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GENERAL & APPLIED ECONOMICS | RESEARCH ARTICLE

The potential and limits of farmers' groups as catalysts of women leaders

Florence Nakazi^{1*}, Paul Aseete¹, Enid Katungi² and Michael Adrogu Ugen¹

Abstract: The Women's Empowerment in Agriculture Index revealed weak leadership and influence of women in the community as indicators of women's political disempowerment. Collective action through farmer groups can be an important strategy for women members to strengthen their political power. The study aims to analyze the potential group characteristics that can act as catalysts to the number of leadership positions that women occupy. The study uses data from 65 farmers' groups in central Uganda. Tobit regression model was used to assess the group factors that influence the proportion of positions women held in groups. The study found that groups had an average of 5 leadership positions and women strong leadership skills lie in being treasurers (70%). Number of households represented (10.7%), record keeping (27.9%), proportion of both youth (19.4%), and women (69.7%), number of economic activities (2.9%) were the key factors that influence the proportion of women in group leadership. The findings are useful in guiding development interventions that use group-based approaches in agricultural production and marketing.

Subjects: Environment & Agriculture; Development Studies; Economics, Finance, Business & Industry

Keywords: rural women; collective action; farmers' groups; leadership roles

ABOUT THE AUTHORS

The authors of the study carry out research on a number of issues such as; food security, production economics, agricultural marketing, gender, climate change, value chain analysis, adoption and impact studies. For collective action, the team offers strengthening skills to existing groups and formation of new groups in areas where they do not exist. This entails rigorous training on group dynamics and functionality to achieve gender-based transformations. It also entails guiding groups in formation of gender-biased constitutions. This approach can be used as a platform to empower women in decision-making to redress the historical biases in women taking on leadership roles. In the precooked bean project, where research activities were basically through farmers' groups, the authors can say that all development agencies in agriculture should target use of group-based approaches in all their interventions to empower both men and women in political arenas.

PUBLIC INTEREST STATEMENT

Collective action through farmer associations is widely recognized as a positive force for rural development in Africa. Getting together with others allows men and women farmers to better cope with risk, particularly where "safety nets" against risk do not exist. Farmer organizations are a strong ground upon which farmers can articulate their views, access technologies and information, and make necessary recommendations. It is hardly possible to find a development/research organization or governmental program that does not attempt to work with community-based organizations in pursuance of rural development goals. Active participation of women in agriculture and commensurate access to productive resources and information has been cited as a key ingredient in increasing agricultural productivity. Women participation in and leadership of such groups is a thus great step towards their empowerment and could be a key towards better outputs. Creating opportunities and eliminating barriers to women participation in leadership is thus inevitable.

1. Introduction

Smallholder farmers in developing countries have long tried to overcome the problems of severe hunger and poverty by engaging in collective action. Collective action through farmer groups can be an important strategy for members to strengthen their political power, gain skills, access inputs, form enterprises, process, and remain competitive in rapidly changing markets (Penunia, 2011). Literature also suggests that when farmers are organized in groups, the efficiency of service delivery to the community improve (Adong, Mwaaura, & Okoboi, 2013). As a result, group-based approaches have increasingly been used by government and non-governmental initiatives to improve farmers economic and social being. Men and women farmers have embraced the idea of collective action with some variations in the degree of participation. Literature reveals that though women are more likely to belong to farmers groups than men, the proportion of women in leadership positions is still limited (Quisumbing et al., 2014), which makes it hard for them to influence group decisions. There is still very limited information on whether and how participation in groups contributes or fails to contribute to women participation in leadership. While farmer groups may be an avenue that can strengthen the skills of women in various ways, the composition and leadership structures of these groups reveals some disparity. Women, for example, may comprise 30–50% of the total number of members but have a weak representation in leadership of these farmers' groups (FGs) which makes their voices not to be fully heard and their specific needs not met (Ampaire, Machethe, & Birachi, 2013). The low participation of women in leadership is further reflected at national level where we see a few women leaders that effectively represent the interests of grassroots women. The situation is not any different in mixed groups where women may be well represented as members, yet generally few take up leadership positions. For example in the Phillipines, the Asian Farmers Association for Sustainable Rural Development has ten member national farmers' organizations with mixed membership, but none of them is led by a woman (Penunia, 2011). Also, in cases where group members hold farmers' meetings, there are more women cooking for the farmer participants than women participating in the discussions. This result into a dramatic disproportion between rural women's voice and decision-making role compared to their enormous contribution to agricultural production, marketing, and livelihoods.

According to the Women's Empowerment in Agriculture Index (WEAI), weak leadership and influence of women in the community are indicators of women's political disempowerment, emanating from their discomfort speaking in public. Literature on collective action provides evidence that supports the notion that women can be successfully empowered through FGs. For example, Njuki, Baltenmeck, Mutua, Korir, and Mulindi (2014) studied women leaders in collective dairy value chains in Kenya and found that women achieved higher adequacy in being leaders. In the CAP-Yako farmers' organization, female in leadership posts rose from 33 to 55% as a result of initiative to give women more posts and their suggestions being taken into consideration more often than before (Impact Learning, 2012). Chitagubbi, Shivalli, and Devendrappa (2011) found that attributes such as devotion to work, sense of responsibility, organizing ability and self-confidence are key attributes that are normally developed through individual membership to groups. The authors revealed that over 90% of the farmers that were engaged in groups' activities had fully developed those skills of leadership. Economic empowerment of women was identified as another essential condition to advance leadership of women in farmers' organizations (International Fund for Agricultural Development, 2010). This implies that farmer groups that empower women economically through access to land, productive resources, credit, technology, information, and markets will also give them the competence and incentives to compete for leadership positions.

The question, however, is if participation in farmer groups boosts women ability to take on leadership duties, are there group characteristics (institutional arrangements) that affect the number of leadership posts that women occupy in a group? Answers to this question are important for mainstreaming gender in development interventions that use group-based approaches and those that are promoting collective action to address community development issues. In tackling the question, the current study uses data from farmer groups profiling survey conducted in central and mid-western regions of Uganda in 2015. The study explores potential group factors/characteristics that can

act as catalysts to the proportion of women in farmer groups leadership with a clear mind that dedicated and committed leadership is a key factor if farmers are to access and maintain links to the market (Njuki, Kaaria, Sanginga, Kaganzi, & Magombo, 2013). Previous studies have focused on how group characteristics influence women participation in groups (Kaaria, Osorio, Wagner, & Gallina, 2016; Markelova, Meinzen-Dick, Hellin, & Dohrn, 2009; Meier zu Selhausen, 2016; Ostrom, 2000) without examining overall leadership posts women occupy and group factors that influence the proportion of leadership positions women hold. The paper introduces a new discourse of participation by examining both the potential and limitations of farmer groups' characteristics in catalyzing women leaders in rural areas of Uganda. This is with a clear mind that collective action could be a tool to improve participation in leadership in Agriculture. The rest of the paper is organized as follows: Overview of farmers' groups and their importance in agricultural transformation are presented in Section 2. The data and methods used in the study are presented in Section 3. The results and discussions are provided in Section 4. Lastly, conclusions and policy implications in Section 5.

2. Overview of farmers' groups

In this paper, farmers' groups refer to independent membership-based rural organizations of small-holder farmers with an element of collective action on any agricultural activity along the value chain. Different terminologies used in the literature to refer to farmers' groups (FGs) include: producer organizations, farmer organizations, groups of co-operative action, or private cooperatives organizations (Aliguma, Magala, & Lwasa, 2007; Asante, Sefa, & Sarpong, 2011; Uliwa & Fisher, 2004). These FGs can be singular (with only men or women) or mixed with both men and women farmers as members. In this study, by collective action; we refer to a voluntary action taken by a group of individuals, who invest time and energy to pursue shared objectives (Markelova et al., 2009). Collective action plays an important role in both political and economic agricultural transformation. Politically, collective action helps to strengthen the political power of members by increasing the likelihood that their needs and opinions are heard by policy-makers and the public. Economically, it helps farmers gain skills, access inputs, form enterprises, process and market their products more effectively to generate higher incomes. It is also associated with easy access to information. It also helps to lower production costs which facilitate further processing and marketing of agricultural commodities. In addition, well organized farmers have greater bargaining power than individuals which puts them in better positions to negotiate with other more. The success of collective action depends on member commitment to fulfill mutual stated obligations (Fischer & Qaim, 2011).

In Uganda, the approach of farmer groups for collective action dates way back in the post-colonial era when government controlled marketing of the then cash crops formed cooperatives to reduce transaction costs. Because the cooperatives were formed around cash crops that were controlled by men, women participation was nearly absent at that time. Following the structural adjustment program in mid 1980s that required all African governments to decentralize support so as to achieve agriculture transformation (Food and Agriculture Organisation, 2010), farmer group approach to rural development underwent structural transformation in terms of function, composition and external actors. Both government and Non-government supported programs continued to use them in the agriculture and community development initiatives. For example, the Uganda five year Agriculture Sector Development Strategy and Investment Plan (DSIP) formulated in 2010 has four pillars in which FGs are envisioned to play a key role in improving produce marketing, increasing access to financing and value addition and ultimately leading to agricultural transformation (Ministry of Agriculture, Animal Industry and Fisheries, 2010). It is upon these pillars that the National Agricultural Advisory Services (NAADS) had its implementation strategy based on the FGs concept. Farmers were required to join existing groups or form new groups within the village and then merge to form the village farmer forum. It is through these groups that NAADS would select those to handle food security enterprises and also distribute multiplied planting and stocking materials.

Penunia (2011) highlights the various ways in which FGs can form essential institutions for enhancing agricultural transformation of the rural poor. Politically, they strengthen the political power of members (women) by increasing the likelihood that their needs and opinions are heard by

policy-makers and the public. Economically, FGs can help farmers gain skills, access inputs, form enterprises, process and market their products more effectively to generate higher incomes. When farmers are well organized, they can easily access information needed to produce, add value, market their commodities and develop effective linkages with input agencies such as financial service providers, as well as output markets. Also once FGs have achieved economies of scale, they can lower production costs which facilitate further processing and marketing of agricultural commodities for individual group members. In addition, well organized farmers have greater bargaining power than individuals which puts them in better positions to negotiate with other more powerful market players to ultimately increase the profits that accrue to farmers rather than intermediaries and buyers (SARD, 2007).

There has been a boom in FGs brought about by NAADs and NGOs as a target to have both women and men embrace collective action. This has led to increased number of farmers' groups. Despite the observed effort, there has been a woman slow upward movement in taking up leadership responsibility to compete with men in mixed groups or using it to compete with men in politics as majority continue to go for women mandated seats. The question at hand is whether the boom in FG has enabled women to overcome their historical biases in leadership and took on more leadership duties than before. This study conceptualizes the link between collective action and leadership as actions that can enhance women's decision-making power as they take on more leadership roles through FGs (Pandolfelli, Meinen-Dick, & Dohrn, 2008). We believe that utilizing the leadership potential of FGs will be effective in addressing biases and also empower rural women for increased economic gains from agriculture. The findings could be a guide to development interventions that use group-based approaches in agricultural production and marketing. A concrete understanding of group factors influencing women leadership in FGs could go a long way in informing policy, researchers and development practitioners on how women leadership can be enhanced and be relied on as channels for agriculture transformation.

3. Methods

3.1. Data sources and collection methods

The study uses data from the farmer groups profiling exercise of 2015 collected by Uganda National Crops Resources Research Institute (NaCRRI) in collaboration with Community Enterprises Development Organizations (CEDO) and the International Center for Tropical Agriculture (CIAT). As part of the "pre-cooked bean" project activities, it was deemed necessary to profile groups to get "bird eye view" of the status of farmers' groups in areas that were selected to participate in the project. Data were collected through a survey of farmer groups between the months of March to June 2015, covering six districts of Rakai, Masaka, Lwengo, Lyantode, Mubende, Mityana and Kiboga. A two-stage sampling technique was used to identify farmer groups. The first stage involved purposive sampling of farmers' groups in the project intervention districts. These were purposively selected based on the availability of bean varieties targeted for processing under the project and the levels of bean production. In the second stage, two sub counties were purposively selected from each district based on their bean production potential. It was from the selected sub counties that farmers' groups were selected. In this case, the farmers' groups were considered as the primary units from which data were collected. Given the implied implementation and monitoring costs under constrained budgets, 65 farmer groups were surveyed (62 mixed FGs (with both men and women) and 3 women groups). Data were collected through direct interview with the key informants (chairpersons, vice chairpersons and/or any leader that were more informed about group activities and management) of the group to capture information on group characteristics such as membership by gender, household represented, purpose of the group, group leadership as well as group production and marketing, group governance, cohesion and skills development.

3.2. Data analysis

3.2.1. Influence of group factors on women participation in group leadership

This section examines group factors that foster or hinder women from taking on leadership in groups using econometric techniques. Our dependent variable takes the value of zero for the groups that don't have any female leaders and continuous for groups with female leaders. Since the number of

leadership positions varies across groups, we defined women participation in leadership as a proportion variable measured as the number of leadership positions held by women divided by total number of leadership positions in the group to neutralize the differences in scale. Given that the study is interested in the proportion of women in leadership positions, this makes the Tobit regression model a more suitable tool of analysis. The Tobit model assumes normal distribution with constant variance (Greene, 2000). Thus, the dependent variable (the proportion of women leaders) is censored with lower limit as zero and upper limit as 1. Greene (2000) specifies a generalized two-tailed Tobit model as;

$$y_i^* = \alpha X_i + \varepsilon_i \quad (1)$$

where y_i^* is a latent variable (unobserved for values smaller than 0 and greater than 1), α is a vector of coefficients to be estimated, and ε_i is a vector of independently normally distributed error terms with zero mean and constant variance σ^2 , X_i is the vector of explanatory variables and $i = 1, 2, \dots, n$ (n is the number of explanatory variables). Denoting y_i (the proportion of women in group leadership) as the observed dependent (censored) variable, instead of observing y_i^* , we observe y_i :

$$y_i = \begin{cases} 0 & \text{if } y_i^* \leq 0 \\ y_i^* & \text{if } 0 < y_i^* < 1 \end{cases} \quad (2)$$

The likelihood function for the Tobit is given as;

$$\log L = \sum_{y_i > 0} -\frac{1}{2} \left[\log(2\pi) + \log \sigma^2 + \frac{(y_i - \beta' X_i)^2}{\sigma^2} \right] + \sum_{y_i = 0} \log \left[1 - \Phi \left(\frac{\beta' X_i}{\sigma} \right) \right] \quad (3)$$

The first part in Equation (3) corresponds to the classical regression for the non-limit observations and the second part adjusts for the limit observations. The Tobit model was chosen over the other choice models because; (a) Of all the available choice models, it is only the Tobit that takes into account both the probability and intensity of participation, (b) It avoids lumping all women who are not leaders as zero or and those who are leaders as one, thereby masking variation in the dependent variable.

Following McDonald and Moffitt (1980), the effect of an independent variable on the expected value of the dependent variable for all observations can be decomposed into two parts. The first part is the change in the dependent variables of those observations above the limit, weighted by the probability of being above the limit; and the second part is the change in the probability of being above the limit, weighted by the expected value of the dependent variable if above.

The expected value of y in the Tobit model (McDonald & Moffitt, 1980) is given by;

$$Ey = X\beta F(z) + \sigma f(z) \quad (4)$$

where $z = X\beta/\sigma$, $f(z)$ is the unit normal density and $F(z)$ is the cumulative normal distribution function, σ is the standard deviation of the error term that is reported in the Tobit results. The expected value of y for observations above the limit, here called y^* (McDonald & Moffitt, 1980) is given by;

$$Ey^* = X\beta + \sigma f(z)/F(z) \quad (5)$$

From Equations (4) and (5), it can be shown that

$$Ey = F(z)Ey^* \quad (6)$$

$$\frac{\partial Ey}{\partial X_i} = F(z) * \frac{\partial Ey^*}{\partial X_i} + Ey^* \frac{\partial F(z)}{\partial X_i} \quad (7)$$

From Equation (7), it can be shown that the effect of an independent variable on the expected value of the dependent variable for all observations can be decomposed into two parts. The first part is the

change in y of those observations above the limit, weighted by the probability of being above the limit; and the second part is the change in the probability of being above the limit, weighted by the expected value of y if above.

$$\frac{\partial E y^*}{\partial X_i} = \beta_i + \frac{\sigma}{F(z)} * \frac{f(z)}{\partial X_i} - \frac{\sigma f(z)}{F(z)^2} * \frac{\partial F(z)}{\partial X_i} = \beta_i \left[1 - \frac{zf(z)}{F(z)} - \frac{f(z)^2}{F(z)^2} \right] \quad (8)$$

$$\frac{\partial F(z)}{\partial X_i} = \frac{f(z)\beta_i}{\sigma} \quad (9)$$

Substituting (7) and (8) into (6) gives

$$\frac{\partial E y}{\partial X_i} = F(z) * \beta_i \quad (10)$$

In Equations (7)–(10) z is the z -score for the area under the normal curve, $f(z)$ is the standard normal density function and $F(z)$, is the cumulative standard normal density function.

The implicit form of empirical model estimated for the proportion of women in group leadership is therefore specified as;

$$y_i = \alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \alpha_3 X_3 + \alpha_4 X_4 + \alpha_5 X_5 + \alpha_6 X_6 + \alpha_7 X_7 + \alpha_8 X_8 + \alpha_9 X_9 + \alpha_{10} X_{10} + \alpha_{11} X_{11} + \varepsilon_i \quad (11)$$

where; y_i = Proportion of women in group leadership, α_0 = the intercept term, X_1 = Number of Households represented, X_2 = Years the group has been in existence, X_3 = Election of leaders by secret ballot, X_4 = Holding meetings on a monthly basis, X_5 = proportion of women in the group, X_6 = Number of activities groups are engaged in, X_7 = Number of times group was trained in 2014, X_8 = Record keeping, X_9 = Proportion of youth, X_{10} = Freelance selling arrangement, X_{11} Contract selling arrangement, $\alpha_1 - \alpha_{11}$ represent parameters to be estimated in the model and, ε_i = Stochastic error term.

4. Results and discussion

4.1. Socio-demographic characteristics of groups

Tables 1 and 2 presents some of key characteristics of the surveyed groups. Table 1 results show that most of the FGs sampled for the study were formed around 2003 when NAADS program was implemented with mass group formation, meaning that they have been in existence for a period of about 11 years. The average number of members in the FG was about 38 members, 55% of whom were female. The average number of members in the study sample is consistent with the results in Sanginga, Lilja, and Tumwine (2001) who found optimum group membership to range between 20 and 50 members for wider experiences and exchange of knowledge. Markelova et al. (2009); Meier zu Selhausen (2016) highlighted group characteristics of group size and composition as key determinants for the group greater interaction and cohesion.

Table 1. Socio-demographic characteristics of groups

Variable	Mean	SD	Minimum	Maximum
Years the group has been in existence	10	10.15	1	61
Total number of members	37.6	36.28	10	289
Number of males	16.57	24.33	0	195
Number of females	20.78	14.70	5	94
Number of youth	8.31	8.00	0	34
Number of households represented	31	31.53	5	250
Number of leadership posts	5.48	1.17	3	9

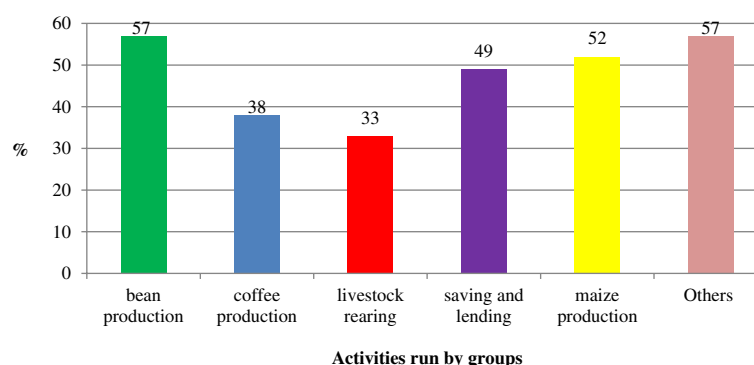
Table 2. Other socio-characteristics of groups (categorical variables)

Variable	Description	Percent (N = 65)	Variable	Description	Percent (N = 65)
Gender composition	Men only	0.00	Record keeping	Keep records	98.46
	Women only	4.62		Do not keep	1.54
	Mixed	95.38	Type of records	Saving	64.06
Committee	Have committees	55.38		Registration	51.56
	Do not have one	44.62		Lending	51.56
Frequency of holding meetings	Weekly	15.38		Production	48.44
	Twice a week	26.15		Receipt book	26.56
	Monthly	53.85		Constitution	20.31
	Quarterly	4.62		Membership	10.94
				Sales	10.94
				Contracts	7.81
				Planning	1.56

However, the average number of leadership positions varied across groups, with an average of five. These included: chairperson, vice chairperson, secretary, treasurer, auditors among others. This is a clear indication that the number of leadership positions are not standard, which could limit participation and exposure to leadership by some members. Table 2 further shows that 95% of the surveyed groups were mixed with no men only group. These mainly hold meetings on a monthly to discuss and resolve group issues. Ninety-eight percent of the groups reported keeping records such as registration, constitution, savings, and lending among others.

The surveyed groups (about 87%) were involved in a diversity of activities that range from agriculture to mutual support services (Figure 1). Overall, the 65 FG were involved in 18 functionally different activities being, 66.33% of which deal with crop production/processing or marketing activities. Diversified group activities provide members with more benefit. This is in with the findings of Tallam, Kibet Tanui, Muller, Mutsotso, and Mowo (2016), Barham and Chitemi (2009) who found that groups with diversified activities, provide more benefits to their members than does dealing in a single activity. The main crops grown by groups or group members were; beans, maize, and coffee. The category of others combines: tomato production, vegetables, potato, cassava, soybean, groundnuts, and coffee seedling management. Groups were also involved in other income generating and community

Figure 1. Main activities run by the group.



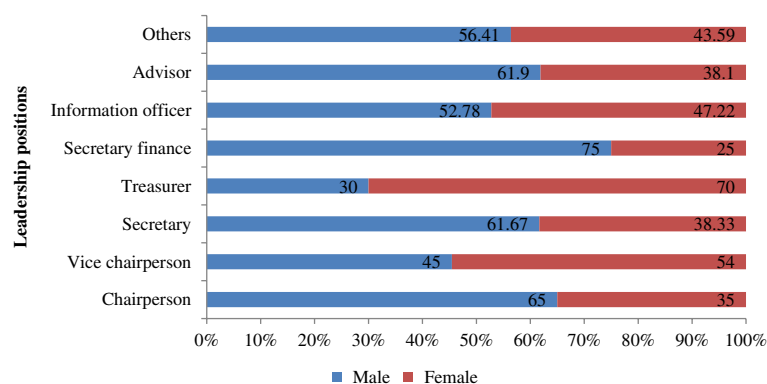
activities including; craft making, hygiene and sanitation, hire services, trading and processing, and development programs. Bean and maize production were the most important crops grown by groups studied probably because of the cropping system of these crops that allows farmers to intercrop them to maximize output and avoid losses just in case a calamity befalls. Also, these crops are readily marketable and have short gestation periods. Also, groups were involved in saving and lending schemes for self-financing purposes and to raise funds to cater for any social courses that often emerge.

Once small holder farmers decide to come together for a common purpose (goal and main activities to achieve), the next item normally on the agenda is how the group will be governed. Group members normally establish leadership structures by electing a five to nine members on executive committees, and by agreeing on some common rules, norms and regulations. The key FGs leadership positions (Figure 2) range from group chairperson, vice chairperson, secretary, Treasurer, advisors, coordinator, publicity/information officers among others. The group's leadership committee is engrossed in directing the aims and objectives for the group which subsequently shapes the concerned group members to be reliant and satisfied with group activities (Raudeliuniene, Dzemyda, & Kimpah, 2014).

The surveyed FGs leadership structure (Figure 2) reveals quite interesting gender biases. First, apart from the vice chairperson and treasurer positions, female were under represented in almost all the leadership positions among the surveyed FGs; a clear indication that women typically have limited access to informal political space. Thirty-five percent of the groups were led by women. This is consistent with the findings of Farnworth, Sundell, Nzioki, Shivutse, and Davis (2013) that women are increasingly taking on farmer groups' lead. The 54% women in vice chairperson positions clearly illustrates how women are shy to speak in public and always cover under men as their vice chairpersons.

The study also found 70% of treasurer positions were held by women which depicts how women are keen in handling accountability issues and therefore most trusted by group members. Increased women in social accountability process can increase their voice and influence over group decision-making which builds their confidence and skills. This is in line with earlier findings of Sanginga et al. (2001) who found 72% of women in Kabale highland farmer research groups in treasurer positions which they attributed to women perceived integrity and reliability in keeping group funds and other assets. It is interesting to note that women are increasingly taking on leadership positions like information officers (47.22%) which traditionally were men's roles. Women limited participation in key decision-making positions like chairperson shows that women bargaining space is still limited, which

Figure 2. Distribution of leadership positions by gender.



gives them less say in decision-making processes (Dannecker, 2000). These patterns in FGs leadership structures can partially be explained by cultural norms within the household and the community that men are perceived to be more abled in making decisions (Kaaria et al., 2016), organize group activities and maintain discipline within the group. This could also be explained by the perception held by women that men are better placed to establish contacts with external institutions to amplify their concerns/voices.

4.2. Characteristics of farmer' groups geared towards participation in leadership

Women's full and equal participation in running of FGs can be considered to be one of the litmus tests for increased participation in decision-making and gender equality (UN Women & UNDP, 2015). When women participate in elections as voters as well as candidates, they can express their own needs and interests since the decisions they normally make better reflects their thoughts. Once the FGs political processes are more inclusive, democracy will eventually be strengthened.

4.2.1. Organization arrangements of group leadership

This section highlights some of the group processes that contribute to individual participation in FG leadership (Table 3). The processes through which a group makes decisions (either democratic or dictatorial) encapsulate women having the power to express their preferences, demands, views and interests to gain access to positions of leadership and consolidate power to take decisions on behalf of the members. The Study found that 74% of the surveyed groups make decisions that affect group members through general consensus of members. This implies that members are accorded the opportunity to influence groups' decision that affect their participation and access to respective benefits. They affect the groups' functionality and their lives in general. The process of choosing leaders influences group governance and over 63% of the groups sampled reported electing leaders through secret ballots. This exemplifies democracy through free will that is practiced in the groups and for one to win; it calls for intensive lobbying of members for votes. However, how this contributes to women to take on leadership posts may depend on the context. Through the process, women gain confidence to lobby for votes and stand firm while campaigning. Election of leaders is mainly through secret ballot voting (63%).

Table 3. Organization arrangements of group leadership

Characteristic	N
Election of members to leadership committee	% of cases (N = 62)
Nomination of group member	25.40
Vote by show of hands	25.40
Vote by secret ballot	63.49
Vetted by the committee	1.59
Seconded by other for approval	1.59
A three month notice for expression of interest	1.59
Decision-making (How leaders guide group members)	% (N = 65)
Meeting to discuss with the involvement of the entire group	73.85
Voting of major decision	15.38
All decisions are made if there is quorum	6.15
Decisions made by executives in executive meeting	1.54
The wish of the majority is considered when making decisions	1.54
The wish of the majority is considered when making decisions	1.54
Negotiations on major issues by the whole group	1.54

Table 4. Partnerships with groups

Partnership	Percent
Presence of partners	
Have partners	100
Do not have partners	0
Types of partners	
Government	71.43
Non-governmental organizations (NGOs)	96.83
Farmers Groups	9.52
Support offered by partners to groups	
Seed support	92.06
Market for produce	33.33
Livestock support	14.29
Trainings	93.65
Financial support and management	38.10
Environmental conservation	23.81
Production support (advisory services)	20.63
Group management	7.94
Infrastructure development	3.17
High group level development	11.11

4.2.2. Group linkages and networks

The study identified that majority of the surveyed groups had interacted with various non-partner (Table 3). These partners include government (71%), non-government organizations (97%) and other farmers' groups (10%). Literature suggests various interventions that contribute to the processes of FGs leadership. Among them is capacity building of members in specific skills including management of group dynamics, engagement in economic activities and information access. In this paper, we examine interventions contributing to capacity building and resulting management skills (Table 4). Bivariate analysis show that 94% of the groups got external support in form of trainings. It is hypothesized that the associated trainings normally come along with capacity building skills like confidence building, ability to discuss with supportive authorities and leadership skills that all help to enhance women social status. This is in line with the findings of Ampaire et al. (2013) who observed lobbying strategies developed at different levels with different support networks being vital to women's ability to capitalize on opportunities that improve their wellbeing. Other key support offered to groups was seed (92%) among others.

4.2.3. Group management skills

We believe that the way the group is managed in one way or another influences the leadership structure it will have which will eventually affect the functionality of the group. Having a group well managed is an internal process that is developed over time. Using the chi-square test (χ^2), the study examined the extent to which groups have developed management skills over time. The ability to develop management skills was evaluated on a four-point likert scale 1 = Early, whereas 4 = fully developed in management skills. The results of the management skills are presented in Table 3. A group that has developed in management should have in place processes that ensure that all members fairly participate in group operations including in decision-making, shared vision, and participation in democratic processes.

We hypothesized that the management skills of any FG vary according to the number of years the group has been in existence since continuous learning increases with age. Using the group management skills set and its parameters that we assessed (Table 5), most groups that were profiled had

Table 5. Extent to which groups have developed management skills (%)

Management skill	≤ 5 years (N = 23)	6–10 years (N = 21)	Above 10 years (N = 20)	Chi-square
Have a vision of its goals shared by all its members				
Early	30.43	4.76	–	26.5373***
Intermediate	30.43	4.76	10.00	
Advanced	26.09	14.29	15.00	
Fully developed	13.04	76.19	75.00	
Written constitution of the group				
Early	43.48	–	–	44.7356***
Intermediate	39.13	4.76	5.00	
Advanced	13.04	19.05	10.00	
Fully developed	4.35	76.19	85.00	
Demonstrate capacity to resolve internal conflicts				
Early	39.13	4.76	0	41.6193***
Intermediate	43.48	4.76	0	
Advanced	4.35	4.76	5.00	
Fully developed	13.04	85.71	95.00	
Support continuous learning of its members				
Early	30.43	–	–	30.6705***
Intermediate	30.43	4.76	5.00	
Advanced	34.78	61.90	40.00	
Fully developed	4.35	33.33	55.00	
Make decisions independently with the participation of all members				
Early	17.39	–	–	22.1061***
Intermediate	21.74	4.76	5.00	
Advanced	39.13	14.29	20.00	
Fully developed	21.74	80.95	75.00	
Follow its own internal rules				
Early	–	–	–	25.6923***
Intermediate	43.48	14.29	5.00	
Advanced	47.83	19.05	15.00	
Fully developed	8.70	66.67	80.00	
Monitor and evaluate its progress towards its goals				
Early	–	4.76	–	3.1532
Intermediate	13.04	9.52	10.00	
Advanced	21.74	33.33	25.00	
Fully developed	65.22	52.38	65.00	

Notes: “Early” The group has no knowledge of or does not fully understand how to use this skill and is not able to do it well even with facilitation: “Intermediate” The group fully understands how to use the skills but not yet able to do this well even with facilitation: “Advanced” The group can do this well but depends on outside facilitation: “Fully developed” The group can do this well and independently without outside facilitation.

*** represents significance of coefficients at 1% levels.

much variation in group management by the number of the years the group has been in existence. Most of the sampled groups have significant variations in vision of its goal, written constitution, resolving internal conflicts and continuous learning. This shows that new and old groups equally developed groups’ management skills as soon as they are formed and sustain them for the longevity

and functionality of the group. The results further illustrate that most of the various attributes of sound group management were met by these groups.

4.3. Potential and limits of farmers' groups as catalysts for proportion of women in group leadership

To identify the potential and limits of farmers' groups as catalysts for proportion of women in group leadership in the study area, the Tobit regression model was used and the regression results are presented in Table 6. Three women groups were dropped from the regression since they had 100% women participation in leadership. The overall model fit was statistically significant ($p < 0.01$). This indicates that the explanatory variables had a significant effect individually or jointly on proportion of women in leadership. The number of households represented the number of years the group has been in existence, proportion of women in groups, record keeping, number of economic activities and selling arrangement followed by the group had significant effect on the proportion of women in leadership.

The number of households represented in farmers groups as a proxy for group size had a significant effect on the proportion of women in group leadership. Farmers groups with increasingly big number of households were 22.4% less likely to have women in its leadership composition. And if women happen to take on leadership responsibilities, their participation intensity will be less by 10.7%. The plausible explanation could be that as more people join the groups, the social networks expand on the geographical coverage, which is disadvantageous to women since they tend to belong to smaller social networks. Literature shows that women are always able to lobby in smaller groups. With the male dominated quorum in the groups, it reduces women confidence to stand

Table 6. Determinants of the proportion of women in group leadership dependent variable = proportion of women in group leadership

Explanatory variables	Coefficient	Marginal effects	
		Probability of participating	Intensity of participation
Number of households represented ^a	-16.957 (4.523)***	-0.224	-10.727
Years the group has been in existence	5.005 (3.026)*	0.066	3.167
Election of leaders by secret ballot [^]	-0.593 (5.240)	-0.008	-0.375
Holding meetings on a monthly basis [^]	4.322 (5.286)	0.057	2.734
Proportion of women	1.102 (0.136)***	0.015	0.697
Economic activities	4.644 (2.239)**	0.061	2.938
Training in 2014	0.941 (1.251)	0.012	0.595
Record keeping [^]	44.255 (19.687)**	0.583	27.997
Proportion of youth selling arrangements	-0.307 (0.123)**	-0.004	-0.194
Freelance	27.406 (11.968)**	0.361	17.338
Contract	11.692 (12.269)	0.154	7.397
Constant	-47.358 (29.954)		
Pseudo R^2	0.117		
χ^2	64.05***		

[^]dummy variable.

^aLogarithm.

*Significance of coefficients at 10%, level.

**Significance of coefficients at 5%, level.

***Significance of coefficients at 1%, level.

against men at any particular post. This is in line with findings of Meier zu Selhausen (2016) who found the share of women members to be negatively correlated with group size, a clear indication that women prefer smaller groups with closer social ties.

From these results, it is evident that the number of years the group has been in existence had a great potential to influence the number of leadership position women occupy. Older groups have 6.6% probability that women would participate in leadership and if they take on these posts, they will 3.2% participate actively in the allocated duties. Older groups could have dedicated members who have the group goals and mission at heart. This is consistent with the findings of Barham and Chitemi (2009) who concluded that older groups are mature in management skills hence foster the performance of women leaders.

The proportion of women in farmer groups was also positively and significantly associated with the proportion of women in leadership. Any additional increase in the number of women by one person would increase the chances that women would take on leadership in FGs by 1.5% with an increase in the number of leadership posts that women would take on being 69.7%. This is because with more women in mixed groups, it increases the chances that women who try to stand for any position and most likely to win given the majority votes by their fellow women.

The number of economic activities dealt in by any farmers' group cannot be underrated. With increasingly more number of activities being carried out in a group, women were 6.1% more likely to take on leadership duties at 2.9% participation rate. This could be attributed to the fact that as groups try to diversify in the activities dealt in, women would get chance to lead in various activities at least as assistants than when the group is engaged in only one activity. Hence, the more activities groups engaged in, the more posts will be occupied by women. This corroborates with the findings of Barham and Chitemi (2009) that groups that take on more economic activities performed better than groups engaged in only one activity.

Also, record keeping as one of the group activities had a great potential on the proportion of women in group leadership. The type of records kept range from planning, production, sales, savings, and constitution among others. If any group does keep records, study findings have shown that women participation in groups is likely to increase by 53.3%, the number of posts that would be filled by women would increase by 28%. This is because women are more keen and good record keepers as compared to men. This is consistent with our descriptive analysis where we found more women taking on positions of a treasurer (70%). This is also consistent with the findings of Ruengdet and Wongsurawat (2011) who found regular record keeping being an important group activity that women were more interested in Thailand.

The proportion of youth in the studied farmer groups was a key hindrance to the proportion of women in leadership. Any additional increase in the number of youth by one person would reduce the chances that women would take on leadership in FGs by 0.4% with a reduction in the number of leadership posts that women would take on being 19.4%. This would partly be attributed to the fact with more youth in groups, it is likely that competition in the various posts would be tough and women may prefer not to stand for any leadership for fear of losing. Thus, women end up saying politics is a dirty game.

Group selling arrangements are key areas to foster women positions in FGs leadership. In particular, groups that sell their commodities on freelance are 36.1% more likely to have more women leaders. And if they happen to participate, they will 17.3% participate in group leadership posts. This could be attributed to the women bargaining power in markets and thus would prefer to use any other selling arrangement but not contract. In this case, women have special financial needs that cannot trust the contract selling arrangement associated with long bureaucratic processes.

5. Conclusions and policy recommendations

The empirical evidence gathered so far about the effect of group factors on women participation in leadership shows that these organizations hold a high potential as catalysts of women leaders. However, this paper also found some limiting factors that typically hinder women to take on leadership positions. The study findings show that the number of household represented in groups significantly reduces the proportion of women in leadership. Record keeping as one of the group management activities, proportion of women in groups, economic activities carried, selling on free-lance, number of years the group has been in existence, proportion of youth significantly increases the chances that groups will have more female leaders. Therefore, we can ably conclude that FGs have both high potential and limits to foster women leaders in rural areas. In a view of findings from the research, there appears to be great potential to achieve more women in leadership in farmers' groups. In this regard, the following recommendations can be taken for policy considerations.

It is necessary to establish quotas for participation of women in leadership structures of the farmers' groups. In this case, some posts should be women posts while others should be dictated for competition between men and women. This would help to establish the necessary critical mass of women as leaders to bring about change in policy and institutional culture. Quotas should be specified in the FGs constitutions, planning and monitoring systems.

There is need to establish women-only committees as a venue for women to gain confidence and a platform for women members to negotiate with the rest of the farmer group and support external partners and institutions. When acting in a women only quorum, they are more comfortable in asserting their rights and challenging social norms that discriminate against them.

Given that the number of household represented has a negative influence on women taking on leadership roles, there is need to build and strengthen leadership of women and men to support gender equality. Training sessions and a formation program on alternative leadership which incorporates good masculine and feminine qualities and traits should be implemented by FGs with both women and men leaders as participants. The leadership program should be a systematic re-programming of the culture and mind set of the person such groups grow to be more and more of a gender-sensitive leadership to transform structures and systems.

Conduct capacity building and training programs that put women farmers at the center. Women need access to the latest technological information regarding agriculture, production and coping with climate change, as well as information technologies to access this information. They need to acquire entrepreneurial and marketing skills; confidence building; leadership skills; and the ability to negotiate and discuss with authorities. They also need to understand the policy issues that affect them as farmers.

The study was limited by lack of information on women leader characteristics. We predict that household and demographic factors of women group leader also could affect women's decisions to take on leadership roles. It is therefore recommended a study that incorporates the effect of household and demographic factors on women in FGs leadership positions be conducted. This will further help give an insight into whether women can still take on group leaderships with family support.

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