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Authors: Haroon Sseguya, Robert E. Mazur, Jemimah M. Njuki, &
Francis Y. Owusu

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Determinants of Participation and Leadership in Food Security Groups in Southeast Uganda: Implications for Development Programs and Policies

Haroon Sseguya

Department of Extension and Innovation Studies
Makerere University
Kampala, Uganda
hsseguya@gmail.com

Robert E. Mazur

Department of Sociology
Iowa State University
Ames, Iowa, USA
rmazur@iastate.edu

Jemimah M. Njuki

Pathways Program, CARE International
ijnjuki@care.org

Francis Y. Owusu

Department of Community and Regional Planning
Iowa State University
Ames, Iowa, USA
fowusu@iastate.edu

Abstract

Local groups are increasingly being promoted as vehicles for effective involvement of community members in development initiatives in the Global South, with the expectation of successful and sustained achievements. Previous studies on participation and leadership in groups have yielded mixed results, implying a need for more contextualized and validated assessments. In this study, using 281 household interviews and discussions with 21 farmers' groups in southeast Uganda, we established that group participation was positively associated with age of household head, household size, and proximity to trading and health facilities. Group leadership was positively associated with the educational level of the household head, land size, and non-agricultural sources of income: the latter two indicating wealth of an individual. Implications for development programs and policies included special efforts to support the participation of youth, as well as dedicating extra effort to reach remote households and groups. Regarding leadership, groups were recommended to facilitate the taking up of leadership roles by non-educated members; enable youth to benefit from the government policy of Universal Primary Education; and establish measures to avoid elite capture.

Keywords: Uganda, Youth Participation, Food Security

1.0 Introduction

The participation of local community groups in development initiatives is increasingly contributing to life the Global South, with the expectation that this offers promising prospects and sustainable achievements (Bukenya, 2011). In Uganda, community groups gained prominence between 1986 and the 1990s when Structural Adjustment Programs (SAPs) and decentralized governance were introduced. The main focus of SAPs was the elimination of government subsidies, liberalization of trade, and privatization. Decentralized governance aimed for a transfer of powers, functions, and responsibilities for planning and implementation of agricultural extension services from central government to local authorities, with community members expected to play an active role (Bahiigwa et al., 2005). In this context, local community groups were promoted as they are viewed by the state, practitioners, and donors as a vital means to activate participation and empower community members, leading to improved quality of services. Further, previous studies have indicated that participation in groups leads to positive outcomes such as health (Rose, 2000), natural resource management (Pretty & Ward, 2001), and economic development (Edwards & Foley, 1998). Sseguya (2009) also established that positive food security outcomes were associated with participation in food security groups, among other social capital dimensions. Sseguya also established that participation in groups and other networks led to enhanced sharing of information and other resources (e.g. improved seeds and livestock breeds). Regarding existence, persistence, innovativeness, and structural transformation of production systems, studies in Uganda have indicated that most groups have not been persistent mainly due to external influence, but in most cases, their existence has transformed production systems by enhancing access to technologies and associated services such as inputs and agricultural markets (Flygare, 2006; Bukenya, 2011).

As noted by Narayan and Pritchett (1997), the success of these groups depended on the ability of members to form cooperative relationships and to channel their time, labour, and economic resources (among others) for positive development outcomes. An increased recognition of the role of local groups in development interventions notwithstanding, there is a dearth of empirical studies that focus on participation in such groups (Behera & Engel, 2006; La Ferrara, 2002; Sanginga et al., 2001). Relatively little is known about why people do or do not participate in groups, along with the characteristics of participants as compared to non-participants. This information is important given the increasing role of local participation in rural development efforts. This study complements existing literature by examining socio-demographic, economic, and spatial factors as determinants for community member participation and leadership in local farmers' groups. Three key questions are addressed in this paper: What are the distinguishing features of those who participate in local groups engaged in food security initiatives? Who takes up leadership roles in such groups? Who has membership in multiple groups?

2.0 Literature Review

2.1 Participation Defined

According to Kelly and Van Vlaenderen (1995), the term 'participation' has been used to refer to a vast range of processes, including the capacity to influence

decision-making processes at all levels of societal organization; direct sharing in decision making; the capacity to take initiative in development activities; and being in a position to benefit from a project or program. It is therefore not surprising that a considerable divergence exists among policy makers, researchers, development workers, and local people involved in development regarding what constitutes participation. Despite the diverse definitions, proponents assert that participation can encourage efficiency, empowerment, or both. With regard to efficiency, community members are often involved in needs assessments, action planning, resource mobilization, implementation, and the monitoring and evaluation of program activities (Lowe et al., 1999). As a result, programs benefit from local knowledge that best reflects local needs and demands. Focusing on empowerment, participation is credited with increasing feelings of self-worth, improving skills, generating a greater sense of rights, as well as improving knowledge and competencies (Pijnenburg, 2004). Involving local people in development programs can shift the power dynamics, whereby local people can decide whether and how to work with other stakeholders, unlike situations in which only development agencies can make such decisions.

Researchers also categorize participation levels, with most typologies focused on implicit normative assumptions, moving from ‘bad’ to ‘good’ participation. Notable among the typologies are those of Arnstein and Pretty. Arnstein (1969) categorized participation from the perspective of citizen participation: citizen control is seen as the highest and best form of participation while non-participation is regarded as the lowest and worst form. Pretty (1995) categorized participation in terms of the nature of interaction with other stakeholders, ranging from contractual to consultative to collaborative to collegiate. With increasingly deep participation (i.e. collegiate), there is greater relinquishing of control and devolution of ownership of program processes (planning, implementation, evaluation, resource mobilization, etc.) to community members. Despite their different points of departure in categorizing participation, both typologies highlight differences in the degree of control of the process exercised by community members and other stakeholders. Unfortunately, research on participation continues to face the challenge of adequately understanding how power dynamics and control of resources within communities and between community members and other stakeholders impact the processes and outcomes of development interventions. Further, the socio-cultural context is an important consideration for better planning of participation.

2.2 Groups as Mechanisms for Participation

Wood and Judikis (2002) define a community group as an assemblage of people who have a sense of purpose and common interest for which they assume mutual responsibility, acknowledge their interconnectedness, respect their individual differences, and commit themselves to the well-being of each other and the community as a whole. This definition implies that people who form groups usually have common identities, pursue common goals, and recognize the possibility of achieving those goals through collective rather than individual efforts. Thorp et al. (2005) categorize the functions of groups into three types: *efficiency* in overcoming market failures, *claims* intended to improve the share of resources or power of members, and *pro bono* actions typically aimed at providing benefits for others (usually among the poor) in society.

The promise of groups as mechanisms for participation is grounded in the theory and practice of collective action and social capital. Olson (1965) argued that even if people have a common interest and would be better off cooperating, they will not do so unless there is a possibility of excluding those who do not cooperate; however, this perception has been challenged and demonstrated as not universal for all group action scenarios. Ostrom (1990) argued that the relevance of Olson's proposition was problematic, as the orientations of those involved could be changed. Through rules, trust, and norms of reciprocity, constraints of self-seeking behaviour could be avoided, and in turn promote successful group action. The work of these scholars, along with Coleman (1990) and Putnam (1995), has emphasized the benefits of rules, norms, and trust in relation to positive group action, and has introduced the concept of 'social capital'. While social capital has diverse interpretations, there exists a general consensus that it refers to "networks, norms and understandings that facilitate cooperative activities within and among groups of individuals" (Helliwell, 2001, p.43).

The notion of social capital suggests some issues that impact the effectiveness of groups. One of these is *exclusion*: there is potential for some people to be excluded from group activities, especially if the community is heterogeneous in terms of gender, wealth, age, ethnicity, and other factors. Differences in power, status, gender, and class among members may also lead to dissatisfaction, as some members become excluded from leadership positions, decision making, and active participation in group activities (Narayan, 1999). This can lead to conflict within the group and ultimate failure of goal achievement. Further, groups may experience *negative externalities* in that not everyone in the community may be able to join a group; for instance, poor people may not be able to join because they cannot pay the membership fee, and some may not have the time to attend group activities. Membership differences, if overlooked, may lead to exclusion and negative externalities, in turn leading to failure of groups as mechanisms for enhancing positive development outcomes and impacts.

2.3 Previous Studies on Participation and Leadership in Groups

A number of factors, most notably heterogeneity of community, wealth status of household head, gender of household head, membership in other social networks, and geographical location, have been suggested as key determinants of participation. Education and age of group members are the most commonly cited determinants of group leadership. Based on research conducted in Tanzania, La Ferrara (2002) established that individuals were less likely to join community groups in heterogeneous communities when the preferences of people, with respect to group activities and perceived benefits, varied according to socio-economic and cultural needs, strategic interests, and resource opportunities and constraints. Such situations had the potential to result in disagreement, and varied enthusiasm and commitment to group activities, depending on the status of each individual who was associated or potentially associated with the group. Varughese and Ostrom (2001) asserted that groups whose membership was drawn from heterogeneous communities may have had greater difficulties self-organizing due to distrust and lack of mutual understanding. The process of trying to reach consensus on a set of rules could therefore involve high levels of conflict.

Regarding *wealth status*, La Ferrara (2002) established that wealthier people were less likely to participate in groups. Weinberger and Jütting (2001) and Beard

(2005) found a ‘middle class effect’, whereby members in the middle wealth category were more likely to participate in groups. Conversely, Sanginga et al. (2001) found no significant difference in wealth categories between group and non-group members. Within all these studies, wealth categories were derived by generating local wealth indicators and employing them to categorize community members into three groups: wealthier than most others, like most others, and poorer than most others. Further analysis indicated that the influence of wealth on participation was mediated by other factors, mainly the nature of the group (open or closed access) and the nature of expectations from the group. Behera and Engel (2006) asserted that in some instances, poor households had a high opportunity cost of participation: the time spent on participation could be used to work for much needed cash income. There were exceptions, as in the case discussed by Sanginga et al. (2001) where the focus of group activity (participation in collaborative research with agricultural researchers) had potential benefits for the poor and wealthy alike. For Weinberger and Jütting (2001) and Beard (2005), the middle class effect was attributed to the high costs of joining groups for both the poor and rich. The poor could not afford transactions and membership costs, whereas the wealthy faced opportunity costs (profitable alternatives) when dedicating time to group activities.

Gender of household as a determinant of participation was impacted by other socio-cultural factors. In East African groups, women had dominant community roles and responsibilities in relation to activities implemented by the groups; thus, were more likely to participate than men (Sanginga et al., 2001). In Indonesian communities, women had limited participation due to cultural limitations on their level of public engagement; thus, men were more likely to participate in group activities (Beard, 2005).

Many studies have also stressed that *membership in other social networks* was a positive determinant of participation in groups (Sanginga et al., 2001; Weinberger & Jütting, 2001; Beard, 2005). Weinberger and Jütting (2001, p. 1402) explained that “the expectation of beneficial effects of networks seems to be higher when experience with group membership exists. The existing stock of social capital has an important influence on participation in local organizations.” Leadership styles have also had an impact on participation in groups, with democratic leadership styles leading to better participation as opposed to exclusionary and autocratic styles (Sseguya, 2009).

Geographically, location of the household also affected participation in groups. In their analysis, Thorp et al. (2005) established that forms of groups such as cooperatives and credit unions were more likely to form near towns where there was some prospect of transport and market access. However, Behera and Engel (2006) established that remoteness from markets was positively related to participation in joint forest management groups in India. This was primarily associated with the high dependency of remote communities on forests and their lower opportunity costs of time. This implied that spatial location of a household may not have solely influenced the level of participation, but also the nature and goals of the group.

With regard to group leadership, Behera and Engel (2006) singled out education and age as significant determinants. Educated group members could easily acquire information and also presented their views more effectively. Concerning age, older

members (especially those in middle age) tended to more readily influence decisions, as compared to younger and older group members.

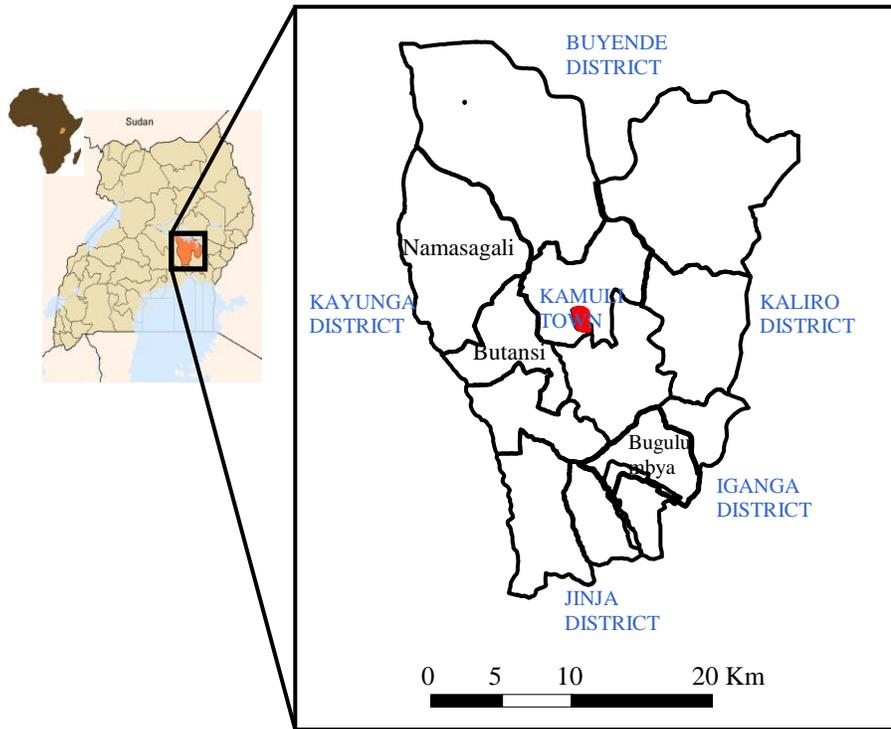
Based on the preceding discussion, past studies on participation have yielded mixed results. The implication being that some underlying factors that were contextual may have also influenced the participation levels of members. Knowing why people participate and why they support, adjust, or resist development interventions introduced through groups are key issues worth considering. As Drijver (1991, p.131) noted, “only if this is known can one understand how and under what conditions can people’s participation be intensified.” Since existing research has not provided completely plausible and consistent empirical results regarding the determinants, this study was conducted in order to contextualize the situation with regard to local group participation in southeast Uganda.

3.0 Data and Methods

3.1 Study Area

This study was conducted in the Kamuli District of southeast Uganda. The district was selected because it had some of the highest food insecurity and poverty levels, although the situation had been improving. In 2002, 46% of the population was absolutely poor and food was insecure, as compared to the national level of 38.8% (UBOS, 2002). By 2010, absolute poverty levels in the district had dropped to 24.3%, slightly lower than the national level of 24.5% (MFPED, 2012). Agriculture was the main livelihood activity, the principal enterprises being crops (maize, beans, cassava, coffee and sweet potatoes) and livestock (chicken, goats, pigs and cattle) (Sseguya et al., 2009). In 2004, a food security program was implemented in the district, involving Iowa State University (ISU-USA), Makerere University (Uganda), and a local NGO known as Volunteer Efforts for Development Concerns (VEDCO). According to Mazur et al. (2006), the program worked with communities through farmers’ groups. By the initiation of this study, the program had been working with 62 groups (a total of 800 households) in three sub-counties (Namasagali, Butansi, and Bugulumbya), covering two parishes in each sub-county (Figure 1). The average group size was 16 members, with a female-male membership ratio of 3:1.

Figure 1. Location of Study sub-counties in Kamuli District, Uganda



Source. Central Intelligence Agency (2012) and Uganda Bureau of Statistics [UBOS] (2011)

3.2 Population and Data

Table 1 presents the sampling process applied in this study. All six parishes participating in the program were included. A proportionate simple random sampling strategy was used to select 206 households from the 800 participating in the program. In addition, 80 households not participating in any food security group were randomly selected from the same communities; thus, the total sample size was 286 households. Five respondents were dropped due to incomplete data.

Table 1. Selection procedure for the study sample in Kamuli district

Sample	Selection method
Parishes	Census (all those participating in the ISU-USA/MU/VEDCO Program)
Households participating in groups	Proportionate random sampling of households
Households not participating in groups	Random sampling of households
Groups	Purposive sampling (from all groups participating in the program)

Of the 62 groups participating in the livelihood improvement program, 21 were selected based on their composition (mixed gender or not, age differences, spatial location, health status of members, etc.), and members of these groups were involved in group discussions about the activities of their respective groups. The group discussions took place before the survey to provide further opportunities for the research team to modify the questionnaire after the pre-test.

Household level information was collected on socio-demographic, economic, and spatial characteristics, including age, sex, and education level of the household head. Other data included marital status, land acreage, livestock ownership, role of the respondent in the group, and years of residence in the village. Additional information was collected on major sources of income, access to physical infrastructure (paved roads, water, education, health, market church/mosque, electricity, etc.), as well as parish location. At the group level, information was collected concerning the history of the groups and the process of implementing major group activities. Selection of study variables was guided by earlier research on participation and improved welfare of community members (Agrawal & Gupta, 2005; Beard, 2005; Grootaert, 2001; Weinberger & Jütting, 2001).

3.3 Variables

Table 2 presents the dependent and independent variables applied in the study. Three dependent variables related to participation. The first variable was general household level participation in the groups (whether any household member belonged to a food security group), and was coded as a dichotomous variable.

Table 2. *Summary of variables used in the study*

Variable	Variable names and labels
A: Dependent	
Participation	<ol style="list-style-type: none"> 1. Participation status (GRPPART) 2. Role of members in groups (GRPROLE) 3. Participation intensity/level for all respondents (PARTLEVL)
B: Independent	
(i) Socio-demographic	<ol style="list-style-type: none"> 1. Age of respondent (RESPAGE) 2. Marital Status of household (HHMSTAT) 3. Educational level of household head (HHHEDUC) 4. Household size (HHNUMBER) 5. Ethnic group (HHTRIBE) 6. Religion (HHRELGN) 7. Number of years of residence (HHRESID) 8. Sex of household head (HHHSEX)
(ii) Economic	<ol style="list-style-type: none"> 1. Land acreage owned (TOTLAND) 2. Number of livestock units owned (LUOWN) 3. Household's main source of income (MAININC)
(iii) Spatial	<ol style="list-style-type: none"> 1. Parish of respondent (PARISH) 2. Distance to major trading centre (DMAJCENT) 3. Distance to local trading centre(DLOCENT) 4. Distance to paved road (DROAD) 5. Distance to nearest water source (DWATER) 6. Distance to nearest education facility (DSCHOL) 7. Distance to nearest health facility (DHEALTH) 8. Distance to market (DMAKT) 9. Distance to electricity supply (DELEC)

**Items in parentheses indicate names of variables used in the analysis*

The second dependent variable referred to the role of members in the group, and was applied to households that belonged to groups. This was also coded as a dichotomous response, with 1 indicating any leadership role in the group (e.g. committee member or volunteer farmer trainer) and 0 as ordinary membership. The third dependent variable, which was applied to the entire sample, focused on the intensity of participation in a group. The variable was coded 0 for non-participation, 1 for ordinary membership, 2 for either being a committee member or having membership in more than two groups, and 3 for playing committee membership roles in more than one group or being a member in more than two groups.

Three categories of independent variables were included: socio-demographic, economic, and spatial. Categorical variables in all cases were coded as dummies. Socio-demographic variables included age of household head, marital status (1 married, 0 otherwise), education level of household head [with 0 indicating education up to primary (7) level completion and 1 beyond primary level], and household size. Other variables included ethnic group (1 for Basoga, 0 otherwise), religion (1 for Christian, 0 otherwise), number of years of residence in the village, and sex of household head (1 for male-headed, 0 otherwise). The economic variables included amount of land owned (in acres), number of livestock units owned, and sources of income (1 for non-agricultural sources, 0 otherwise). Livestock were converted to tropical livestock units (LU), as suggested by Otte and Chilonda (2002): cattle=0.70, pigs=0.20, sheep and goats=0.10, and chickens=0.01. The livestock conversion figures did not factor in weight and age differences within species, with only the variations among species considered. The spatial variables included parish of respondent and distance between respondent's home and a set of basic infrastructure (major trading centre, local trading centre, paved road, water, education, health, market, electricity, etc.).

3.4 Analysis

Data were analysed with the Statistical Package for the Social Sciences (SPSS, v.16). Three logistic regression (logit) models were developed to establish relationships between dependent and independent variables. Logistic regression was appropriate for these analyses because the first two dependent variables were dichotomous, whereas the third was categorical.

4.0 Results and Discussion

4.1 Predictors of Participation in Food Security Groups

Logistic regression was used to establish the specific socio-demographic, economic, and spatial variables that significantly predicted participation in food security groups. Prior to the regression analysis, multicollinearity among independent variables was tested (Leach et al., 2005). Nine independent variables, with tolerance values greater than $1-R^2$ ($1-0.096 = 0.904$), were included in the logit model (Appendix 1) and coded as described in Table 2. Group participation was coded as 1, 0 otherwise. The resulting model (Table 3) significantly predicted whether or not a community member would have participated in a food security group ($\chi^2=23.18$, DF=9, $p=0.004$).

Among the socio-demographic factors, age of respondent significantly predicted group participation. Older people were more likely to be members of groups than younger people: for each additional year of age, the likelihood of participating in

groups increased by 5%. However, chi-square tests indicated that the relationship between participation and age was not linear but \cap -shaped: low for those below 30 years ($\chi^2 = 0.00$), high for 31–45 years ($\chi^2 = 0.42$), low for 46–60 years ($\chi^2 = .002$).

Table 3. *Logistic regression of participation in groups with socio-demographic, economic and spatial factors in southeast Uganda*

Variable ^a	β	SE	Odds Ratio	p
<i>Socio-demographic factors</i>				
Age	.049	.015	1.051	.001*
Educational level of household head	.148	.318	1.160	.641
Household size	.088	.045	1.092	.047**
Ethnic group (1)	.217	.401	1.242	.588
Religion (1)	-.083	.315	.920	.792
<i>Economic factors</i>				
Number of livestock units owned	-.018	.019	.982	.346
Household's main source of income (1)	.062	.384	1.064	.872
<i>Spatial factors</i>				
Distance to major trading centre	-.023	.023	.977	.317
Distance to nearest water source	.001	.085	1.001	.992
Constant	-1.451	.806	.234	.072

^a The reference categories, all coded as 1 were (i) Ethnic group - Basoga, (ii) Religion – Christian, and (iii) Household's main source of income – non-agricultural source.

*Significant at $\alpha = 0.01$. **Significant at $\alpha = 0.05$

Discussions with group members revealed that members under age 30 were usually interested in quick financial returns that may not have been readily forthcoming through participation in groups; thus, most chose to start up small businesses or migrate to the nearest trading centres for off-farm jobs. Those in the 31–45 age range were more energetic and committed to benefitting from agriculture through joining groups, as it was the main economic activity in the area. Due to family life cycle stages, they also tended to have more roles and responsibilities than those in other age categories, which necessitated membership in groups to attain maximum benefits from agricultural production activities. For the age category of 46 and above, the probable explanation for their low participation related to the required commitments of time, labour, and other resources. Group discussions revealed that relatively older citizens did not participate or participated less in groups, mainly due to high labour demands that were required for managing group demonstration gardens used by the programme to promote food security interventions. This result resembled that of Beard (2005) who also found a significant relationship between age and participation in community development groups in Indonesia, with members between 15–30 years and over 60 years participating less.

Another significant factor was the total number of household members. With each additional household member, the likelihood of participating in a group increased by 9%. The probable explanation was that as household size increased, more members were able to dedicate some time to group activities. This potentially reduced the opportunity cost of participation at the household level. Weinberger and Jütting (2001) also found positive relationships between household size and group participation among women's groups in

Kashmir and Chad. None of the economic and spatial factors significantly predicted the likelihood of participation in groups in the final model.

Education level of household head was not a significant predictor: the education levels of group participants and non-participants were roughly equal. This was a result of the largely ‘open’ nature regarding requirements for joining the groups, as there was no deliberate selection criterion based on socio-cultural or economic status. Beard (2005) found a positive relationship between group participation and education levels in Indonesia, and Weinberger and Jütting (2001) also found a positive relationship between participation and education level in India and Chad. In both cases, there were some deliberate criteria for joining groups that favoured education level.

4.2 Determinants of Group Leadership

Table 4 presents results of a logit model based solely on members in groups. Multicollinearity for the independent variables was also tested, with nine factors having qualified for inclusion in the model [tolerance values less than $1-R^2 = 1-0.103 = 0.897$ (Appendix 2)]. The coding approach was similar to that used in Table 3. The resulting model significantly predicted members’ group leadership roles ($\chi^2 = 17.487$, $DF = 9$, $p = 0.035$).

Table 4. *Logistic regression of group leadership with socio-demographic, economic and spatial factors in southeast Uganda*

Variables^a	β	S.E.	Odds ratio	p
<i>Socio-demographic factors</i>				
Age	.011	.014	1.011	.443
Educational level of household head	.608	.348	1.838	.08**
Household size	.028	.037	1.028	.457
Ethnic group (1)	.121	.457	1.128	.791
Religion (1)	-.094	.142	.910	.506
<i>Economic factors</i>				
Land acreage owned	.016	.030	1.016	.599
Household’s main source of income (1)	-1.181	.488	0.283	.010*
<i>Spatial factors</i>				
Distance of household to major trading centre (km)	-.031	.027	0.969	.252
Distance of household to nearest market (km)	-.099	.095	0.906	.297
Constant	.762	.989	2.142	.441

^a Figures in parentheses indicate the reference category for the dummy

*Significant at $\alpha = 0.01$. **Significant at $\alpha = 0.1$

Two factors were significant predictors of leadership in food security groups. The only socio-demographic factor that significantly predicted group leadership was education, with the odds increasing by 84% for each unit instance where a household head’s education level was beyond primary school level. The arbitrary categorization of education level, between completion of primary and other levels, was based on the assumption that attainment of education levels beyond primary level rendered a person more functionally literate. This result suggested the importance of education in enabling community members to take up needed roles

such as documenting on behalf of the group (serving as secretary or representing a group at a training workshop where feedback to members was required, both of which required a minimum level of functional literacy). Beyond functionality, education exhibited a high potential of conferring social status and power because of the stock of knowledge and information (perceived or real) acquired by the individual. This result was corroborated by Beard (2005) and Behera and Engel (2006), who established positive relationships between group leadership and education level. Age was not a significant predictor of group leadership, though group discussions revealed that young group members typically were not considered for leadership positions due to the perception that they were inexperienced. This view was also echoed by Behera and Engel (2006) in the case of joint forest management groups in India.

The other predictor – income – was an economic factor. The odds of group leadership, beyond ordinary group membership, decreased by 72% for a member whose main source of income was non-agricultural as compared to a member whose main income source was agricultural production. This result suggested that members with non-agricultural income sources may not have had the time to serve in roles beyond ordinary membership. Households with alternative sources of income may have had other connections beyond the community that affected their dedication to community groups: a phenomenon that Coleman (1990) referred to as ‘network closure’. Members with connections outside the community may not have dedicated much time to networks in the community because they felt that they could access more valued services from outside networks. No spatial factor significantly predicted differences in group leadership roles. Experience also indicated that some members participated in one group, others in more than one, and still others having leadership roles in these groups. Factors that predicted levels of participation were also considered.

4.3 Predictors of Level of Participation in the Food Security Groups

A multinomial logistic regression was conducted to analyse the level of participation in food security groups. Multicollinearity for independent variables was also tested, with seven factors having qualified for inclusion in the model [tolerance values more than $1-R^2 = 1-0.127 = 0.873$ (Appendix 3)]. Multinomial logistic regression provided for prediction of factors between the reference category and other categories within the dependent variable (Leech et al., 2005). In this analysis, non-participation was treated as the reference category and was compared, in turn, with participation at other levels: (1) ordinary membership in a group, (2) being a committee member in a group or having membership in more than two groups, and (3) having committee membership roles in more than one group. The independent variables were coded as described in Table 2. The resulting model (Table 5) was well fitted to the data ($\chi^2 = 63.98$, DF = 21, $p = .000$).

Table 5. *Logistic regression of participation levels with socio-demographic, economic and spatial factors in southeast Uganda*

Level of participation ^a	Independent variable	B	SE	Odds Ratio	p
Ordinary member (1)	Intercept	-2.817	1.370		0.040
	Age	0.056	0.024	1.058	0.020*
	Education level of household head (0) ^b	-0.167	0.691	0.846	0.809
	Sex of household head (0)	0.452	0.783	1.572	0.564
	Land acreage owned	0.157	0.099	1.170	0.113
	Household's main source of income (0)	0.312	0.652	1.366	0.633
	Distance to major trading centre (km)	-0.049	0.035	0.952	0.164
	Distance to nearest health facility (km)	0.123	0.107	1.131	0.249
Executive or member in more than one group (2)	Intercept	-2.586	1.211		0.033
	Age	0.049	0.022	1.051	0.022*
	Education level of household head (0) ^b	0.319	0.633	1.376	0.614
	Sex of household head (0)	0.186	0.702	1.205	0.791
	Land acreage owned	0.183	0.095	1.201	0.055*
	Household's main source of income (0)	0.840	0.587	2.317	0.153
	Distance to major trading centre (km)	-0.041	0.027	0.960	0.133
	Distance to nearest health facility (km)	0.032	0.097	1.032	0.743
Executive in more than one group or member in more than two groups (3)	Intercept	-1.753	1.496		0.241
	Age	0.062	0.026	1.063	0.017**
	Education level of household head (0) ^b	0.987	0.935	2.683	0.291
	Sex of household head (0)	0.173	0.799	1.189	0.829
	Land acreage owned	0.167	0.097	1.181	0.087**
	Household's main source of income (0)	-1.164	0.587	0.312	0.047**
	Distance to major trading centre (km)	-0.040	0.034	0.961	0.242
	Distance to nearest health facility (km)	-0.503	0.188	0.605	0.008*

a. The reference category for the dependent variable is: 0 (Non-participation in food security groups). Reference categories for independent variables are indicated in parentheses.

b. Education was coded as (1 for education above 7 years, 0 otherwise)

* Significant at $\alpha = 0.01$. ** Significant at $\alpha = 0.05$. *** Significant at $\alpha = 0.1$

The model shows that a range of socio-demographic, economic, and spatial factors were significant in distinguishing non-participation from other levels of participation. Older respondents were more likely to participate at all levels [dependent variables (DV) 1-3] than being non-members. The odds of being a group member at the three group participation levels (1, 2, and 3) increased by 6%, 5%, and 6%, respectively, for each year increase in age of household head. Two economic factors significantly predicted the level of participation in groups: main source of income and land acreage owned. Respondents with agricultural production as the main source of income were less likely to be members in more than two groups (DV category 3) as compared to non-participants. The odds of being a member in this category versus a non-member decreased by 69%; thus, the implication being that since membership and leadership roles in farmers' groups required a great deal of sacrifice in terms of money and time (Behera & Engel,

2006), members with agricultural production as the main source of income may not have been able to afford the demands associated with membership in multiple groups, as well as the funds that may have been required by the different groups. Agrawal and Gupta (2005) also established a positive relationship between alternative sources of income and participation among local groups in rural Nepal.

Community members with more land were more likely to be members of the two categories (DV = 2 and 3) than non-members, with the odds increasing by 20% and 18%, respectively. The probable explanation was that as land size increased a household may have wanted to use it to the maximum, which necessitated joining at least one group as a means of augmenting access to resources. However, this relationship - together with that of having a non-agricultural primary source of income - reflected the potential negative implication of elite capture of groups by the relatively more wealthy community members, which in turn limited the influence of the disadvantaged.

Gugerty and Kremer (2000) highlighted the negative effects of elite capture in their study of the impact of development assistance on organizational capacity and social capital in Kenya. They argued that outside support for local groups made membership and leadership positions more attractive, leading to program capture by wealthier, more educated and better connected community members not initially involved in groups, and to the disadvantage of poorer, less educated, and less connected members. However, elite capture may not always imply negative outcomes for the non-elite, as demonstrated by Dasgupta and Beard (2007) and Fritzen (2007). In their studies, conducted in Indonesia, they argued that in some instances elite participation in groups may in fact have benefited poorer community members; for instance, even though elites may have controlled the resources or the groups, they ensured that all group members accessed benefits. What is required in such a situation, as suggested by Prokopy (2009), is the establishment and consideration of context-specific issues (policy, community history, and characteristics), such that some participants (the non-elite) are not exploited by others (the elites).

Among the spatial factors, community members remotely located from health facilities were less likely to be executive committee members or to be members in more than two groups, with the odds having decreased by 40% for each additional kilometre. The probable explanation may be linked to a related dearth of groups in remote locations, since health facilities were most likely located in major trading centres; thus, proximity to health facilities for a household was an indicator of physical spatial centrality. Major trading centres were usually the operation offices of NGOs and government staff working with groups; however, the staff faced challenges of regularly working with those members due to the extra efforts required to reach them. As Chambers (1983) suggested, this rural development bias led to scenarios where the issues of remote household members were not given due attention, and led to their de-motivation to actively participate in development programs. Thorp et al. (2005) also established that cooperatives formed near towns where there were better prospects for access to resources and facilities, and lower transaction costs to engage in markets. This implied that remotely located communities may have had minimal chances of working with groups initiated by external agencies, as the latter potentially encountered problems of efficiency in this situation. They may therefore have chosen to work with easily accessible communities at the expense of the more remote.

5.0 Conclusion and Implications for Policy and Practice

A major aim of this paper was to identify factors that predicted participation and leadership in food security groups. A range of socio-demographic, economic, and spatial factors were found to significantly predict participation in southeast Uganda. Age and education level were the main socio-demographic factors that explained variation in general participation, as well as leadership in groups. The relationship between age and participation of community members in farmers' groups was not linear but \cap -shaped. Moreover, analyses indicated that when community members under age 30 joined such groups, they were largely left out of leadership roles. Their interests and priority enterprises may have also differed from those of other group members, implying a need to plan programs tailored to their need; therefore, programs are required that promote 'youth' groups and, when possible, in an exclusive manner, such that their distinct needs and priority enterprises are addressed. Another alternative would be to promote rural-based, off-farm employment opportunities, given that youth spend most of the time in rural settings, which would boost their potential to form new groups or join existing ones in their communities. Given their resource needs and the stage of their development, pluriactivity would be an important risk management strategy for ensuring that youth are gainfully engaged in rural development initiatives, as also confirmed by a recent meta-analysis by IFAD & FAO (2012).

Education was undoubtedly a key factor in ensuring more active participation in groups. In this study, the main shortcoming of respondents with little or no education was that they did not take up roles beyond ordinary membership, probably due to feelings that they could not effectively perform some leadership roles given their status. The challenge of education levels might be overcome through adult education programs and by ensuring that children benefit from the current policy of Universal Primary Education in Uganda. In addition, groups should be encouraged to make it easier for illiterate members to take up leadership roles through the implementation of capacity building (adult education) initiatives for willing and promising members who may happen to exhibit low literacy levels.

With regard to economic factors, agricultural production as the main source of income was associated with less frequent participation in multiple groups. This implies that food security programs should strongly consider promoting value-chain improvement so that even while remaining in one group, a farmer might maximize benefits, especially income. This is especially feasible if community members achieve food security through own production, with more agricultural produce available for the market. Land acreage was also associated with higher levels of participation. The significance of land acreage and alternative income sources indicates a risk of elite capture for which programs may need to establish mechanisms to ensure that the non-elite do not lose benefits that are due to them. For instance, the poorer community members can be affirmatively sought for involvement in food security and related interventions, unlike the case of this program whereby only those interested were involved. Where fees for group membership are required, they can be waived for the poorer sections of the community, using jointly agreed-upon criteria.

Most previous studies on participation in groups have not addressed the spatial aspect of households. In this study, it was established that remoteness from major towns and health facilities was negatively related to participation in groups. Accessibility constraints to remote communities by external agencies limited the

intensity of interaction and ability to work with them; thus, programs may not work with groups in remote locations as regularly as compared to those more closely located. Food security intervention programs should therefore dedicate extra effort toward reaching remote households and groups in their areas of jurisdiction, such that holding other factors constant, equitable development is achieved irrespective of location. Furthermore, there is need for groups in remote communities to nurture and support dedicated members who can represent them at the trading centres and partners' offices where they can access and furnish members with appropriate information and opportunities.

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Appendix 1. Tests of multicollinearity between independent variables for regression of participation in groups

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.310 ^a	.096	.060	1.04754

a. Predictors:

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	26.532	9	2.948	2.687	.006 ^a
	Residual	249.097	227	1.097		
	Total	275.629	236			

a. Predictors:

b. Dependent Variable: partvedco Level of participation in vedco groups

Variables	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	.303	.353		.859	.391		
Major source of income	.289	.171	.108	1.690	.092	.981	1.020
Respondents' age	.015	.006	.175	2.672	.008	.927	1.078
Number of livestock units owned	-.005	.009	-.034	-.527	.598	.976	1.024
Distance to major trading centre (km)	-.003	.010	-.021	-.332	.740	.965	1.036
Distance to nearest water source	-.111	.102	-.070	-1.090	.277	.966	1.036
Ethnic group of respondent	.094	.184	.033	.513	.609	.975	1.025
Religion of household	-.002	.140	.000	-.013	.989	.966	1.035
Educational level of household	.157	.139	.071	1.125	.262	.985	1.015
Total number of household members	.043	.016	.173	2.639	.009	.930	1.075

a. Dependent Variable: partvedco Level of participation in vedco groups

Appendix 2: Tests of multicollinearity between independent variables for regression of leadership in groups

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.320 ^a	.103	.047	.48275

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.892	9	.432	1.856	.063 ^a
	Residual	34.025	146	.233		
	Total	37.917	155			

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	.410	.239		1.720	.088		
Age of respondent	.002	.003	.063	.776	.439	.934	1.071
Ethnic group	.018	.109	.013	.168	.867	.973	1.027
Religion	-.039	.080	-.039	-.488	.626	.952	1.051
Number of household members	.003	.009	.024	.296	.768	.931	1.074
Educational level of head	.071	.035	.163	2.054	.042	.977	1.023
Distance to major trading centre	-.007	.006	-.093	1.155	.250	.940	1.064
Distance to market	-.022	.022	-.081	1.020	.310	.984	1.016
Major source of income	.263	.097	.215	2.709	.008	.972	1.029
Total land owned	.001	.001	.093	1.142	.255	.928	1.078

Appendix 3: Tests of multicollinearity between independent variables for regression of participation level in groups

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.356 ^a	.127	.100	1.03125

ANOVA ^b						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	35.489	7	5.070	4.767	.000 ^a
	Residual	244.599	230	1.063		
	Total	280.088	237			

b. Dependent Variable: part_level participation level of household in groups

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	.904	.378		2.394	.017		
Sex of household head	-.181	.210	-.055	-.861	.390	.916	1.092
Educational level of hh head	.365	.137	.164	2.659	.008	.995	1.005
Age of respondent	.015	.006	.169	2.645	.009	.928	1.078
Total land owned	.001	.002	.026	.418	.677	.974	1.027
Major source of income	.413	.136	.189	3.047	.003	.984	1.016
Distance to major trading centre	-.017	.008	-.136	-2.185	.030	.977	1.023
Distance to nearest health facility	-.053	.032	-.104	-1.668	.097	.976	1.025