and Roberts, John. Economics, Organization and Management. New York: Prentice Hall, 1992.

Namunane, Benard. "More Kenyans Slide Deeper into Poverty." Daily Nation Friday, 29th August, 2008.

Ochango, Owens. Small Scale Farmers: Key to Africa's Future. *The African Executive – Free Africa's Ultimate Capital*. 01 – 08 October, 2008.

# <u>APPENDIX</u>

**Table 1: Logit Model Regression Results** 

Variable	Symbol	Coefficient	Standard Error	Significance
Age	$\mathbf{X}_1$	9.766	3.443	0.005*
Gender	$X_2$	-5.916	3.481	0.001**
Marital Status	$X_3$	1.278	3.648	0.726
Household Size	e $X_4$	-1.915	0.922	0.008*
Land Size	$X_5$	0.567	0.967	0.558
Land Tenure	$X_6$	-3.531	3.458	0.307
Occupation	$X_7$	93.129	40,361.861	0.998
Farm Income	$X_8$	7.999	2.860	0.005*
Perception	$X_9$	-11.858	18.473	0.521
Collateral	$X_{10}$	6.073	2.277	0.005*
Awareness	$X_{11}$	0.304	0.041	0.001**
Education Leve	el $X_{12}$	-2.630	4.544	0.563
Constant		-13.796	19.135	0.471

 $<sup>-2 \</sup>text{ Log likelihood} \rightarrow 26.610$ 

Cox & Snell R Square  $\rightarrow 0.706$ 

Nagelkerke R Square → 0.941

Omnibus test for model coefficients - Chi-square  $\rightarrow$  200.742

Hosmer & Lemeshow test - Model Chi-square → 2.809



Sample Size  $\rightarrow$  n = 164

The \*\* and \* represent 1% and 5% levels of significance respectively.

Source: Author's Survey Data, 2009

**Table 2: Summary Statistics for Significant Quantitative Variables** 

Variable	Minimum	Maximum	Mean	Standard Deviation
Household Siz	ze 1	11	4.87	1.713
Farm Income	10,000	300,000	42	,896.34 36,105.10

Source: Author's Survey Data, 2009

Table 3: Descriptive results for Age

Age Group	Frequency	Percent
Under 25 years	3	1.8
25 – 45 years	116	70.7
46 – 60 years	18	11.0
Above 60 years	27	16.5
Total	164	100.0

Source: Author's Survey Data, 2009

**Table 4: Descriptive results for Land Tenure System** 

Tenure system	Frequency	Percent	
Communal ownership	18	11.0	
Private ownership	120	73.2	
Leasehold	26	15.9	
Total	164	100.0	

Source: Author's Survey Data, 2009

**Table 5: Credit Requirements** 

Requirement	Frequency	Percent
Guarantors	1	0.6
Collateral	2	1.2
Guarantors and collateral	22	13.4
Guarantors, collateral and application and legal fees	49	29.9
Guarantors and application and legal fees	2	1.2
Collateral and application and legal fees	7	4.3
Not applicable	81	49.4
Total	164	100.0

Source: Author's Survey Data, 2009



**Table 6: Costs of Operating Bank Accounts** 

Cost	Frequency	Percent
Withdrawal charges	9	5.5
Withdrawal charges and minimum balance	20	12.2
Withdrawal charges and ledger fees	35	21.3
Withdrawal charges, minimum balance and ledger fees	58	35.4
No response	42	25.6
Total	164	100.0

Source: Author's Survey Data, 2009

**Table 7: Opinion on Account Costs** 

Opinion	Frequency	Percent
Very low	1	0.6
Low	2	1.2
Fair	16	9.8
High	127	77.4
Very high	18	11.0
Total	164	100.0

Source: Author's Survey Data, 2009

This academic article was published by The International Institute for Science, Technology and Education (IISTE). The IISTE is a pioneer in the Open Access Publishing service based in the U.S. and Europe. The aim of the institute is Accelerating Global Knowledge Sharing.

More information about the publisher can be found in the IISTE's homepage: <a href="http://www.iiste.org">http://www.iiste.org</a>

### CALL FOR PAPERS

The IISTE is currently hosting more than 30 peer-reviewed academic journals and collaborating with academic institutions around the world. There's no deadline for submission. **Prospective authors of IISTE journals can find the submission instruction on the following page:** <a href="http://www.iiste.org/Journals/">http://www.iiste.org/Journals/</a>

The IISTE editorial team promises to the review and publish all the qualified submissions in a **fast** manner. All the journals articles are available online to the readers all over the world without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. Printed version of the journals is also available upon request from readers and authors.

# **IISTE Knowledge Sharing Partners**

EBSCO, Index Copernicus, Ulrich's Periodicals Directory, JournalTOCS, PKP Open Archives Harvester, Bielefeld Academic Search Engine, Elektronische Zeitschriftenbibliothek EZB, Open J-Gate, OCLC WorldCat, Universe Digtial Library, NewJour, Google Scholar

























