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ASSESSMENT OF AGRICULTURAL REVOLVING FUND PERFORMANCE IN RURAL UGANDA

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ABSTRACT: *Access to agricultural credit in rural areas in developing countries is limited and it undermines growth of rural agriculture based economies. The study assessed an agricultural revolving fund performance in terms of access to inputs, repayment for inputs and access to cash loans from farmers' groups in rural Uganda. Two hundred farmers were interviewed. A structured questionnaire was used to collect quantitative data which was analysed using bivariate and linear regression analyses. The cost of inputs ($p = 0.0001$, $R^2 = 0.437$), grace period ($p = 0.0001$, $p = 0.0001$, $R^2 = 0.423$) and repayment knowledge ($p = 0.0001$, $R^2 = 0.406$) influenced access to inputs. Location ($p = 0.0001$, $R^2 = 0.209$), grace period ($p = 0.0001$, $R^2 = 0.209$) and farmer group experience in savings and credit ($R^2 = 0.187$) influenced repayment for inputs. Interest rate ($p = 0.0001$, $R^2 = 0.503$) and farmer group experience in saving and credit management ($p = 0.0001$, $R^2 = 0.395$) influenced access to cash loans. Majority of farmers were likely to access inputs if their cost was lower, the grace period was sufficient and farmers were well sensitized. Repayment for inputs was more successful for longer grace periods, and where the group had savings and credit management experience. Access to cash loans was influenced by interest rate and farmers' group experience in savings and credit management. Cost of inputs, grace period, knowledge about the revolving fund, interest rate and farmers' group experience of saving and credit management influenced the performance of the revolving fund significantly. Agricultural inputs given to farmers should be customized to their income levels to improve repayment, the grace period should be at least one year, highest interest rate should be 10% or lower. Beneficiary farmers' groups should have five years' experience in savings and credit management.*

KEYWORDS: Access, Credit, Farmer Group, Inputs, Repayment

INTRODUCTION

Majority of Ugandans (77%) live in rural areas (UBOS, 2014) and depend on agriculture for their livelihood (Mwesigye, 2006) hence the sector has potential to spur economic growth and poverty alleviation (IFAD, 2012). However, Uganda's agriculture sector has not maximized its potential probably due to limited access to credit (Ssonko and Nakayaga, 2013). Notably limited access to agricultural inputs including credit slows growth of rural agriculture based economies (Abula *et al.,* 2013) and undermines the farmers' goal of increasing production (Nabwire, 2015). Microfinance institutions and commercial banks have not prioritized funding of agricultural related activities (IFAD, 2016). Limited access to agricultural credit has been attributed to the reluctance of the financial institutions to advance agricultural loans to farmers besides the demand for collateral which excludes majority of the rural poor particularly women who lack land ownership rights and control over other household assets (USAID, 2007; IFAD, 2009; Anyiro and Oriaku, 2011; Kosgey, 2013, Ololade and Olagunju, 2013).

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Providing revolving funds to rural farmers creates opportunities for investing in income generating activities (IGAs) and growing of more food besides other benefits (Abdulai *et al.*, 2014). The Government of Uganda has implemented several national micro-credit schemes to provide revolving funds to farmers (Karuma, 2011) including *entandikwa* scheme (Kasirye, 2007), agricultural credit facility scheme, youth livelihood fund and youth venture capital fund (Ahaibwe *et al.*, 2013). Unfortunately, these credit schemes have performed dismally and failed to meet the expectations of various stakeholders. Thus the need to assess and identify the major factors influencing the performance of the ongoing revolving fund.

Previous studies on the NAADS programme assessed extension service delivery (Bukenya, 2010), farmer participation and empowerment (Parkinson, 2008), procurement processes (Mugenyi *et al*., 2007), impact on household production (Okoboi *et al*., 2013), and gender differences in accessing productive resources (Okonya and Kroschel, 2014). No study has assessed the performance of the revolving fund in regards to access and repayment by beneficiaries since it was implemented over 10 years ago. This study assessed the performance of the revolving fund under the NAADS programme (MAAIF, 2005) in terms of access to and repayment of the revolving funds. The findings from the study will inform the programme managers in making decisions to improve the performance and sustainability of the revolving fund.

Theoretical Underpinning

Limited access to agricultural inputs including credit slows growth of rural agriculture based economies (Abula *et al.*, 2013) and undermines the farmers' goal of increasing production (Nabwire, 2015). Expenses on agricultural inputs account for the biggest percentage of the farmers' expenditure (World Bank, 2010). Under the NAADS programme, farmers form groups through which inputs are distributed (Adong *et al.*, 2013). However, due to low funding (MFPED, 2012), only about 20 percent of the farmers are able to access inputs through this approach (Nabwire, 2015).

Financial access is critical to reducing hunger and poverty by; supporting agricultural value chains development to achieve broad based economic growth that raises incomes for low income households, supports diversification out of agriculture and rural entrepreneurs require financial access in order to invest in non-farm enterprises. At the household level, access to financial services including savings and other non-credit products enables rural households to meet both regular and unexpected consumption as well as social demands such as food, school fees, health care and funeral expenses without having to divert financing from investment opportunities. The new model recommends integrating rural finance and introducing more flexible products and services that fit the needs of households, facilitate households to invest as well as firms in the value chain thereby strengthen the competitiveness of value chains while simultaneously lowering their exposure to risks (USAID, 2011).

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METHODOLOGY

The cross-sectional study was conducted in Bugongi sub-county, Sheema District in the Western part of Uganda. Sheema district was purposively selected because it was among the first districts to implement Integrated Support to Farmers Groups (ISFG) under the National Agricultural Advisory Services (NAADS) in 2005/2006 that provided inputs on a revolving basis. Bugongi sub-county was selected because it was among the first two sub-counties in Sheema district to benefit from ISFG. All the four parishes in Bugongi sub-county were included.

Thirty three (33) farmer groups (FGs) accessed inputs totaling to three hundred ninety eight (398) members who comprised the sampling frame. The confidence level was 95 percent, margin error of 5 percent. Using sample size selection tables by Isaac and Michael (1981), and Smith, (1983), two hundred (200) respondents (farmers) were selected using simple random sampling.

A structured questionnaire was used to collect quantitative data from the respondents regarding access to agricultural inputs, repayment and access to cash loans during face to face interviews. The interviews were conducted in *Runyankore*, the most widely spoken language in the district. Each respondent was interviewed from his/her household to avoid biased responses.

Quantitative data from the structured questionnaire was cleaned, coded and entered into SPSS version 16 for analysis. The analysis was guided by the objectives of the study. Bivariate analysis was used to generate descriptive statistics such as percentages. Chi-square (X^2) tests were performed to examine the relationships between variables of interest. Bivariate linear regression was performed on all significant variables to assess the relationships between the independent and dependent variables. Variables with the highest percentages were considered the most significant in explaining the variation in the dependent variable.

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RESULTS AND DISCUSSION

Factors that influenced access to agricultural inputs among farmers' groups

Table 1. Factors that influenced access to agricultural inputs

Variable	Variable category	N (%)	Chi-square test X^2	R^2
Location	Karera parish	62 (31.0)	$p \leq 0.035$; df = 3	0.043
	Kyamurari parish	32(16.0)	$X^2 = 8.57$	
	Isingiro parish	70 (35.0)	CI = 0.031 to 0.041	
	Rugarama parish	36 (18.0)		
Group size	10-20	173 (86.5)	$p \leq 0.0001$	0.21
	> 20	27 (13.5)	df = 1; $X^2 = 42.44$	
Access to information	None	3 (1.5)	$P \leq 0.005$; df = 3	0.0637
	Group meetings	95 (47.5)	$X^2 = 6.69$	
	Technical staff	101(50.5)		
	Community	1(0.5)		
Cost of inputs (UGX)	1 – 50,000	139 (69.5)	$p \leq 0.0001$;	0.437
	>50,000 – 100,000	23(11.5)	df = 2, X2 = 200	
	>100,000	9(4.5)	CI = 0.00 to 0.00	
Selection of beneficiaries	Group members	138(69.0)	$p \leq 0.0001$;	0.157
	Group leaders	52 (26.0)	df = 2; $X^2 = 31.45$	
	Not aware	10 (5.0)	CI = 0.00	
Beneficiaries selection Criteria	Co-funding	155 (77.5)	$p \leq 0.0001$, df = 4	0.122
	Enterprise experience	10 (5.0)	$X^2 = 24.37$	
	Voting	3 (1.5)	CI = 0.00 to 0.001	
	Active Group Member	21 (10.5)		
	Not aware	11(5.5)		
Repayment Knowledge	Yes	185(92.5)	$p \leq 0.0001$; df = 1	0.406
	No	15 (7.5)	$X^2 = 81.3$	
Grace period	1 – 6 months	40(20.0)	$p \leq 0.0001$; df = 3	0.423
	7 – 12 months	144 (72.0)	$X^2 = 84.6$, CI = 0.00-0.00	
	>12 months	4(2.0)		
	Not aware	12(6.0)		
Major economic activity	Crop farming	93(46.5)	$p \leq 0.002$; df = 6; $X^2 = 23.9$ CI = 0.00- 0.003	0.119
	Livestock farming	25 (12.5)		
	Small business	58 (29.0)		
	Formal employment	4 (2.0)		
	Casual labor	6(3.0)		
	Ground rent	2(1.0)		
	None	12(6.0)		

Cost of inputs, grace period, location, group size, selection criteria for beneficiaries, source of information, knowledge of repayment period and the major economic activity or farmer's off-farm activities influenced access to agricultural inputs. Cost of inputs and grace period were the most significant factors that influenced access to agricultural inputs (Table 1). Majority of farmers resented expensive inputs probably for fear of failure to pay back (Yasir *et al.*, 2012). The grace period influenced farmers' access to inputs significantly probably because livestock enterprises are long term and don't give immediate incomes. Being knowledgeable about the repayment period influences access to inputs, probably as a result of the interaction between extension staff and farmers, or farmer to farmer (Mwondha, 2011, Churi *et al.*, 2012; Olaniyi and Adewale, 2012). Having off-farm income sources increased chances of accessing inputs (Table 1). Previous studies have highlighted that off-farm income sources positively influence the farmer's decision to access inputs on credit (Ilembo *et al.*, 2012).

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Distance influenced access to inputs and majority of farmers who received inputs were from parishes closer to the sub-county headquarters or distribution point (Table 1). A study in Malawi showed that nearer farmers received more fertilizers compared to the rest (Chirwa *et al.,* 2011). Living close to the centre responsible for input distribution increases the chances of accessing inputs. Farmers from nearby parishes may not face constraints related to higher transport costs (Fowler and Panetta, 2011), delay in information access and have more access to extension workers.

Factors that influenced repayment for inputs among farmers' groups

Table 2. Factors that influenced repayment for inputs

Variable	Variable category	N (%)	Chi-square test X^2	R^2
Location	Karera parish	47 (23.5)	$p \leq 0.0001$, df = 3	0.209
	Kyamurari parish	29 (14.5)	$X^2 = 35.78$	
	Isingiro parish	65 (32.5)	CI = 0.00 to 0.00	
	Rugarama parish	30 (15.5)		
Sex	Male	71(35.5)	$p \leq 0.054$	0.022
	Female	100 (50)	df = 1; $X^2 = 3.699$	
Inputs received	Goats	169(84.5)	$p \leq 0.006$; df = 1;	0.044
	Mulches	2 (1.0)	$X^2 = 7.589$	
Selection of beneficiaries	Group members	127 (63.5)	$p \leq 0.0001$ df = 2;	0.152
	Group leaders	41 (20.5)	$X^2 = 26.058$	
	Not aware	3 (1.5)	CI = 0.00 to 0.00	
Farmer group experience in saving & credit	Never	58 (29.0)	$p \leq 0.0001$; df = 2;	0.187
	1-5 years	67 (34.0)	$X^2 = 31.930$	
	> 5 years	46 (23.0)	CI = 0.00 to 0.00	
Benefits accrued from the inputs	Yes	160(80.0)	$p \leq 0.001$; df = 1;	0.075
	No	11 (5.5)	$X^2 = 12.827$	
Repayment Knowledge	Yes	170(85.0)	$p \leq 0.052$; df = 1;	0.0221
	No	1 (0.5)	$X^2 = 3.772$	
Grace period	1 – 6 months	32(16.0)	$p \leq 0.0001$; df = 3;	0.2087
	7 – 12 months	135(67.5)	$X^2 = 35.69$	
	>12 months	1(0.5)	CI = 0.00 to 0.00	
	Not aware	3(1.5)		
Major economic activity	Crop farming	75 (37.5)	$p \leq 0.025$; df = 6;	0.0842
	Livestock farming	22 (11.5)	$X^2 = 14.399$	
	Small business	56 (28.5)	CI = 0.022 to 0.028	
	Formal employment	4 (2.5)		
	Casual labour	2 (1.5)		
	Ground rent	1 (0.5)		
	None	11 (5.5)		
Cost of inputs	0-50,000	139(69.5)	$p \leq 0.002$; df = 2;	0.0724
	> 50,000-100,000	23 (11.5)	$X^2 = 12.376$	
	> 100,000	9 (4.5)	CI = 0.003 to 0.005	

The farmers' location, FG years of experience in active savings and credit management, selection criteria for the individual beneficiaries and the grace period influenced repayment for the inputs (Table 2).

The percentage of farmers' who paid back for inputs increased with increase in the number of years of savings and credit management (Table 2) probably because they gained experience in managing their debts thus reducing the probability of defaulting. Borrower's experience contributes about 80 percent to the recovery (Al-Sharafat *et al*., 2013). Additionally, Sileshi *et al., (*2012) showed that smallholder farmers with a borrowing experience of about four years had not defaulted on their loans as opposed to farmers with shorter borrowing experience.

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Farmers from Isingiro and Karera parishes located closest and farthest from the Sub-county headquarters respectively showed the highest probability to repay. The good repayment rates registered by farmers from these parishes was attributed to availability of several non-farm income sources. Farmer's possession of off-farm income sources increases farmers' chances of loan repayment significantly probably because it minimizes chances of loan diversion (Wongnaa and Awunyo-Vitor, 2013). Wubie *et al.* (2014) found that on-farm income affected repayment, with increase in on-farm income, resulting into increased households' capacity to repay loans.

Repayment was higher for beneficiaries who were selected by the group members as opposed to those beneficiaries selected by group leaders. This implies that, the group leaders may have selected their close friends and relatives whom they could not put under pressure to pay back. Cases of members participating in group decision making and where leaders solely make decisions have been observed (Sseguya, 2009); Sseguya *et al.*, 2012; Liverpool-Tasie, 2012).

Absence of legal measures to enforce repayments rendered in-kind revolving funds more prone to defaulting than cash funds (Barca and Riemenschneider, 2012). Comparatively, due to fear to lose social capital use of peer pressure to enforce recovery may be inapplicable in some FGs. This is contrary to (Murray and Rosenbarg, 2006; Abaru *et al.*, 2006) who attributed higher recovery rates amongst the savings-based groups to peer pressure and monitoring of FGs.

Factors that influenced access to cash loans from a farmers' group

Table 3. Factors that influenced receiving cash loans from a farmers' group

Variable	Variable category	N (%)	Chi-square test X^2	R^2
Location	Karera parish	62 (31.0)	$p \leq 0.001$; df = 3;	0.0825
	Kyamurari parish	32 (16.0)	$X^2 = 16.492$	
	Isingiro parish	70 (35.0)	CI = 0.001 to 0.002	
	Rugarama parish	36 (18.0)		
Sex	Male	79 (39.5)	$p \leq 0.003$; df = 1;	0.0437
	Female	121 (60.5)	$X^2 = 8.736$	
Age	≤ 35	68 (34)	$p \leq 0.246$; df = 2;	0.0140
	≥ 36-59	100 (50)	$X^2 = 2.803$	
	> 59	32(16)	CI = 0.242 to 0.259	
Marital status	Married	167 (83.5)	$p \leq 0.01$; df = 4;	0.0659
	Never marriage	15 (7.5)	$X^2 = 13.184$	
	Widow	13 (6.5)	CI = 0.004 to 0.007	
	Widower	2 (1.0)		
	Separated	3(1.5)		
Education level	Primary	41 (20.5)	$p \leq 0.071$; df = 4;	0.0431
	O-level	22 (11)	$X^2 = 8.625$	
	A-level	3 (1.5)	CI = 0.057 to 0.066	
	Tertiary	17 (8.5)		
	None	117 (58.5)		
Group size	10-20	173 (86.5)	$p \leq 0.013$; df = 1;	0.0311
	> 20	27 (13.5)	$X^2 = 6.210$	
Revolving fund Information source	None	3 (1.5)	$p \leq 0.001$; df = 3;	0.0787
	Group meetings	95 (47.5)	$X^2 = 15.742$	
	Technical staff	101 (50.5)	CI = 0.000 to 0.001	
	Community	1 (0.5)		
Experience in saving & credit management	No revolving fund	67 (33.5)	$p \leq 0.0001$; df = 2;	0.3951
	1-5 years	82 (41.0)	$X^2 = 79.012$	
	> 5 years	51 (25.5)	CI = 0.000 to 0.000	

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Interest rate %	No revolving fund	67(33.5)	p ≤0.000; df = 4;	0.503
	1 – 5	85(42.5)	X^2 = 100.522	
	6 – 10	22(11.0)	CI = 0.000 to 0.000	
	>16	16(8.0)		
	None	10(5.0)		
Major economic activity	Crop farming	93 (46.5)	p ≤0.034; df = 6;	0.0681
	Livestock keeping	25 (12.5)	X^2 = 13.617	
	Small business	58 (29.0)	CI = 0.024 to 0.030	
	Formal employment	4 (2.0)		
	Casual labour	6 (3.0)		
	Ground rent	2 (1.0)		
	None	12(6.0)		

Access to cash loans was mainly influenced by the interest rate and the FG experience of managing savings and credit (Table 3). Higher recovery rates were observed among the farmers with longer grace periods of up to one year (Table 3) probably because most farmers had realised benefits from the inputs after a year to enable them pay back. FGs with shorter grace periods registered the lowest recovery rates which agrees with Wongnaa and Awunyo-Vitor (2013) who showed that insufficient grace period undermines repayment. Overall, farmers who accessed cash loans were from groups with experience of five years and above. This implies that farmer borrowing increases with the number of years of engaging in savings and credit activities as they adapt to the credit policies (Yehuala, 2008).

Majority of the farmers received cash loans at an interest rate (IR) lower than 10% per annum. The lower the IR the higher the uptake of cash loans (Wongnaa and Awunyo-Vitor, 2013). Majority of borrowers accessed small loans of not more than one hundred thousand Uganda Shillings per annum probably group savings have not grown fast enough to enable disbursement of bigger loans that can be invested in new production technologies. Better off farmers may opt to use alternative credit sources that give bigger loans.

Farmers' sex also influenced access to credit; more women accessed loans than men. FGs played an important role in improving women's access to credit. Probably because collateral was not required rather fully paid membership fees and saving regularly were the preconditions. Previous studies indicated that NAADS village based farmers groups were a major source of credit (Okonya and Kroschel, 2014) and women were more likely to obtain credit from informal sources in rural areas than men (Kosgey, 2013). More women could have accessed credit because they had a better recovery rate than men or because men were not interested in the small size loans given out. Women can actively borrow when the credit source is nearby and does not require collateral. However, another study in Nigeria showed that informal credit sources such as local savings and rotating credit were important to both women and men (Jeiyol *et al.*, 2013).

Majority of the cash loans were received by married farmers. According to Abula *et al.* (2013), lenders have more trust in married people because they consider them to be settled and committed to work. FG membership size also influenced access to loans. Groups with over twenty members registered the highest percentage of members receiving loans probably they were more active in borrowing compared to members from smaller groups or they saved and borrowed regularly thus growing their capital to serve more members. Other factors need to be considered as to why some groups perform better than others. For instance, according to (Sseguya, 2009; Grossman and Hanlon, 2010), the leadership among other factors, influences the group success.

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Implications to Research And Practice

The rural poor engaged in the agriculture sector are heterogeneous with varying attributes, needs and abilities to utilize agriculture financing and to pay back. Hence they should not be bundled together by rural agricultural financing schemes if they are to achieve their objectives. Different agricultural financing options should be availed to suit the varying needs according to the farming enterprises and their aspirations. Borrowers who possessed non-farm enterprises or off-farm sources of income performed better in regards to repayment of loans. This is supported by the new model that recommends integrating rural and agricultural finance as well as supporting diversification of financial products and services to meet the needs of the different rural households.

CONCLUSIONS AND RECOMMENDATIONS

Cost of inputs, knowledge on repayment, grace period and group size significantly influenced access to inputs. While interest rate and experience in managing savings and credit significantly influenced access to cash loans from the farmers' groups. Savings and credit management experience, sufficient grace period and location of the farmers significantly influenced repayment for the inputs.

Implementers of rural agricultural credit schemes should provide sufficient grace periods that suit various enterprises supported by the revolving funds in order to improve access to inputs and repayment. The value of inputs given to farmers should be customized to suit the various categories of beneficiaries and allow them to select what they can afford to pay back in order to achieve higher recovery rates. Farmers' groups with experience of at least five years in managing savings and credit should be prioritized to receive inputs in order to achieve higher recovery rates.

Future Research

Future research should assess how seasonality (drought and rainy seasons), and availability of market influences the performance of an agricultural revolving fund.

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