

The Contributions of Rural Institutions in Rural Development: Case of Smallholder Farmer Groups and NGOs in Uganda

Patrick Nalere

ABSTRACT

In this work, through a case study, the role of NGOs and smallholder farmer groups as sample rural institutions in addressing four main objectives is examined. A range of organizational level information on the characteristics is collected using various research tools. The data collection tools administered to leaders of the SFGs and staff of NGOs mainly included a structured questionnaire, focus group discussion, interview guide, key informants and literature review. A random sample of 40 NGOs and smallholder farmer groups (SFGs) were selected, stratified by location in the Central region of Uganda for a period between 2002 and 2012 for which the data were available. The central region of Uganda was chosen based on their ease of logistics – transport and communication, and presence of NGOs and functional SFGs. Based on the findings presented in this study, it is conclusively remarked that rural development in Uganda is informed by four major objectives of improving health, education, agriculture as well as improving industry.

Keywords: *NGOs, smallholder farmer groups, rural institutions, development*

INTRODUCTION

There is broad appreciation that NGOs have an important role to play in supporting the rural poor to break out of their condition of poverty (Lwanga-Ntale and Kimberly, 2003). Certainly, a major source of the strength of NGOs comes from their idealism and values, which include a strong spirit of volunteerism and independence. For instance, NGO's insistence on the empowerment of the poor as the key to their transformation, provides groundwork for effective partnership (IFAD, 2005). Through community groups, efforts of the people are combined with those of development actors (such as NGO, government) to improve socio-economic and cultural conditions of the communities (Akinola, 2008). Reviewed literature and empirical findings of previous studies show that each individual group (NGOs and smallholder farmer groups activities) has a positive effect on rural development by developing programs that transform communities through supporting self-reliance and underlining popular participation in their development activities (Aheibwe, 2013). Akinola (2008) further stresses that community groups provide an avenue for people to organize themselves for planning action, define their common and individual needs and problems and offer solutions thus, informing community development. In line with Akinola's assertion, Abegunde (2009) contends that community groups are the first

*Patrick Nalere is a PhD Student in Leeds Beckett University, United Kingdom.
E-mail: p.nalere4377@student.leedsbeckett.ac.uk.*

joint efforts by people (beneficiaries) towards self and community development. This is in support of purely free market approaches to economic development which calls for more local decision-making and more locally based economic ventures. At the center of this new approach is a strong community commitment to provide resources and information, overcome collective action problems and improve the functioning of local labour markets. To Abegunde, community development thus involves the initiators, supporters and beneficiaries of any defined development efforts. Salami *et al* (2010) are of the opinion that most smallholder farmer groups operations occur not only in farming systems with the family being key in planning, decision making and implementation but also operates within a community level network of relations.

Magingxa and Kamara (2003), Barham and Chitemi (2008), World Bank (2006), Anriquez and Stamoulis (2007) argue that expansion of smallholder farming through their organized groups stimulates faster rate of poverty reduction. To them, this is because it raises the incomes of rural farmers and reduces food expenditures and thus lowers income inequality (Resnick, 2004). Community groups such as smallholder farmer groups open ways for people participation at grassroots levels. Smallholder farmer groups have taken on the role of rural community developers in developing countries such as Uganda (Jjuuku, 2008). They bring the technical skills needed to execute the plans. They also mediate community conflicts, built infrastructure, attract other development actors (such as donor agencies, NGOs, etc.) into the community. These groups help many individuals work collectively. In a catalytic development model, the emphasis is on mobilizing rural local talent and leveraging local resources and networks to find local solutions, and ultimately foster development of communities. Consequently, this study is preoccupied with assessing the contribution of rural institutions in rural development taking small holders farmers groups and NGO in Uganda as a case in point.

METHOD

In this work, a probit regression model was adopted to investigate the relationship between various potential factors (table 1) and the dependent variables (Improved health, education, agriculture and industry). All our study outcomes were binary; to whether improvement in health, education, agricultural production, and industry leads to rural development (1) or not (0). Using data collected from a statistical sample of organizations (NGOs and SFGs) of central region of Uganda, the Probit regression model is used to model NGOs and SFGs characteristics, perceptions of their staff and their supported development sector (health, education, agriculture and industrial improvement) in the development of the rural economy. The relevance of the potential factors that influence the improvement in health, education, agriculture and industry and their relationship to rural development were captured through perceptions of study respondents. This was based on stochastic simulations through randomly selecting and interviewing a number of NGOs and SFGs staff. A range of organizational level information on the characteristics was collected using various research tools. The data collection tools administered to leaders of the SFGs and staff of NGOs

mainly included a structured questionnaire, focus group discussion, interview guide, key informants and literature review. A random sample of 40 NGOs and smallholder farmer groups (SFGs) were selected, stratified by location in the Central region of Uganda for a period between 2002 and 2012 for which the data were available. The central region of Uganda was chosen based on their ease of logistics – transport and communication, and presence of NGOs and functional SFGs. With the help of two research assistants, functional SFGs in the Central region were identified and weighed according to their partnership dealings with some NGOs. Finally, for each NGOs, a random sample of employee and 8 Executive Committee members of each SFG were drawn after visiting them.

A total of 96 respondents were targeted but only 87 respondents from 40 organizations (NGOs and Smallholder farmer organizations) in central region of Uganda that were in partnership were reached. This involved 31 to NGO officials, 56 to SFG executive committee members. Issues addressed include: Background information on sampled organizations such as their contacts, year of establishment, and number of staff by their gender, and employment status (permanent/temporary), scope, beneficiaries and source of funding, and the main objective of their organizations. Specifically, the contribution of rural institutions to Uganda’s rural development: case of smallholder farmer groups and NGOs in central region of Uganda was examined.

Dependent variable is one which results from the manipulation of other variables (independent variables). In the study, variables considered dependent are the MAIN OBJECTIVES –Health Improvement; Education Improvement; Agricultural Improvement; and Industrial Improvement whose categories were recorded as 1 for agreement (strongly agree and agree) and 0 for no agreement (strongly disagree and disagree). Independent variables offer the “input” which is adjusted by the model to change the “output.” Independent variables considered in this study are the factors affecting the main objectives are shown on table 1.

RESULTS AND DISCUSSION

The information set on table 1 has a binary response (outcome, dependent) variable. There are several predictor variables listed under each main objective, which are all ordinal and taking two score 1 (one) or 0 (zero). Variables with much score 1 have a positive influence (strong/weak) on the particular main objective, while those with 0 have a negative influence. To Okidi, and Mugambe the country needs to achieve and sustain economic growth to arrest and reverse the spread of poverty. To do so, Uganda needs to increase focus and investment in health, education, agriculture and industry development as key engines of raising efficiency, increasing household incomes, improving standards of living and reducing poverty. A hypothesis is a statement that expresses the probable relationship between the dependent and independent variables (Okidi and Mugambe, 2002). In light of the above, the overall (main) null hypothesis is presented as: Focusing and investing in the independent variables (factors that influence improvements in Health, Education, Agriculture, and Industry) does not enhance dependent variables (MAIN OBJECTIVES

– Health Improvement; Education Improvement; Agricultural Improvement; and Industrial Improvement), thus fostering rural development.

Improving Health to Foster Rural Development in Uganda: The study sought to establish whether improving health has any linkage with rural development by investing in the factors (independent variables) affecting health Improvement (main objective). In other words, whether there are factors that can be invested in to lead to improved health and hence foster rural development. Hence, the hypothesis focusing and investing in any of the independent variables on table 1 is likely not to increase the dependent variable (health improvement), in order to foster rural development is tested. The final probit regression model results with significantly agreed on factors relating to health improvement was:

$$\begin{aligned} & \text{PROBIT (Improved health)} \\ & = -0.872 - 0.709 \text{ Health Subsidies} + 1.109 \text{ Health Information Sharing} \\ & + 1.416 \text{ Policy and Service} \dots\dots\dots 1 \end{aligned}$$

This, based on only the significant factors that influence health improvement, assuming the insignificant is 0 (zero) on table 2. As such, they are already in the metric of “Z” or standard normal scores. The probability of the MAIN OBJECTIVE of the SFG/NGO working in partnership for Health improvement = 1 is 63% given that all predictors are set to their mean values.

Health insurance subsidization and health services financing: First of all, it can be noticed from the results that subsidizing health insurance and financing health services were perceived or agreed as having negative effect on the improving health in rural areas given a negative probit coefficient of -0.709 and statistically significant effect on health improvement in rural Uganda. The study further that respondent who stated that it would be beneficial to rural development if NGOs/SFGs introduced health subsidies (subsidized insurance and service financing), they were less likely to state that improving health would lead to rural development. On average (all other factors held at their means), compared to individuals who disagreed with NGOs/SFGs investing in health subsidies, those who agreed had a probability of 26.8% less (z-score = -1.72) of stating that improved health would lead to rural development. In other words, introducing health subsidies is necessary but not crucial in rural development in Uganda. This effect is weak and statistically significant at 10 per cent level. The finding does not conform to a priori expectation, hence investing in subsidizing health insurance and financing health services does not improve health to foster rural development is accepted. Therefore, given the result, it may crucially be a misguided policy to subsidize health insurance and finance health services for the rural poor in Uganda. Subsidizing health insurance is likely to be exacerbated as health insurance premiums rise and out-of-pocket medical expenses increase. The result is surprising in that, it in itself appears to contradict the findings of Trujillo, Portillo and Vernon (2005) who in their research on the impact of subsidizing health insurance for the poor suggests that subsidizing health insurance programmes is often used to provide basic healthcare to the poor and uninsured citizens. This is confirmed in the popular literature by Panopoulus and

Velez (2002), and Bailey (2013) who claim that health insurance coverage significantly increases medical care utilization. Also in contradiction with the result, is MoH (2010) in the national health policy on reducing Poverty through promoting people, that contend that Health insurance is for a few and largely subsidized by employers on behalf of employees. The result perhaps may be explained by the fact that households in Uganda constitute the majority of financing sources, and for poor rural households, this imposes a health improvement challenge, hence affecting the pace of rural development.

However, in developing countries such as Uganda, less is known about the magnitude of the real effect of insurance coverage on medical care use, as they rarely exist in the rural areas. Therefore, the rationale behind this finding may be based on assumptions, not facts as given by Ministry of Health (MoH) that Uganda's health expenditure stands at an average of about 9% of the national budget, which is far below the Abuja declaration target of 15%. In fact to factor rural development through health improvement, Government of Uganda will need to embrace strategies that promote alternative health financing mechanisms as may be deemed appropriate for rural areas with poor populations. The policy issue in this regard is how subsidizing health insurance and financing health services is made affordable for the rural people. With the view that health improvement is a process of enabling people to exert control over the determinants of health so as to improve their health (WHO, 2009) but also infrastructure and overall quality of healthcare therefore, how subsidizing health insurance and finance health services are structured and who receives them are fundamental issues for health improvement in rural areas of Uganda to foster rural development.

Improved access to and sharing of information: In contrast to the previous results, it is revealed that increased awareness or improved access to and sharing of information on health trends among the communities is imperative for health improvement in the rural areas in the country (Management Science for Health, 2010). The results on table 1 show that increased awareness or improved access to and sharing of information on health trends by NGOs and SFGs has a positive probit coefficient of 1.109 and statistically significant effect on health improvement in rural Uganda. The positive coefficient means that an increase in subsidizing health insurance and finances health services level according to respondent is likely to consequently lead to increases in the level of health improvement due to the direct relationship of the independent variable. Individuals who stated that it is helpful for NGOs/SFGs to create awareness or improve access to and sharing of information on health trends among the rural communities had a probability of 41.8% higher (z-score = 2.62) of stating that improved health leads to rural development, on average. That is, individuals who perceive investment in health information sharing also perceive improved health as useful for rural development. Thus, it can be inferred that access to health information in rural areas and improved health would lead to rural development. This effect is statistically significant at one per cent level. The implication of this finding to the policy makers and other stakeholders is that there is need to design and put in place measures aimed at improving access to information sharing on health trends. This may improve on the health status of the people in rural areas and avoid treatment

based health management which is very costly. This conforms to a priori expectation, thus investing in increased awareness or improved access to and sharing of information improve health to foster rural development. This result is not surprising at all and as expected concurs with lots of available literature that provides a wealth of examples of how improving access to and sharing of information can enhance health improvement. For example, Management Science for Health (2010) emphasizes that countless lives are lost world over because of insufficient access to quality health information. In support of Management Science for Health, Green, Ottoson, Garcia and Hiatt (2009) note that availability of accurate, timely and analysed information improves the quality of people's health and the healthcare system in general, the delivery of care, the understanding and management of overall health systems. Furthermore, the findings of Kolodner, Cohen and Friedman (2008) shown that access to information and its sharing has much to offer in managing healthcare costs and improving the quality of care. In the same vein, Fernandopulle and Patel (2010) hold a similar perspective that sharing electronic health records by providers can increase administrative efficiency, reduce healthcare costs by eliminating unnecessary duplication of medical tests, and most importantly, reduce medical errors.

However, Dutta and Mia (2009) claim that rural communities are faced with significant shortages of health personnel and many small rural health facilities, improving information sharing can increase the health system response to patients and informs effective decision making. It seems, therefore, that the result possibly may mean that health information sharing is much lower in the rural areas of Uganda relative to urban setting, because of the differences in access to information infrastructure. This implies that as the health care system increases, its resilience on better and wide access to and sharing of more accurate and timely information, quality improvement and reduction of health care disparities are registered. This concurs with findings of Musoke (2012), who maintains that addressing bottlenecks to increased awareness or improved access to and sharing of information on health trends also holds great potential for strengthening rural health care and healthcare delivery gaps.

Policy Development, Programme Planning and Service Delivery: Finally, the estimated coefficient of promoting policy development, programme planning and service delivery has positive probit coefficient of 1.416 and statistically significant effect on health improvement in rural Uganda. The positive coefficient means that promoting policy development, programme planning and service delivery is likely to consequently lead to increases in the level of health improvement among the rural areas in Uganda due to the direct relationship of the independent variable. Further, individuals stated that it is useful for NGOs/SFGs to be involved in promoting policy development, better health programme planning and service delivery to enhance rural development, they were also most likely to state that improved health leads to rural development. Compared to those who disagreed with the relevancy of NGOs/SFGs investing in promoting policy development and better health programming, those who cited its relevance had a probability of 53.5% higher (z -score = 2.96) of stating that improved health would lead to rural development. In other words, NGOs/SFGs' involvement in promoting policy development, better health

programme planning and service delivery is tied to improved health and hence would lead to rural development. This effect is statistically significant at one per cent level. The implication of the result is that in building a viable health sector that addresses the health needs of rural people is well postulated with the magnitude by which health improvement can be boosted when everything in terms of policy, planning and delivery is done appropriately. This conforms to a priori expectation, this shows that investing in policy development, program planning and service delivery in health does not improve health to foster rural development. In support of the result scholars such as Dixon, Harroson, and Mundle (2011) add that effective health programme planning and service delivery is crucial for directing, assessing the impact of health programme or project to the local community, their effectiveness and identifying opportunities.

The results probably may be informed by the understanding that health policy and programme planning facilitate practitioners more systematically to plan, align the delivery of existing health services, document, disseminate and promote effective practice of health service delivery to meet the changing pattern of need and use of services. Therefore, in Uganda there is need to improve the capacities of practitioners in the planning, development and implementation of health services processes by deciding in advance what, how and who is to do it, thus bridging the gap between where we are and where we want to go.

Improving Education to foster Rural Development in Uganda

Palmer (2007) and Gaspenerini (2000) contend that education is a critical part of rural development, as the rural sector benefits from the overall development of the national economy and poverty alleviation, for which education is essential. They further argue that individuals who have had some education are better farmers and more capable of finding off-farm employment. On this, Fluitman (2005) asserts that without basic skills, it is impossible to develop one's potential, neither can a person comprehend the instructions on a bottle of medicine or bag of fertilizer, read a notice, nor compute a bill or write a letter. This leads to the hypothesis that focusing and investing in independent variables (table 2) does not enhance Education improvement in order to foster rural development.

Study results from probit model parameter estimates for factors that affect education improvement (geographical scope, non – formal adult training, coordinating major sources of funding for education, enhanced formal educational quality, policy on education, and research & development) were significant and the results are discussed below. This, based on the computation of the parameters regression estimates for significant factors that influence education improvement, assuming the insignificant is 0 (zero) on table 3, the following equation is derived:

$$\begin{aligned}
 &PROBIT (Education Improvement) = \\
 &1.107 - 2.036 Geog Scope + 1.255 Info \& Tech + 2.899Mjr Src Fund + \\
 &2.052 Govt Poly - 1.885 R\&D + 0.031 Tl Empl \dots\dots\dots(2)
 \end{aligned}$$

Using the probit mode to run function (1) yields the parameter estimates for factors that affect education improvement. The probability of the current main field group/NGO is working in as a partner in Education = 1 is 75.5% given that all predictors are set to their mean values. Study results from probit model marginal values estimates for factors that

affect education improvement such as geographical scope, information and technology, major sources of funding, government policy on education, research and development, and total employees reveal interesting findings regarding the factors that influence education improvement in rural areas in Uganda and are statistically significant. Inferences for significant variables from table 4 show the probit estimation of the education improvement and selected socioeconomic factors in rural areas in Uganda.

Geographical Scope: Firstly, the result on table 3 show the geographical scope of the organization has a negative estimated probit model coefficient of -0.640 and statistically significant effect on education improvement in rural Uganda. Keeping other factors constant, the negative coefficient means that an increase in focus on or investment in geographical scope of the organization is perceived to consequently lead to a decrease in the level of education improvement due to the inverse relationship of the independent variables, thus negatively influencing development in rural areas of Uganda. The finding further reveals that *ceteris paribus* on average the estimated marginal effect focusing and investing in geographical scope of the organization is likely to reduce the probability of education improvement by 64 per cent (z- Score = -2.93) compared to counterparts that do not focus on geographical scope. The effect is statistically significant at one per cent level. The estimated marginal effect shows that organizations with larger geographical scope are likely to be inefficient in providing the required services to the community and hence they end up negatively affecting rather than promoting education improvement.

The policy implication of investing in the geographical scope of the organization wide rural areas makes individuals better farmers and more capable of finding off farm employment, thus contributing to rural development. This did not conform to a priori expectation, thus investing in the geographical scope of the organization regarding its operation does not improve education to foster rural development. The result's uniqueness is that it contradicts the argument of Ssemawala (2011) that investing and focusing on rural geographical scope of the partnerships (between NGOs and SFGs) involved in education promotes education improvement in terms of literacy, post literacy and school education programmes; organizing seminars of awareness building among the community, and skills training for capacity building and income generation. To Ssemawala this is because it activates participation of rural people and cultural development, increasing critical abilities for rural people to diagnose their needs, assert their rights and take greater control of the decisions affecting their lives, providing employment and income opportunities. Ssemawala is supported by Mazibuko (2000), who shows that education contributing to rural development must be locally controlled and could empower the disadvantaged segment of the rural population such as people with disabilities, the girl child and orphans. In Uganda an NGO called World Vision is a partner with rural Communities members where it operates to support schools fees payment through scholarship programmes, improving the learning environment by assisting communities with the construction of classrooms and purchase of furniture and school supplies (Musunguzi, 2009). This has not only strengthened and promoted awareness among the rural communities of the need and importance of education but also promoted the rights of children. The results however may probably be explained

by the challenges which NGOs and SGFs face by investing in rural education services (Kapiriri and Wrightson, 2000), which in the Ugandan context includes the increasing rural poverty and the number of vulnerable children, coupled with adequate funds to facilitate the various activities and programs to promote quality education as they mainly rely on donors and it is difficult to mobilize resources from poor parents.

Promotion of Information and Technology Dissemination: The result shows that promoting information and technology dissemination for learning has a positive probit coefficient of 0.911 and statistically significant effect on education improvement in rural Uganda. The inference therefore is that an increase in promoting information and technology dissemination for learning will consequently lead to an increase in the level of education improvement due to the direct relationship of the independent variable. Equally, the probit model marginal values estimates on table 4 show that promoting information and technology dissemination for learning may increase the probability of education improvement by 39.4 per cent. This result means that on average, the respondents who agree compared to those that disagree that NGOs and SFGs investing in rural communities with improved information and technology dissemination for learning is likely to improve education had a probability of 39.4 per cent (z -score = 2.22). This effect is strong and statistically significant at 5 per cent level. The implication of this finding is that government and other stakeholders need to ensure that there are well laid measures aimed at improving information and technology dissemination for learning in all parts of the country to bridge the would be education gap between rural areas and also between urban and rural areas in the country. With such measures in place, they are likely to ensure improved education among the rural communities. This conforms to a priori expectation, thus promoting information and technology dissemination for learning improves education to foster rural development. This implies that, *ceteris paribus* as SFGs and NGOs promoting information and technology dissemination for learning increases, the likelihood that education is improved also increases. This result therefore is not surprising and is thus supported by Menou and Niang (1991), who show that promoting the role of information for learning through establishment of innovative community information channels, strengthens and empowers the rural people to be among global players in the knowledge-based economy (Mchombu, 2003; Chester and Neelameghan, 2006) also provides opportunities for them, to inform rural development. The rationale for this may be based on the fact that provision of information services in Africa and Uganda in particular has been dispersed and access to various information services has become more difficult especially for those in rural areas who are mainly illiterate, too poor and far from information sources. The results however may perhaps be explained by the great contemporary challenge of equipping rural learning facilities without other support infrastructure such as electricity. In order for teachers to conduct effective lessons on technological use, they must be skilled, informed and critical users themselves, which is not the case in rural Uganda.

Coordination of Major Sources of Funding: Taking this into consideration, the results show that good coordination of major sources of funding for education has a significant

positive effect on education improvement in the rural areas. The estimated probit coefficient of coordination of major sources of funding for education was positive at 2.900 and statistically significant effect on education improvement in rural Uganda. The positive coefficient means that an increase in coordination of major sources of funding for education is perceived to bring about an increase in the level of education improvement due to the direct relationship of the independent variable. From the probit model marginal values estimates (table 4), promoting the coordination of major sources of funding for education on average (all other factors held at their means), respondent that agree, compared to those that disagree that SFGs and NGOs investing in coordinating major sources of funding causes education improvement increases the probability of education improvement by about 91.1 per cent (z-score = 3.52). The effect of coordination of major sources of funding for education is statistically significant at one per cent level. The implication of this finding is that government and other stakeholders should ensure that there are measures put in place to ensure transparency and good coordination of major sources of funding for education in order to meet the needs of education financing and delivery of scholastic materials in the rural areas. This conforms to a priori expectation that investing in coordinating major sources of funding improves education to foster rural development. This implies that, *ceteris paribus* as SFGs and NGOs coordinating major sources of funding increases, the likelihood that education is improved also increases.

All other factors remaining constant, an increase in coordinating major sources of funding for education has a statistically significant influence on education improvement due to the direct relationship of the independent variable, which is not surprising. Not surprising, the finding supports both endogenous and exogenous growth of the rural areas, but the challenge is how to coordinate major sources of funding for greater impact (Okidi, and Mugambe (2002). The results seem to suggest that rural areas are lacking common strategies, instruments and structures to better coordinate all funds to avoid overlaps and duplication of efforts in order to contribute towards rural development through education improvement. Decentralisation has enabled local governments to institutionalize processes, negotiate partnership agreements to raise resources to target and reach the rural areas (Serageldin *et al*, 2006), which seem to have failed in the area of coordinating the different sources of funding. The reason for this might be that unlike funding from the central government that is placed in a basket to target and reach the areas of greatest need and launch a range of initiatives to foster development, coordinating of private funding sources such as of NGOs and SFGs remain wanting. Therefore, mechanisms for coordinating major sources of funding for education such as the need to define the roles of key actors in education who work together in the design, delivery, monitoring and evaluation of services and activities aimed at enhancing education in rural areas must be taken more serious than ever.

Government Policy: Subsequently, the estimated coefficient of government policy on education for rural areas/ poor families (e.g. UPE/ USE) has a positive probit coefficient of 2.052 and statistically significant effect on education improvement in rural Uganda. The positive coefficient means that an increase in coordination of major sources of funding for

education is perceived to cause an increase in the level of education improvement due to the direct relationship of the independent variable, which in turn influences rural development. The result of the education improvement model also reveals that policies on education for rural areas with specific focus on the poor families have a significantly positive effect on education improvement in rural areas in the country. The probit model marginal values estimates on table 4 indicate that policy on education for rural areas in form of Universal primary Education (UPE) and Universal Secondary education (USE) increases education improvement by about 64.5 per cent (z -score = 2.61) compared to their counterparts with no such government policies on education for rural areas. In other words, increase in coordination of major sources of funding for education is necessary and crucial for improving education in rural Uganda. The estimated effect is statistically significant at one per cent level. This means that there is need to ensure that people fully participate in UPE and USE in order to enhance education improvement in the rural areas. This conforms to a priori expectation, thus focusing and investing in policy on education for rural areas/poor families increases education improvement. While in general the finding suggests that an increase in investments in policy on education for rural areas/poor families enhances education in rural settings. This implies that, *ceteris paribus*, as SFGs and NGOs focus and invest in policy on education for rural areas/poor families (e.g UPE/ USE) increases, the likelihood that education improves also increases. The finding is not surprising as it is in agreement with the study of Gardiner (2008) who suggests that surplus rural labour has to find work outside the farm, whether in rural or urban areas and that without basic literacy and numeracy individuals are unlikely to be hired for reasonable pay. Moreover, the exogenous approach to rural development supports the finding by arguing that because rural development efforts are stimulated from the outside and in this case by the central government through the formulation of a policy for rural education (Galdeano-Gomez, Aznar-Sanchez and Perez-Mesa, 2011). In addition, Feintein and Sabate (2007) explain that rural areas of low income countries have problems of access to education and in order for people in such areas to compete with others, free education (like UPE, USE) is required. The findings, therefore, suggest that the rural communities cannot foster development without an educated lot of their people. Perhaps, the explanation behind the finding is based on the fact that Uganda is an agrarian economy dominated by smallholder farmers, where it is acceptable that farmers with basic education are more likely to adopt new technology and become more productive.

Research and Development: Another interesting finding of this study is that conducting research and development programmes has a significant effect on education improvement in the rural areas. The estimated coefficient of conducting research and development programmes was negative probit coefficient of -1.884907 and statistically significant effect on education improvement in rural Uganda. The negative coefficient of conducting research and development programmes implied that conducting research and development programmes did have an inverse bearing on education improvement. On the other hand, the estimated probit marginal value estimates from table 4 show that respondent who stated that it is beneficial to improve education if NGOs and SFGs invests in conducting

research and development programmes, they were less likely to state the contrary. On average, keeping other factors at their means, compared to responds who disagree that NGOs and SFGs investing in conducting research and development programs, those who agree their probability is likely to reduce education improvement by about 59 per cent (Z score = -2.19). The implication is focused investments in conducting research and development programmes are not so relevant to the rural setting of Uganda, as may be in urban. In this context government and stakeholders in the education sector should design rural development programme that addresses the priorities of the real people such as providing good quality education in order to develop rural human resources for reducing poverty. This did not conform to a priori expectation, thus investing in conducting research and development programmes decreases education improvement. The result therefore, contradicts Field's (2011) argument that research and development helps the understanding of what works and why, what the short and long term implications are, and provides justification and rationale for decisions and actions, that help to build a repertoire for dealing with the unexpected, identify problems, inform improvement in the delivery and so forth. To Field (2011), investing in research and development related to education helps to avoid running into the risk of basing education on dogma, theory, ideology, convenience and prejudice. The results perhaps may be explained by the fact that funding, conducting research and development programs may lead to diversion of both financial resources and man power that could have been allocated to direct education funding and this negative effect could be short-term. Also, possibly, the priority for rural people in Uganda may not be research and development but providing good quality education. In this case, what would matter much is for NGOs and SFGs to provide quality education which would entail focusing and investing in factors such as local voice in what the school offers and how it is governed, recruiting and supporting capable teachers, adapting the curriculum to a rural setting while keeping it within the national system, helping those who cannot afford it, and constructing new schools as well as increasing classrooms in existing schools. Hence, the rationale behind the finding may be unlike in urban areas as in rural settings research and development rarely gives policy understanding of externalities, and NGO and SFGs in Uganda possibly would prefer implementing education projects that are intended to have system wide effect such as building school management and administrative capacity, information systems, teachers' training, textbook development and publication, monitoring and evaluation for education (Basaza, Milman and Wright, 2010) in order to foster rural development.

Total Number of Employees: Finally, another prominent finding of this study is the significant and positive effect of the total number of employees on education improvement in Ugandan rural areas. The estimated probit coefficient of total number of employees is positive (0.031) and statistically significant effect on education improvement in rural Uganda. The positive coefficient means that an increase in the total number of employees will consequently lead to an increase in the level of education improvement due to the direct relationship of the independent variable. In the same vein, the probit marginal value estimates

on table 4 shows that respondents specified that it is valuable for NGOs and SFGs to have more employees in the education services to improve education, they were also most likely to state the contrary. Compared to those who disagree with the importance of NGOs and SFGs investing in having more employees, those who agree their probability increases education improvement by about 1 per cent (Z -score = 1.86). This result means that rural communities with increased total number of employees will realise 1 per cent in education improvement, compared to counterparts without. This effect is weak and statistically significant at 10 per cent level.

Given that we do not control for the quality of education of the workers, this finding should be interpreted cautiously. The implication therefore is that government and other stakeholders should put in place measures conducive to attract more workers and also to keep them in service for rural education improvement. This conforms to a priori expectation, thus investing in the total number of employees improve education to foster rural development. This implies that, *ceteris paribus* as SFGs and NGOs subsidize health insurance and financing health services increases, the likelihood that education is improved also increases. The result is not surprising in that, it confirms the conclusions by Coultas and Lewin (2002) who contend that teachers prefer to teach in urban areas, which results into rural school having empty posts which reduced total number of employees in the rural area, even when they are filled, rural education facilities have fewer qualified and experienced teachers. In the same vein, Towse *et al* (2002) suggest that the problem of staffing in rural education facilities is often considered as a problem of employee numbers.

In addition, Lewin (2002) notes that while there may be many qualified people in urban areas including teachers, in the rural areas there are equally serious challenges of deployment of qualified people such as teachers. Lewin, further argues that the pattern of simultaneous surpluses and shortages is strong evidence that the problem of the number of teachers in rural schools will not be solved simply by providing more teachers. MoES (2005) maintains that the inadequacies of teachers in rural areas make it difficult for them to secure their entitlements from local governments, sometimes having to put up with obstacles or corruption by officials. Lewin (2002) also brings in a gender dimension, when he argues that female employees may be even less willing to accept posting in education institutions in rural settings. This gender distribution of employees in rural education institutions has important implications for gender equity in school enrolment, which makes school environments not very supportive of and nurturing for girls, thus reason for high drop out of girls. This, to Lewin has resulted into fewer female teachers. The result may probably be explained by the need for policies that will ensure that the teachers reach and stay motivated in rural schools in Uganda when posted. This calls for policies focused on addressing challenges of low and irregular salaries, lack of professional opportunities, and the risk for taking on multiple duties as proposed by Luis and McEwan (2000).

Improving Agriculture to Foster Rural Development

Rosegrant and Evenson (1992) demonstrate that agricultural input and productivity vary greatly with the stage of economic development, resource endowment, government policy and agronomic-ecological conditions. Distinguishing productivity growth from the

conventional inputs/factors of production such as land, labour, capital, water and chemical inputs, Rosegrant and Evenson (1992) contend that basic and advanced training in agriculture; access to resources for agriculture; agricultural policy advocacy; access to agricultural information and research and extension services are fundamental.

Geographical Scope: First, the findings reveal that the geographical scope of the NGOs and SFGs with regard to farming activities has a significant effect on agricultural improvement in the communities. The results show that geographical scope of the NGOs and SFGs has a positive probit coefficient of 1.668 and statistically significant effect on agricultural improvement in rural Uganda. The positive coefficient implies that these independent variables had a direct relationship to agricultural improvement. Holding other factors constant, an additional investment in geographical scope is associated with an increase in agricultural improvement, thus inducing rural development. Equally, the estimated marginal effect indicates that geographical scope of the NGOs and SFGs' operations increases the probability of agricultural improvement by 59 per cent. This results mean that respondents stated that it is important for NGOs and SFGs to focus on their geographical scope to realize agricultural improvement; they were also most likely to state the contrary.

Therefore, compared to those who disagree with the importance of NGOs and SFGs focusing on the geographical scope, those who cited its importance had a probability of 59 per cent (Z -score = 3.9) higher than agricultural improvement, compared to counterparts without. This effect is statistically significant at 1 per cent level. It further indicates that the NGOs and SFGs in Uganda are undertaking their operations in reasonably manageable geographical areas and thereby are likely to be efficient in providing the required services to the community and hence they end up positively affecting rather than promoting agriculture improvement. The implication of the result is for government and stakeholders to look for ways of enhancing relevance and effectiveness of agriculture for sustainable development and poverty reduction. This may mean that broad-based agricultural development is crucial in Uganda, as it plays an important role in the rural economy and for people's income accelerating agricultural growth is a must for rural development. This conforms to a priori expectation, providing evidence that geographical scope leads to agricultural improvement. The finding is not surprising in that it is supported by McNamara, (2011) who discusses that most of the agricultural activities take place in rural areas. In fact, Uganda's food production base is widely dependent on the rural smallholder farmers (Balya, 2008).

The explanation is that to foster rural development, enhancing agriculture is not only the most critical but the easiest sector to focus – as it employs the majority in the rural areas. The finding therefore is in line with (Magingxa and Kamara, 2003) who claims that agricultural and rural developments are very much interlinked with each other. Possibly the results can be explained by the fact that Uganda is an economy dependent on agriculture of the small holders who can only find affordable factors of production accessible in rural areas with over 85% of the estimates and thirty million people living and thereby depending mainly on agriculture (Knickel, 2013). While opportunities for agricultural improvement are inherent in Uganda, challenges to realise them are huge. For example, in rural Uganda,

productivity of crop production is associated with the intensive use of inputs, yield can be increased through better land management and farming practices, and weed/pest control (Benin *et al*, 2007). Aheibwe (2013) add that poor land husbandry are common in Uganda, besides the inappropriate use of inputs and lack of knowledge for chemical input.

Basic and Advanced Training: Interesting, the estimated results show that offering basic and advanced training has a negative and statistically significant effect on agricultural improvement among the Ugandan rural farmers. The estimated coefficient of offering basic and advanced training is a negative probit coefficient of -0.913 and statistically significant effect on agricultural improvement in rural Uganda. The negative coefficient implies that these independent variables had an inverse relationship to agriculture improvement. Holding other factors constant, an additional investment in offering basic and advanced training is associated with a decrease in agricultural improvement.

Meanwhile, the estimated result show that respondents who stated that it would be useful to agriculture improvement, if NGOs and SFGs focus on offering basic and advanced training, they were less likely to state the reverse. On average (keeping other factors at the mean), compared to the respondents who disagree with NGOs and SFGs investing in basic and advanced training, those who agree had a probability of 82.4 per cent less (Z -score = -1.77) for stating that offering basic and advanced training would lead to agricultural improvement in order to foster rural development in Uganda. This effect is strong and statistically significant at ten per cent level. The implication of this finding is that government and other stakeholders need to ensure that they precisely understand the basic needs of the farmers in all parts of the country to avoid funding non beneficial activities. With such measures in place, they are likely to ensure improved education among the rural communities. This conforms to a priori expectation, providing evidence that offering basic and advanced training does not lead to agricultural improvement. This is backed by Naluwairo and Tabaro (2006) who contend that agricultural education and training creates niches for farming and smallholder rural enterprises. Naluwairo and Tabaro further allude that agricultural education and training brings in cross cutting issues of sustainability, environment, gender, participatory development and the role of rural institutions. The results perhaps may be explained by the slow response of the agricultural sector to the rapid changes occurring in rural areas of Uganda, resulting from new approaches and policies such as NAADS for tackling the declining productivity, environmental degradation and increasing population. In particular, changes for the existing agricultural education and training combined with the need to meet emerging opportunities arising through the growth of the civil society's (including NGOs) involvement in extension (Lukwago, 2010). Besides, within the rural setting of Uganda, there are inadequate mechanisms to coordinate the several agencies involved in agricultural education and training. In fact, the institutions are often isolated from extension and research services, thus curricula rarely adjust to the emerging issues (e.g. farmers' participation in research) and from rural communities themselves.

Promoting Access to Land and Other Factors of Production: In addition, the analysis

of the effect of promoting access to land and other factors of production on agricultural improvement in the country reveals a significant negative effect on the latter in the rural areas. The estimated coefficient of promoting access to land and other factors of production was a negative probit coefficient of -0.850 and statistically significant effect on agricultural improvement in rural Uganda. The estimated result show that respondents who stated that it would be advantageous to agricultural improvement, if NGOs and SFGs focus on promoting access to land and other factors of production, they were less likely to state the opposite. On average (keeping other factors at the mean), compared to the respondents who disagree with NGOs and SFGs investing in promoting access to land and other factors of production, those who agree had a probability of 30.2 per cent less (z-score = -2.47) for stating that promoting access to land and other factors of production would lead to agricultural improvement in order to foster rural development in Uganda.

The effect is statistically significant at five per cent level. The implication of this finding is that government and other stakeholders should institute measures to ensure that farmers have access to land and other factors of production in order to boost agricultural productivity given that it provides employment to about 67 per cent of Ugandans and over 80 per cent derive their livelihood from agriculture (UBOS, 2007). This did not conform to a priori expectation, thus accept the null hypothesis that promoting access to land and other factors of production does not have a bearing on agricultural improvement. As it is, a well-known fact that land is an asset of enormous importance to billions of rural dwellers world over, especially within developing countries, the result is surprising.

According to Cotula, Toulmin and Quan (2006), rural poverty is strongly associated to poor access to land either in the form of landlessness or other factors. Cotula, Toulmin and Quan, further assert that increasing access to land for the poor can bring about direct benefits such as poverty reduction, not least by contributing directly to increase household food security. In a country like Uganda where agriculture is the main economic activity, access to land is a fundamental means for the poor to ensure household food supply and generation of income. However, the rationale for this finding may be that for the respondent from Central Uganda, land is in abundance to the extent that their poverty is not in any way attributed to poor access to land but to other structural and cultural factors such as remoteness of rural areas, poor infrastructure (poor roads, absence of vehicles), poor market linkages, lack of access to financial services, changing weather patterns (drought, floods), which in all have an impact on water, natural resources, agricultural production and rural livelihoods.

Mobilizing Resources: Subsequently, the estimated coefficient of mobilizing resources (human and financial) for agricultural development was positive probit coefficient of 0.820 and statistically significant effect on agricultural improvement in rural Uganda. The positive coefficient means that an increase in mobilizing resources (human and financial) for agricultural development will consequently lead to an increase in the level of agricultural improvement due to the direct relationship of the independent factor. The estimated result show that respondents who specified that it would be gainful to agriculture improvement, if NGOs and SFGs increase in mobilizing resources (human and financial), they were less likely to state the reverse. On average (keeping other factors at the mean), likened to the

respondents who disagree with NGOs and SFGs investing increase in mobilizing resources (human and financial), those who agree had a probability of 29 per cent higher (z-score = 2.23) for stating that increase in mobilizing resources (human and financial) would lead to agricultural improvement in order to foster rural development in Uganda. The result is statistically significant at five per cent.

The main policy message from this finding is that there is need at household, local and national levels to put in place measures aimed at mobilizing the existing resources and adequately allocating them to boost agricultural improvement in the country. In line with government programmes of agricultural modernization, this will go a long way in reducing poverty in the country. This conforms to a priori expectation, therefore, mobilizing both financial and human resources do promote agricultural improvement in Uganda. The finding is not surprising, as it is consistent with Khalil *et al* (2008) who maintain that agriculture requires both human and financial resources to facilitate the transfer of knowledge from research centres to the farmers. The finding, therefore, indicates that mobilizing resources through SFGs and NGOs for agricultural development is essential for enhancing agriculture, which in turn is a major source of food, income, employment, foreign exchange and tax revenue that are critical to rural development. As Echeverria and Beintema (2009) contend that since agriculture connects with food security, poverty reduction and maintenance of the natural resource base, it requires better appreciation in terms of the skills, knowledge and funding rations in budget. It further concurs with Mugambe, (2008) who reasons that people perceive groups as a critical avenue for fighting poverty and SFGs in rural areas in particular. The finding is in consistence with Khalil *et al* (2008) who argues that agriculture requires both human and financial resources to facilitate the transfer of knowledge from research centres to the farmers. The finding, therefore, indicates that mobilizing resources through SFGs and NGOs for agricultural development is essential for improving agriculture, which in turn is a major source of food, income, employment, foreign exchange and tax revenue that are critical for rural development. The result may be explained possibly by the fact that the poor view groups as providers of means to working together in self-help groups, and through which they can be in a position to tap external benefits such as resources (financial, human and physical). As Echeverria and Beintema (2009) emphasise that since agriculture connects with food security, poverty reduction and maintenance of the natural resource base, it requires better appreciation in terms of the skills, knowledge and funding rations in budgets.

Access to Agricultural Information: Another finding revealed by this study is that promoting access to agricultural information has a significant effect on agriculture improvement among rural farmers in the country. The result indicates that promoting access to information relevant for agricultural development has a negative probit coefficient of -1.149, and statistically significant effect on agricultural improvement in rural Uganda. The negative coefficient of promoting access to information relevant for agricultural development though had an inverse bearing on agricultural improvement. The estimated result show that respondents who stated that it would be profitable to agricultural improvement, if NGOs and SFGs are promoting access to agricultural information, they were less likely to state

the reverse. On average (keeping other factors at the mean), compared to the respondents who disagree with NGOs and SFGs promoting access to agricultural information, those who agree had a probability of 41 per cent less (Z -score = -2.56) for stating that promoting access to agricultural information would lead to agricultural improvement in order to foster rural development in Uganda. The effect is statistically significant at one per cent level. The implication of this is that an attempt to promote agriculture productivity in the country as a major source employment, foreign exchange and source of food, government and other stakeholders should design and implement transparent efficient measures to ensure that farmers get access to agricultural information. This did not conform to a priori expectation, thus promoting access to information relevant for agricultural development does not have a bearing on agriculture improvement; but this result contradicts Aina (2007), who asserts that information and knowledge are very crucial in agricultural improvement/development of any community and where they are not or are poorly disseminated because of certain constraints, agricultural improvement becomes highly impeded. Indeed Aina, further argues that lack of access to basic agricultural knowledge and information by rural smallholder farmers may be forcing them to stick to their old traditional methods of farming systems and animal husbandry practices that result in poor crop and livestock productivity.

Aina (2007) is supported by Obidike (2011) who affirms that the most expensive input for improving rural agriculture is ensuring adequate access to knowledge and information on new technologies, early warning systems (drought, pests, diseases, etc.), improving seedling, fertilizer, credit, market prices, among others. Perhaps the explanation behind the result may be due to several challenges rural smallholder farmers face in accessing information for agricultural development and the resultant effect of this has still been poor agricultural yields. The results may be explained perhaps by the fact that some of the key challenges for poor dissemination of information common in Uganda include: lack of access to roads for regular visits by extension officers, poor public relations, none availability of electricity supply, and lack of funds to procure information carrying gadgets. This is supported by Van and Fortier (2000) who add that illiteracy and remoteness to sources of information hamper easy provision of agricultural information to farmers in a rural setting.

Research and Extension Services: The result indicate that conducting agricultural research and extension services has negative probit coefficient of -1.334 and statistically significant effect on agricultural improvement in rural Uganda. The study further shows that respondents who state that it would be beneficial to rural development if NGOs/SFGs conducting agricultural research and extension services, they were less likely to state that conducting agricultural research and extension services would lead to improving agriculture. On average (all other factors held at their means), compared to individuals who disagreed with NGOs/SFGs investing in conducting agricultural research and extension services, those who agreed had a probability of 47.3 per cent less (Z -score = -2.52) of stating that conducting agricultural research and extension services would lead to agricultural improvement. In other words, conducting agricultural research and extension services is necessary but not crucial in agricultural improvement in order to inform rural development in Uganda. This effect is strongly and statistically significant at 5 per cent level. Thus, in line

with the government's NAADS programmes, the implication is that government and other stakeholders should ensure that provision of extension services is for all farmers with no gender discriminations and this will further promote agricultural improvement in the country. This did not conform to a priori expectation, thus investing in conducting agricultural research and extension services does not have a bearing on agriculture improvement. This is a notable result in that for an agriculturally dependant country such as Uganda, conducting agricultural research and extension services can help bring about increased agricultural production and productivity.

Okori (2011) argues that reducing poverty rates in Uganda requires the empowerment of smallholder farmers to adapt to new technologies, add value and access market which can all be informed properly by conducting successful agricultural research and effectively delivering extension services. To London, Lane and Powell (1996) in Kumba (2003) research and extension promulgate development as they provide opportunities for agricultural professionals to make expert contributions in identifying lessons for best practices, development of appropriate agricultural technologies and improve their dissemination among farmers for adoption. The explanation of these results may be based on the fact that smallholder farmers and NGOs in the short-run don't see critical relevance of the research and extension since they are long-term processes and returns on investment may take at least 10 to 15 years to realize (Kumba, 2003).

Also, research and extension require considerable investment of capital and operational costs to be effective. Besides, possibly, the prerequisites are lacking for research and extension to operate successfully, such as government commitment, which presupposes lack of supportive policies for research and extension; the linkage between research and extension must be well articulated and operationalized – for instance the information and technology generated by research should be able to reach the greatest number of smallholder farmers (as users) if the extension system is to achieve its goal, and of course time and feedback to research and ability to research systems. However, it could be that research and development are not what rural people want but the results from the R&D if presented in a simple and easily assimilated manner.

Improving Industry to Foster Rural Development in Uganda

The details of the factors as derived from the pilot study and literature such as organization scope, geographical scope, small holders and SMEs participation in markets; infrastructure development; scaling up and replicating value chain innovations; NRM & development agro-based industries; rural advocates for agro-based industrial policies; research and development; and total employees are shown, as on table 5. Focusing and investing in independent variables (table 4) does not increase industry improvement, thus fostering rural development. Based on table 4, the regression coefficients have effects on a cumulative normal function of the probabilities that is derived from equation (iii) to give:

$$PROBIT (Industrial Improvement) = 0.849 - 0.964 GeoScp + 0.743 Rural Policies + 0.023 Total Employees \dots\dots\dots 7$$

The probability of the current main field your group/NGO is working in as a partner in Industry = 1 is 27.6% given that all predictors are set to their mean values. 31.5% given that all predictors are set to their mean values. Applying the probit method to establish the effect of the factors that affect industry improvement in order to foster rural development, give rise to the parameter estimates for factors that affect industry improvement as on table 5.

Geographical Scope: First, the findings reveal that the geographical scope of the organization regarding the reach of the NGOs/SFGs has a significant effect on industrial improvement. In addition, the results show that promoting geographical scope of the organization regarding NGOs/SFGs reach has a positive probit coefficient of -0.964 and statistically significant effect on industrial improvement in rural Uganda. The estimated result shows that respondents who state that it would be advantageous to industrial improvement, if NGOs and SFGs focus on promoting geographical scope, they were less likely to state the opposite. On average (keeping other factors at the mean), compared to the respondents who disagree with NGOs and SFGs focusing on promoting geographical scope, those who agree had a probability of 39.4 per cent less (z -score = -2.47) for stating that promoting geographical scope would lead to industrial improvement in order to foster rural development in Uganda. This effect is strong and statistically significant at 5 per cent level. The implication is that the bigger the area of operation of the SFGs and NGOs, the less effective they will be. This did not conform to a priori expectation, thus focusing and investing in geographical scope does not lead to industrial improvement. This means that an increase in support for rural advocates for agro-based industry policies will consequently lead to an increase in the level of industry improvement due to the direct relationship of the independent factor.

What is surprising here is that geographical location indicated by geographical scope, together with infrastructure development (including financial facilities) do not positively influence industrial improvement. This is contrary to Osei (2010), who debates that those industries located in rural areas such as cottage ones have the advantages of needing low capital and they use local resources which is readily available. It also does not match with the findings of Barkley and Henry (1997), who add that industries located based on the rural geographical basis facilitate effectively in mobilizing rural resources such as capital and skills which might otherwise remain utilized. In Addition Gabe, Stolarick and Jaison (2012) note that geographical scope of rural industries generates employment and slow down rural-urban migration. The result could be explained based on the argument that geographical scope of agro based industries are based on the agricultural products which are easily and cheaply available in the rural areas.

b). Support for Agro-Based Industry Advocates: Considering supporting rural advocates for agro-based industry policies for industry promotion, the estimated marginal effects results show that supporting rural advocate for agro-based industry policies for industry has a significant positive effect on industry improvement in the rural areas. The results show that supporting rural advocates for agro-based industry policies for industry promotion

has a positive probit coefficient of 0.743 and statistically significant effect on industrial improvement in rural Uganda. Additionally, respondents state that it is useful for NGOs/SFGs to be involved in supporting rural advocates for agro-based industry policies to improve industry, they were also most likely to state that supporting rural advocates for agro-based industry policies leads to industrial improvement. Compared to those who disagreed with the relevance of NGOs/SFGs, investing in supporting rural advocates for agro-based industry policies, those who cited its relevance had a probability of 24.8% higher of stating that supporting rural advocates for agro-based industry policies would lead to industrial improvement to inform rural development. This effect is strong and statistically significant at 5 per cent level. The implication of this finding is that government and other stakeholders should ensure that there are measures put in place for transparency and good micro-environment investments in rural areas to attract industry investments to enhance industrial growth in rural areas. This means that an increase in support for rural advocates for agro-based industry policies will consequently lead to an increase in the level of industry improvement due to the direct relationship of the independent factor. This conforms to a priori expectation, thus considering supporting rural advocates for agro-based industry policies promote industrial improvement to foster rural development in Uganda. This means that an increase in support for rural advocates for agro-based industry policies will consequently lead to an increase in the level of industry improvement due to the direct relationship of the independent factor. The result is not surprising in that it supports the findings of Sundar and Srinivasan (2009) that emphasizes that agro-industrial policy influence aims at value addition from agricultural produce by induction of modern technology into food processing chain by developing facilities for storage, transport and processing. This literature is in line with that of Aryeetey (2007) and Olayiwola and Adeleye (2005) that maintains that policy influence for agro-based industries also increases participation of entrepreneurs and farmers in food processing and related sectors, creating new employment opportunities and increasing incomes for the rural people. The results perhaps can be explained by the fact that farmers as small holders and small enterprises in Uganda need qualitative different support in terms of finance, infrastructure and skills development. Agro-industrial policy influence therefore can support in improving storability and providing the link from the farm to the processor and the market.

Total Employees: Another key finding of this study is that total employees of the organizations in question have a significant effect on industry improvement in the rural areas. The result show that increasing total employees of the NGOs and SFGs has a positive probit coefficient of 0.023 and statistically significant effect on industrial improvement in rural Uganda. Further, respondents state that it is useful for NGOs/SFGs to be involved in increasing total employees of the NGOs and SFGs to enhance rural industry; they were also most likely to state that increasing total employees of the NGOs and SFGs leads to improvement of industry. Compared to those who disagreed with the relevance of NGOs/SFGs increasing total employees of the NGOs and SFGs, those who cited its relevance

had a probability of 53.5% higher of stating that increasing total employees of the NGOs and SFGs would lead to improved industry in order to promote rural development. This effect is weak and statistically significant at 10 per cent level. This results means that total employees may lead to enhanced advice to potential investors and this will subsequently promote industry improvement. This conforms to a priori expectation investing in increasing the number of employees of NGOs and SFGs promote industrial improvement in the rural areas of Uganda. This implies that the total number of employees has an influence on industry improvement due to the direct relationship of the independent factor. The results here indicate that in order to realize rural development through industry improvement, it is paramount to invest in employees considering the current scope of NGOs and SFGs. Supporting rural advocates for agro-based industry policies as well as conducting research and development programmes. Uniquely though, geographical location indicated by geographical scope, together with infrastructure development (including financial facilities) do not positively influence industrial improvement. This supports the argument of Adedayo and Afolayan (2012), who say that infrastructural development such as roads, electricity and communication enhances industrial development. In the same vein the result concurs with Gabe, Stolarick and Jaison (2012) findings that the more number of workers that are available in a place determines the nature of activities engaged in for livelihoods. The result may be explained by the fact that in Uganda, like elsewhere rural industries are labour intensive, they require large numbers of personnel especially casual workers that area readily affordable and accessible in rural areas. This is supported by Bryden and Bollman (2000) who reason that rural setting are fond of harbouring more of the unskilled labour that can easily be employed as casual workers. For this study, it is apparent that with the inherent growth of the rural -urban economy in Uganda, the traditional industries are on the decline; few new industries have appeared and they are either location-tied because of their weight-loss, loss of bulky consignments or preference of the rural location because the owners inherited land assets. To succeed, Uganda's rural industry has to latch on to the urban economy and make profits from the urban money.

CONCLUSION

Through a case study, this work analysed the contribution of Non-governmental Organisations (NGOs) and smallholder farmer groups (SFGs) in rural development in Uganda. First, which is already in use by existing NGOs and SFGs, requires putting more focus and investment in improving health, education, agriculture and rural industry in rural areas. Second approach pre-calculates the specific factors for improving health by subsidizing health insurance and finance health services increased awareness/improved access to information and information sharing on health trends among the communities, and policy development, program planning and service delivery; education through geographical scope of the organization regarding its operation; promoting information and technology dissemination for learning and access to various information; coordination of major sources of funding for education; policy on education for rural areas in form of

Universal Primary Education (UPE) and Universal Secondary Education (USE); conducting research and development; the total number of employees. Also, improving agriculture through focusing investments in geographical scope of the organization regarding it; offering basic and advanced training; promoting access to land and other factors of production on agriculture; mobilizing resources both financial and human in promoting access to agricultural information; conducting research and extension services; as well as Industry through investing in geographical scope of the organization regarding its operation; supporting infrastructure development including financial facilities; supporting rural advocate for agro-based industry policies for industry promotion; conducts research and development programs ; and considering the total employees. It is therefore necessary to harness the role of different players in rural development including the rural institutions such as NGOs, SFGs among others.

Table 1: The summary of Independent variables - factors affecting the main objectives

Main Objectives (Improvement)			
Health	Educational	Agricultural	Industrial
Organizational Scope	Geographical scope	Geographical scope	Organization scope
Geographic al Scope	Non-formal adult training	Training in agriculture	Geographical scope
Beneficiaries	Formal educational quality	Access to production factors	Small holders and SMEs participation in markets
Health Subsidies	Information and technology	Resources mobilization for agricultural	Infrastructure development
Health practitioners' training	Major sources of funding	Networking in agriculture	Scaling up and replicating value chain innovations
Health Information sharing	Capacity building of SFGs/NGOs	Agricultural policy	NRM & agro- based industries development
Personal education & self-management	Government Policy on education	Access to agricultural information	Rural advocates for agro-based industrial policies
Policy and Service	Research and development	Research and extension services	Research and development
Partnership Efforts	Total employees	Total employees	Total employees
Research and Development			

Source: Field Survey, 2015

Table 2: Parameter Regression and Marginal Value Estimates for Health Improvement

Health Improvement	Estimates			Marginal Value Estimates		
	Coef.	Std. Err.	z	dy/dx	Std. Err.	z
Organizational Start Year	-0.872	1.313	-0.66	0.630107	0.072	8.79
Organizational Scope	-1.073	0.682	-1.57	-0.405	0.255	-1.59
Geographic al Scope	-0.053	0.301	-0.18	-0.020	0.114	-0.18
Beneficiaries	0.260	0.454	0.57	0.098	0.172	0.57
Health Subsidies	-0.249	0.492	-0.51	-0.094	0.186	-0.51
Health practitioners' training	-0.709	0.408	-1.74**	-0.268	0.155	-1.72**
Health Information sharing	0.112	0.382	0.29	0.042	0.145	0.29
Personal educ& self-management	1.109	0.433	2.56***	0.419	0.161	2.62***
Policy and Service	0.009	0.523	0.02	0.003	0.197	0.02
Partnership Efforts	1.416	0.484	2.93***	0.535	0.181	2.96***
Research & Development	0.375	0.596	0.63	0.142	0.225	0.63
Total Employees	0.483	0.554	0.87	0.182	0.208	0.88
	-0.005	0.016	-0.34	-0.002	0.006	-0.34
LR chi2(12)				40.2000		
Prob. > chi2				0.0001		
Pseudo R2				0.3823		
Log likelihood				-32.4820		
Number of observations				77		

***, **, and * is significant at 1%, 5% and 10% level, respectively

Source: Field Survey, 2015

Table 3: Parameter Regression and Marginal Value Estimates for Education Improvement

Educ Improvement	Estimates	Regression		Marginal Value Estimates		
	Coef.	Std. Err.	z	dy/dx	Std. Err.	z
Intercept/ Constant	1.107	1.617	0.68	0.755	0.095	7.92
Geog Scope	-2.036	0.736	-2.77***	-0.640	0.218	-2.93***
Non-formal adult trgs	0.908	0.551	1.65	0.285	0.178	1.6
Formal educ quality	0.175	0.800	0.22	0.055	0.255	0.22
Info and techn	1.255	0.603	2.08**	0.394	0.178	2.22**
Major funding sources	2.899	0.790	3.67***	0.911	0.259	3.52***
Capacity building	1.176	0.785	1.5	0.369	0.239	1.54
Gov't Policy on educ	2.052	0.807	2.54***	0.645	0.247	2.61***
R&D	-1.885	0.862	-2.19**	-0.592	0.271	-2.19**
Total employees	0.031	0.017	1.86*	0.010	0.005	1.86*
LR chi2(12)	73.87					
Prob. > chi2	0.0000					
Pseudo R2	0.6801					
Log likelihood	-17.368814					
Number of observations	83					

***, **, and * is significant at 1%, 5% and 10% level, respectively

Source: Field Survey, 2015

Table 4: Parameter Regression and Marginal Value Estimates for Agricultural Improvement

Agric'l Improvement	Estimates	Regression		Marginal Value Estimates		
	Coef.	Std. Err.	z	dy/dx	Std. Err.	z
Intercept/ Constant	-2.571	0.965	-2.66	0.315	0.060	5.22
Geographical scope	1.668	0.441	3.78***	0.592	0.152	3.9***
Training in agric	-0.913	0.516	-1.77*	-0.324	0.183	-1.77*
Access to fop	-0.850	0.349	-2.44**	-0.302	0.122	-2.47**
Rs mobilize for agric	0.820	0.375	2.19**	0.291	0.131	2.23**
Networking in agric	0.452	0.387	1.17	0.161	0.137	1.17
Agricultural policy	-0.371	0.348	-1.07	-0.132	0.123	-1.07
Access to agric info	-1.149	0.456	-2.52***	-0.408	0.159	-2.56***
Rsch & ext. services	-1.333	0.541	-2.46**	-0.473	0.188	-2.52**
Total employees	-0.016	0.012	-1.32	-0.006	0.004	-1.33
LR chi2(12)	29.28					
Prob. > chi2	0.0006					
Pseudo R2	0.2647					
Log likelihood	-40.669451					
Number of observations	84					

***, **, and * is significant at 1%, 5% and 10% level, respectively

Source: Field Survey, 2015

Table 5: Parameter Regression and Marginal Value Estimates for Industrial Improvement

Industry Improvement	Estimates	Regression		Marginal Value Estimates		
	Coef.	Std. Err.	z	dy/dx	Std. Err.	z
Intercept/ Constant	0.849	0.867	0.98	0.276	0.054	5.13
Organization scope	0.359	0.239	1.5	0.120	0.080	1.5
Geog Scope	-0.964	0.400	-2.41**	-0.322	0.131	-2.45**
Small & SMEs in mkts	-0.346	0.407	-0.85	-0.116	0.135	-0.85
Infrastructure dev't	-0.251	0.403	-0.62	-0.084	0.135	-0.62
Scaling /VC innovation	-0.539	0.465	-1.16	-0.180	0.156	-1.15
NRM & agro- industry	0.008	0.377	0.02	0.003	0.126	0.02
Rural policies	0.743	0.351	2.12**	0.248	0.117	2.13**
R & D	0.190	0.390	0.49	0.064	0.131	0.49
Total employees	0.023	0.0125	1.83*	0.008	0.004	1.81*
LR chi2(12)	17.63					
Prob. > chi2	0.0397					
Pseudo R2	0.1697					
Log likelihood	-43.155173					
Number of observations	84					

***, **, and * is significant at 1%, 5% and 10% level, respectively

Source: Field Survey, 2015

REFERENCES

- Abegunde, A. A.** (2009). The Role of Community based organizations in economic development in Nigeria: *The case of Oshogbo, Osun State, Nigeria*. Departments of Urban and Regional Planning; Faculty of Environmental Science, Obafemi Awolowo University, Ife.
- Adedayo, A. and Afolayan, G. P.** (2012). Implication of Community infrastructure in the Development of medium-Sized Towns in Kwara State Nigeria. *Ethiopian Journal of Environmental Studies and Management*, 5, 4.
- Aheibwe, G.** (2013). Youth Engagement in Agriculture in Uganda
- Aina, L. O.** (2007). Globalization and small-scale farming in Africa: What role for information centres? World Library and information congress 73rd IFLA General Conference and Council. Durban, South Africa
- Akinola, S. R.** (2008). Coping With Social Deprivation through Self-Governing Institutions in Oil Communities of Nigeria Africa Today - Volume 55, Number 1, Fall 2008, pp. 89-107
- Anriquesz, G. and Stamoulis, K.** (2007). Rural Development and Policy Reduction: Is agriculture Still the Key? *ESA Working Paper* No. 07-02, Rome Italy, FAO
- Arulmozhi, G. and Nadarajan, R.** (2003). Proceedings of the Second national Conference on Mathematical and Computational Models: Palanisamy R, Evolving Research design using flexible Systems Methodology: expert System Approach
- Aryeetey, E.** (2007) Enabling Environments for Agribusiness and Agro-industry Development. Plenary Country Paper, Agricultural Management, Marketing and Finance Services (AGSF) Rural Infrastructure and Agro-industries Division UNFAO.
- Bailey, J. A.** (2013). Making Health Insurance Affordable: Assistance to Individuals and Families in the Affordable Care Act.
- Balya, C.** (2008). Supporting Smallholder farmers to Grow in Uganda: The Story of Eagle Lager, Paper presented at the conference on making Markets work for the poor in Eastern and Southern Africa, 12th – 14th March, Cape Town South Africa.
- Barham, J. and Chitemi, C.** (2008). Collective Action Initiatives to improve Marketing Performance Lessons from farmer groups in Tanzania. *Collective Action for property Rights (Capri) Working Paper No. 74*.
- Barkley, D. L. and Henry, M. S.** (1997). Rural Industrial Development: To cluster or not to cluster? Paper Presented at the 36th Annual Meeting of the Southern regional Science Association, Memphis, TN
- Basaza G. N., Milman N. B. and Wright C. R.** (2010). The Challenges of Implementing Distance Education in Uganda: A Case study. *International Review of Research in Open and Distances Learning*, 11 (2), 1492-3831.
- Benin, S. et al** (2007). Assessing the Impact of the national Agricultural Advisory Services (NAADS) in the Uganda Rural Livelihoods. *IFPRI Discussion Paper 00724*
- Bryden, J. and Bollman, R.** (2000). Rural Employment in Industrialized Countries. *Agricultural Economics*, Vol 22
- Chester, G. and Neelameghan, A.** (2006). Information Professional: Knowledge and Skills Development for Serving Marginalized and Rural Communities. *Webology*, 3(3), Article 29.
- Cotula L., Toulhmin C. and Quan J.** (2006). Better land Access for the poor. Lessons from
- Coultas, J. and Lewin, K.** (2002). Who becomes a teacher? The characteristics of Student Teachers in four Countries. *International Journal of Educational Development*, 22, 3-4
- Dixon A., Harroson T. and Mundle C.** (2011). Economic Regulations in Health Care: What can we Learn from Other Regulators? London: The King's Fund. Available at: www.kingsfund.org.uk/publications/economic-regulation-health-care
- Dutta, S. and Mia, J.** (2009). *The global Information technology Report 2008-2009: Mobility in a Network World*. Geneva, Switzerland: World Economic Forum.

- Echevirria, R. G. and Beintema, N. M.** (2009). Mobilizing Financial Resources for Agriculture Research in developing countries, Trends and Mechanisms.
- Feinstein, L. and Sabate, R.** (2007). The Public value of Adult Education: Skills and Social productivity.
- Fernandopulle, R. and Patel, N.** (2010). How the Electronic Health records did not Measure up your demand of Out Medical Home Practice. Health Affairs
- Field, K.** (2011). Importance of Research for Education's Future.
- Fluitman, F.** (2005). Poverty Reduction, decent Work and the Skills it takes or: Towards Correcting a partial View of Training needs in African Development
- Gabe, Stolarick and Jaison** (2012). Rural Areas Lag Behind in key Workface Skills Choices (2nd Quarter)
- Galdeano-Gomez, Aznar-Sanchez and Perez-Mesa** (2011). Intensive Horticulture in Almeria (Spain): A Counterpoint to Current European Rural Policy Strategies. *Journal of Agrarian Change*, 11, 2
- Gardiner, M.** (2008) Education in Rural Areas. *Issues in Education policy* No. 4
- Gaspenerini, L.** (2000). From Agriculture Education for Rural development and Foods Security: All for Education and food for all. Paper Presented at the 5th European Conference on Higher Education. University of Plymouth, UK
- Green L. W., Ottoson J. M., Garcia C. and Hiatt R. A.** (2009). Diffusion Theory and Knowledge Dissemination, utilization and integration of public health. Public health Vol. 30
- IFAD** (2005). Rural Poverty Report
- Jjuuku, C.** (2008). Uganda: Farmers Urged to Form Groups. New Vision paper, 5th August
- Kapiriri, M. and Wrightson, T.** (2001). Community Based Rehabilitation Programme, Output to Purpose Review Report, USDC, Uganda
- Khalil, A. H et, al.** (2008). Extension Workers as leaders to farmers: Influence of Extension leadership competencies and Agricultural Committeemen on extension workers performance in Yemen.
- Knickel, K.** (2013). Are we Confusing Innovation for Development? A Critical Reflection of the meaning of Agricultural Modernization, *XXV ESRS Congress, Florence*
- Kolodner R. M., Cohen S. P. and Friedman C. P.** (2008). Health Information technology: Strategic Initiatives, Real Progress. Health Affairs
- Kumba, F. F.** (2003) farmer participation in Agricultural Research and extension services in Namibia. *Journal of International Agriculture and Extension Education*, Vol. 10, Issue 3
- Lewin, K.** (2002). The Cost of Supply and demand for Teacher Education: Dilemmas for development. *International Journal of educational department*, Vol 22, issue 3
- London, L. C. and Powell, A. P.** (1996). Participatory Rural Appraisal Concepts Applied to Agricultural Extension: A Case Study in Samatra. *Quarterly Bulletin of IAALD*, Vol. 41, Issue 1
- Luis, B. and McEwan, P.** (2000). Constraints to Implementing Educational Innovations: The Case of Multi-grade Schools. *International review of Education* Vol. 46, Issue 1-2
- Lukwago, J.** (2010). Increasing Agricultural Sector Financing: Why it matters for Uganda's Socioeconomic Transformation. ACODE Policy Research Series No. 40
- Lwanga-Ntale, C. and Kimberly, K.** (2003). The Face of Chronic Poverty in Uganda As Seen by the Poor Themselves - Constraints and Opportunities. *Journal of Human Development and Capabilities: A Multi-Disciplinary Journal for People-Centered Development*, 1945-2837, Volume 5, Issue 2, 2004, Pages 177 – 194
- Magingxa, L. L. and Kamara, A. B.** (2003). Institutional Perspectives of Enhancing Smallholder market Access in South Africa. A paper Presented at the Annual Conference of Agricultural Economic Association of South Africa
- Management Science for Health** (2010). Applying or Integrating Mobile-Based Episurveillance Technology into Malawi Malaria Supervision. Strengthening Pharmaceutical Systems, Accessible online, www.datadyne.org/blog/msh-malawi.
- Mazibuko, F. D.** (2000). The Role of Non-Governmental Organization in Educational Advancement in developing Countries: The South African Experience. Trust for Educational Advancement in

- South Africa. *Journal of International Cooperation in Education*, Available at: <http://home.hiroshima-u.ac.jp/cice/maz3-1.pdf>
- Mchombu, K.** (2003). Case studies: Impact of Information to Rural Development: Background, Methodology, and Progress. International Development research Centre.
- McNamara, C.** (2011). Thinking about Organizations as systems. Adapted from the Field Guide to Consulting and Organizational Development.
- Menou, M. J. and Niang, T.** (1991). PROGREFIA: A cooperative Efforts towards the strengthening of Education for Agricultural Information in less developed countries. In Boedegebuure, B. G., Arango, H. R., and Sotolongo, G. (eds), *information, a resource for development*. Pp. 65-79
- MoES** (2005). Education Sector Annual Performance report, Kampala, Ministry of Education and Sports
- MoH** (2010) Human Resources for Health Audit Report, Kampala
- Mugambe, K.** (2008). Assessment of Poverty Reduction Strategies in Sub-Saharan Africa, The Case of Uganda. (OSSREA).
- Musinguzi, R.** (2009). Assessment of Education Interventions By World Vision and Compassion International on Orphans and Vulnerable Children of Rakai District, and Kampala in Uganda
- Musoke, M. G. N.** (2012). Outreach to Rural Health Units in Uganda Enhances Access to Information Resources. Paper Presented at SCECSAL XXth Conference Hosted by KLA, Nairobi, Kenya
- Naluwairo, R. and Tabaro, E.** (2006). Promoting Food Security and Sustainable Agriculture through facilitated Access to Plant genetic Resources for Food and Agriculture: Understanding the multilateral System of Access and Benefits Sharing. *ACODE Policy Research Series, No. 18*
- Obidike, N. A.** (2011). Rural Farmers' Problems Accessing Agricultural Information: A case study of Nsukka Local Government Area of Enugu State, Nigeria. Library Philosophy and Practice.
- Okidi, J. and Mugambe, G.** (2002). An overview of chronic poverty and development policy in Uganda. Chronic Poverty Research Centre Working paper No. 11, Chronic poverty Research Centre, Manchester
- Okori, P.** (2011). Capacity Building in Agriculture Research: A Case Study on Uganda's Makerere University. Background Paper Prepared for The ASTI – IFPRI/ARA Conference Agricultural R&D: Investing in Africa's Future, Analyzing Trends, Challenges, and Opportunities, Accra, Ghana
- Olayiwola L, M. and Adeleye, O. A.** (2005). Rural Development and Agro-industrial promotion in Nigeria: Concept, Strategies and Challenges. *Journal Social Sciences* Vol. 11 (1) 57-61
- Osei, A.** (2010). Mapping of Poverty Reduction Strategies and Policies (PRSPs), related to Rice Development in Ghana. Nairobi Kenya: Coalition for Africa Rice development (CARD).
- Palmer, R.** (2007). Skills for work?: From skills development to decent Livelihoods in Ghana's rural Informal Economy. *International Journal of Education Development* Vol. 27
- Panopoulos, G. and Velez, C. E.** (2002). Subsidized Health Insurance, Proxy means Testing and Demand for healthcare among the poor in Colombia. Working paper, 214-241
- Resnick, D.** (2004). Smallholder African Agriculture: Progress and Problems in Confronting Hunger and Poverty. *DSGD Discussion Paper* No. 9, Washington D.C., USA, International Food Policy Research Institute.
- Rosegrant, M. W. and Evenson, R. E.** (1992). Agricultural Productivity and Sources of Growth in South Asia. *American Journal of Agricultural Economics*, Vol. 74
- Salami, A, et al.** (2010). Smallholder Agriculture in East Africa: Trends, Constraints and Opportunities. *Working paper*, No. 105
- Serageldin, M. et al.** (2006). Local Government Actions to reduced Poverty and Achievement of the millennium development Goals. *Global Urban development Magazine*. Vol. 2 issue 1
- Ssemawala, F. M. et al.** (2011). Strengthening Universal Primary Education in Uganda: The Potential Role of an Asset based development Policy. *International Journal of Educational development*, 31,

- Sundar, K. and Srinivasan, T.** (2009). Rural Industrialization: Challenges and Prospects . Commerce Wing DDE, Annamalai University. *Journal of Social Science*, 20(1), 23-29
- Towse, P, et al .** (2002). Non-Graduate Teacher Recruitment and Retention: Some factors Affecting Teacher effectiveness in Tanzania. *Teaching and Teacher Education*, 18, 6
- Trujillo A. J., Portillo J. E. and Vernon J, A.** (2005). The Impact of Subsidized health Insurance for the poor: Evaluating the Colombia Experience Using propensity Social matching. *International Journal of Healthcare Finance and Economics*, 5, 211-239
- UBOS** (2007). *Uganda National Household Survey: Agricultural Module Report*. Uganda Bureau of Statistics, Kampala, Uganda
- Van, Crowder L. and Fortier, F.** (2000). National Agriculture and Rural Knowledge and Information System (NARKIS): A proposed Component of the Uganda National Agricultural Advisory Service (NAADS) FAO
- WHO** (2009). Maximizing Positive Synergies Collaborative Group. An Assessment of interactions between Global Health Initiatives and Country Health Systems. The Lancet
- World Bank** (2006). Agriculture and Achieving the Millennium Development Goals. *World Bank Agriculture and Rural Development Department and IFPRI 32729*.