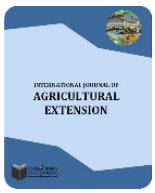

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ANALYSIS OF COLLECTIVE ACTION: THE CASE OF INDIGENOUS CHICKEN FARMERS FROM MAKUENI COUNTY, KENYA

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A B S T R A C T

Farmer groups in the world provide farmers with economies of scale, access to information, credit and markets. These farmer groups are an important intervention in Africa, due to the structural adjustment programmes (SAPs) initiated in the eighties. As a result Kenya has experienced market liberalization and reorganization in agriculture services delivery. Consequently small scale farmers are constrained in production and marketing. However, few farmers in Makueni County belong to farmer groups. In addition there is little information on why this situation persists. Therefore the objectives of the study were to assess participation of farmer in groups and determine the effect of socioeconomic characteristics on this participation. A total of 130 households were sampled in a survey, using a multistage sampling technique. The data were collected using a structured questionnaire then analyzed using descriptive statistics and Tobit regression in STATA11. The results showed that:- group activity, age of group, access to market information, sex of household head, education of household head, land size, off farm income and distance to the nearest market had a significant effect on joining groups. Policy must focus on financing groups, provision of market information and improvement of infrastructure.

Keywords: Distance, activity, infrastructure, income, land size, market information

INTRODUCTION:

Collective action involves the organization of individuals into groups, which are an important form of social capital in the world (La Ferara, 2002; Stockbridge *et al.,* 2003; Place *et al.,* 2002). There has been an evolution in the forms of collective action in different countries around the world (FAC, 2009). These changes in the collective action have been the result of dynamics in the population and political policies of the different governments in the world (Agrawal, 2010). However, despite these changes, collective action is still a determinant of economic development in rural areas (Reardon and Barrett, 2000). This role of collective action is significant since large parts of populations in developing countries are found in the rural areas (La Ferrara, 2002). The main activity in the rural areas is agriculture, which contributes to the economic development of the developing countries; and is constrained by transaction costs (Gabre-Madhin, 2001).

African countries were affected by the structural adjustment programmes in the 1980's (SAPs) (FAC, 2009). The SAPs led to market liberalization, reorganization and reduction of government involvement in some agricultural activities (Abaru *et al.,* 2006). The effect of these changes brought by the SAPs were gaps in the roles that were previously performed by the Government ministries such as Agricultural extension (FAC, 2009). The consequence of these gaps was the exposure of farmers to food insecurity, poor access to agricultural market information, extension services and access to credit (Kydd & Dorward, 2004). Therefore, there was a need for an innovative intervention to bridge these gaps in the agriculture sector (Staal *et al.,* 1997). There was an additional need to have a participatory approach which was "bottom- up approach". Consequently the introduction of farmer groups served to fill the gaps due to SAPs and improve

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farmer livelihoods in rural areas (Deininger, 1993). The economy of Kenya is largely based on agriculture, which contributes 24% to the Gross Domestic Product (GDP) (MoLD, 2008). These returns from the Agriculture sector are mainly from the crop and livestock sectors (GoK, 2010). These sectors in turn receive part of their contributions from farmers based in rural areas, who are organized into farmers group (Muradian, 2013). The groups are vital to farmers in production and marketing (Fischer and Qaim, 2012; Staal *et al*. 1997; Gabre-Madhin, 2001). The importance of farmer groups in production is due to the economies of scales that they offer to farmers (Kirimi & Olwande, 2010; Davis & Negash, 2007). In addition, the farmer groups ensure that farmers have bargain power, meet the quality standards and have a consistency in supply of their agricultural produce to markets (FAC, 2009; Abaru *et al*., 2006; Kydd & Dorward, 2004).

Kenya like most of the developing countries in Africa was affected by the SAPs (Abaru *et al*., 2006; FAC, 2009). These resulted in restructuring of parastatals which performed the input supply for production and marketing of agricultural produce (Jayne *et al*., 2002). The cooperative societies were expected to act like their global counterparts and fill these gaps in production and marketing (Deininger, 1993). However, these cooperatives did not effectively serve the resource constrained farmers (Ortmann & King, 2007; Bernard & Spielman, 2009; Francesconi & Heerink, 2010). The farmer groups on the other hand experienced a growth due to the social advantages inherent in their organization (Davis & Negash, 2007; Fischer & Qaim, 2012). These farmer groups in Kenya like in other parts of the world were formed mainly with a social and economic function (Agarwal, 2010). The importance of these groups was underlined by the fact that most Government and development agencies preferred to serve communities through organised groups (NALEP, 2001).

The Eastern part of Kenya is ranked as the third largest producer of indigenous chicken in Kenya (MoLD, 2008). There are a total of 4,165,210 poultry, which include 112,640 broilers, 164,950 layers and 3,864,760 indigenous chickens (MoLD, 2008). There is a growing and unmet demand for indigenous chicken attributed to changes in the dietary habit of the urban dwellers in Kenya (Muthee, 2006; Gamba *et al*., 2005). On the other hand small holder farmers who are the main producers of indigenous chicken are constrained in production and marketing (Ayieko *et al*., 2014). These challenges could be mitigated through well organized and sustainable farmer groups. Despite the existence of indigenous chicken farmer groups in Makueni County, there are a few farmers who participate in these groups. In addition, there is little information on the factors that affect the farmer decision to participate in these farmer groups. Therefore it was on this basis that the study was conducted to assess participation of farmers in groups and determine the effect of socioeconomic characteristics on this participation.

Participation of smallholder farmers in Collective action: Several studies have been done on collective action in agriculture with a focus on smallholder farmers. Godquin & Quisumbing (2006) conducted a study in the Philippines to analyse participation in collective action and reported that likely participants in collective action were the households with educated heads and asset endowment. These households had a good social and economic network. Place *et al.* (2002) reported that farmer groups in Kenya were dynamic and diverse. The main reasons why women joined these groups were to enable them purchase items and for social insurance. On the other hand men joined these groups for market access and to allow them to manage financially. Agarwal (2003) found that there were fewer women in cooperatives in India. This was attributed to challenges in land ownership by women in the cooperatives. Therefore these women were unable to gain membership since the cooperatives were for land pooling and leasing.

The relationship between participation in farmer groups (collective action) and socioeconomic characteristics have been analysed in studies. Yang & Liu (2012) reported that the Chinese farmers who were farmer group members had higher incomes compared to non-members. Gitter *et al.* (2012) reported a positive relationship between schooling and group membership. Studies by (Bernard & Spielman, 2009; Francesconi & Heerink, 2010) reported that there was a negative relationship between land size and farmer group membership. The results of studies by (Fischer & Qaim, 2012; Abebaw & Haile, 2013) showed that there was a negative relationship between distance to the main road and farmer group membership in Central Kenya and Ethiopia respectively. A study by Adong *et al*. (2012) reported that education, access to extension

services and distance to road had an effect on participation in farmer groups. Ofuoko *et al*. (2013) reported that marital status, educational level, household size, farm size, farming experience, extension and contact with other farmers had a significant effect on subscription into groups in Nigeria. The studies reviewed so far have focused on the effect of socioeconomic characteristics on group participation. However, none or few of the studies (Ofuoko *et al*., 2013) focused on the effects of both socioeconomic characteristics and characteristics of an existing group on participation in groups. Therefore it was on this basis that the study was done to analyse the effect of socioeconomic and group characteristics on decision to participate in farmer groups Makueni County, Kenya.

CONCEPTUAL FRAMEWORK

Figure 1 shows that the study conceptualized that there was a relationship between the socioeconomic characteristics of the household on one hand and the group characteristics on the other hand. The decision to participate in group marketing was seen as one of the components of market participation. The result of group participation in turn was expected to influence market participation, which was expected to raise the livelihood standards (Nsoso *et al*., 2004).

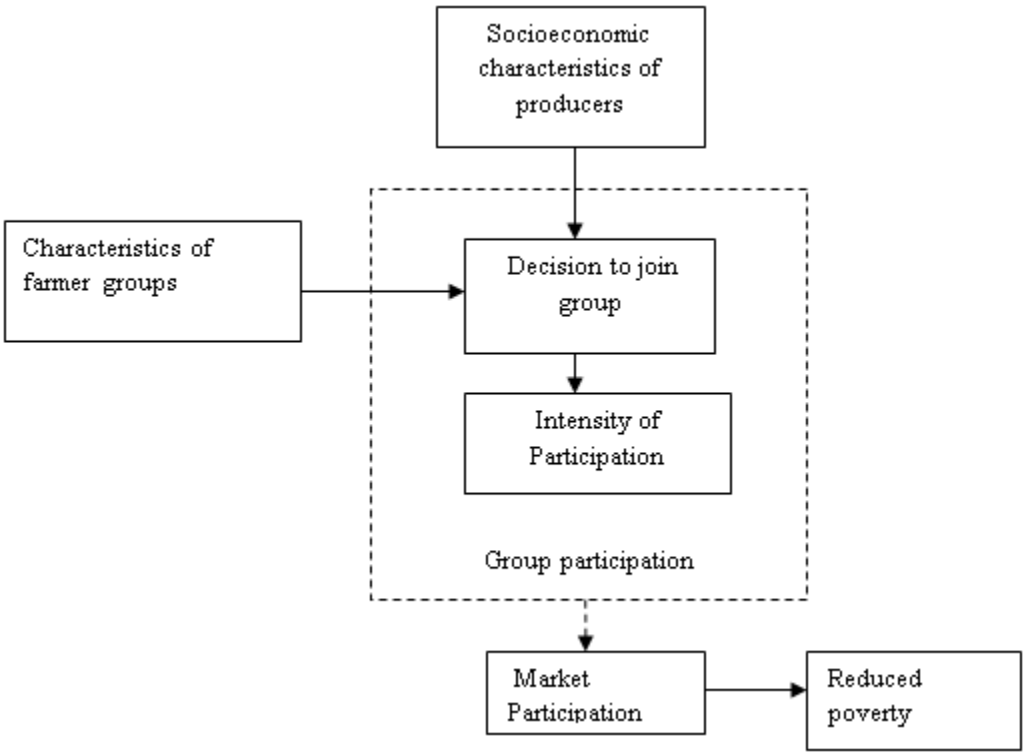

Figure 1: Conceptual framework

Source: Modified from Meinz-Dick *et al.* (2004) & Mukundi *et al.* (2013)

RESEARCH METHODOLOGY

Study area: The study was conducted in Makueni District. It is an administrative unit in Makueni County, found in Eastern Kenya. Makueni District, found within Makueni County, lies between Latitude 10 35′, South and Longitude 37010′ East and 38030′ East. The District covers 8,009 km2 with an altitude of 600m – 1,900m above sea level. The district has rainfall variability with an annual range of 800 – 1,200mm per year in the hilly areas and less than 500mm per year in the other regions. The annual mean temperature range in the District is 20.20C – 24.60C (RoK, 2005). The agriculture in this area relies mainly on rainfall with small areas under irrigation (ACF-USA, 2013).

Sampling procedure and sample size: The three divisions included Kaiti, Kee and Wote were considered for research purpose. A multistage sampling technique was used to sample the Households. The first stage involved selection of Makueni Districts and Kaiti Districts from other districts in Makueni County. The second stage involved random selection of two divisions within Makueni District and one within Kaiti District.

The third stage was the selection of households based on the proportion of their population: - Kee (18), Kaiti (52) and Wote (60). This resulted in a total of 130 households as a representative of the area of study.

Data collection and Analysis: The data were collected using a pretested questionnaire as the main tool between 25th March-17th April,2013. This data collection was done by trained enumerators from the study area due to their familiarity with the region and also for ease of communication with respondents. A focus group discussion was also conducted to help in verification of some information that was unclear at the household level. The data which was collected was then cleaned and coded before analysis. The relevant pre analysis tests were done to check for normality of data, heteroscedasticity, and multicollinearity. Consequently the data were analysed using STATA11 software. The descriptive data was used in description of the socioeconomic characteristics and group characteristics.

Tobit model: The Tobit model is also referred to as censored regression model or a limited dependent variable model (Guajarati, 2004).This model is able to censor the non-participants from the model (Tobin, 1958).Therefore this model is useful in cases where some of the dependant variable have a value of zero (Green, 2003). This model according to Green (2003) can be represented as follows:

$$y^*i=\beta1+ \beta2Xi+ ei$$

$$y\ i=0 \text{ if } yi^*\leq 0,\ y\ i=yi^* \text{ if } yi^*>0$$

Where y*is the limiting factor and for this study the dependent variable y is defined as decision of a farmer to join a farmer group. If a farmer decides to join, Yes=1 and Otherwise = 0. X is a vector of independent variables, β is the coefficient of the parameters to be estimated and e is the error term.

The use of an OLS (Ordinary least square) regression may lead to biased and inconsistent coefficient in censored data (Green, 2003). The decision to participate in farmer groups is made subject to the utility derived from the decision to participate. If the utility of participation is represented by Ui (Xi) and that of not participating is represented by Vi (Xi), then the decision to participate is made only when Ui (Xi) exceeds Vi (Xi) (Bett *et al*., 2012).

According to Tobin (1958) the expected variable y can be expressed as a function of a set of explanatory variables weighted by probability that yi >0. Therefore, expected decision of farmers to join a group;

$E(yi) = X\beta(Z) + 6F(Z)$ and $Z=X\beta/6$

Where F(Z) is the cumulative normal distribution and f(zi) is the derivative of the normal curve and 6 is the standard error. Z is the score of the area under the normal curve (Tobin, 1958). The Tobit regression has been used in studies to analyse participation (Damianos, 2002; Wossink & Wensum, 2003; Ofuoko *et al*., 2013; Bett *et al*., 2012).

RESULTS AND DISCUSSION

Farmer group characteristics: Table 1 show that the average number of members per group was 24 members, with a minimum of 4 members and a maximum of 52 members. These members had belonged to the farmer groups for an average of 4 years, the minimum year of membership was 4 months (0.3 years) and the maximum was 9 years. This may indicate that indigenous chicken farmer groups were a new intervention in Makueni. The average subscription fee for the farmer groups was Ksh.471, with a minimum of Ksh.0 (defaulters and non-members) and a maximum of Ksh.700 depending on the type of group and frequency of payment. The results in Table 2 showed that the most preferred type of group was the Women group (46%), while the least preferred was the clan group (0.77%). This preference for women group could have been due to their level of organization, consistency and efficiency compared to the other types of groups.

The results in Table 2 further showed 32% of the farmers preferred credit lending as the main activity in groups for access to credit. This amount was an average of Ksh.5703 and varied from Ksh.0 for those that had not accessed credit to a maximum of Ksh.58, 000 (Table 1). On the other hand, only 8% of farmers preferred crop processing activity. Despite the marketing of indigenous chicken by these groups only 14% sold through these groups. Table 2 showed that 39% of the farmers sold their indigenous chicken at the farm gate and only 7% had a contract with the buyers.(1US$=Ksh87.70).

The results in Table 2 show that the most common constraint faced by the farmers was inadequate credit. There was 55% of the household heads who mentioned inadequate credit as a constraint. The other constraints that were mentioned were inconsistent supply of Indigenous chickens (19%), poor leadership (2%), poor meeting attendance (5%), inadequate market information (7%) and extension contact (11%).

Table 1: Characteristics of farmer

Variable	Mean	Std. Dev.	Min	Max
Size of group	23.20769	13.13	0	52
Period of membership	4.019231	2.65	0	9
Cash borrowed from group	5703.38	7369.05	0	58,000
Subscription fee	471.15	88.35828	0	700

Group

Source: Field survey (2013)

Table 2: Summary of household production and group marketing characteristics

Characteristics	Frequency	Percent
Preferred group		
Women group	60	46.15
Men group	5	3.85
Farmer group	27	20.77
Youth group	5	3.85
Clan group	1	0.77
Credit Group	5	3.85
Several groups	27	20.77
Main buyer of IC		
Farm gate	51	39.23
Primary market	26	20
Secondary market	31	23.85
Other markets	22	16.92
Total	130	100
Group Activity		
IC production	15	11.54
IC marketing	14	10.77
Merry go round	41	31.54
Crop production	14	10.77
Dairy farming	15	11.54
Crop processing	10	7.69
Social activity	21	16.15
Contract with Buyer		
Yes	10	7.69
No	120	92.31
Constraints		
Inadequate credit	72	55.38
Inconsistent IC supply	25	19.23
Leadership	3	2.31
Poor meeting attendance	7	5.38
Inadequate market information	9	6.92
Inadequate extension contact	14	10.77

Source: Field survey (2013), N=130

Determinants of joining farmer groups: The results in Table 3 show that 8 independent variables had a significant effect on the probability of joining a farmer group. These variables included: activity of group, age of group, access to market information, sex of household head, education of household head, land size, farm income and the distance to the nearest market. The group activity had a significant effect on the probability

of joining a farmer group (Table 3). The coefficient showed that agricultural activity in a group increased the probability of joining a group (Table 3). This may have been the result of the increased productivity and income of group members. These results concur with those of Gwary *et al.* (2012) which showed a positive effect of agricultural production motive on group participation.

Table 2: Results of Tobit regression

Variable	Coefficient.	Std. Error	T	P>t
Contract with buyer	0.2294	0.1887	1.22	0.227
Activity of group	0.0278	0.0151	1.84	0.069**
Age of group	0.0349	0.0106	3.29	0.001***
Size of group	0.0002	0.0020	0.09	0.927
Type of group	0.0162	0.0109	1.48	0.142
Access to extension services	0.0648	0.0540	1.2	0.233
Other livestock units	-2E-04	0.0003	-0.45	0.652
Access to market information	0.1742	0.0511	3.41	0.001***
Distance to all weather road	-0.107	0.0884	-1.2	0.231
Age of household head	-0.002	0.0023	-0.75	0.456
Sex of household head	0.1064	0.0579	1.84	0.069*
Education of household head	0.1164	0.0659	1.77	0.080*
Family size	0.0174	0.0144	1.21	0.230
Land size	-0.027	0.0135	-2.01	0.047**
Access to credit	0.3649	0.3160	1.15	0.251
Off farm Income	0.0823	0.0265	3.11	0.002**
Distance to nearest market	-0.143	0.0563	-2.54	0.012**
Constant	-0.063	0.6098	-0.1	0.917
/sigma	0.2735	0.0171		

N=130 LR Chi 2(17) =54.86 Prob>Chi2=0.000 Log likelihood=-17.880672 Pseudo R2=0.6054

Source: Field Survey (2013)

The age of the group had a positive and significant effect on the probability of joining a group (Table 3). The coefficient indicated that an increase in the age of the group lead to an increase in the probability of joining the group (Table 3). This may have been the result of perceived trust, stability and organization that attracted new members. However these results contradict those of Hambly (2000) which showed that longevity of tree seedlings women group was related to infrastructure.

The access to market information had a positive and significant effect on the probability of joining a group (Table 3). The coefficient indicated that access to market information increased the probability of joining a group (Table 3). This may have been due to the competitive advantage that came from accessing market information. Therefore farmers were likely to join this group in order to access this market information. These results therefore confirm those of Place *et al.* (2002) that showed that men in Kenya join groups to access markets. In addition it confirms results from Katungi *et al.* (2006) that showed that information had a positive effect on joining groups.

The sex of the household head had a positive effect on the probability of joining a group (Table 3). The results showed male had an increased probability of joining groups (Table 3). The reason of this increase could be due to the fact that resources and decisions are made mainly by male. Therefore the results confirm those of Godquin & Quisumbing (2006) which showed that men were more likely to joined production groups. In addition it confirms results of studies by (Agrawal, 2003) which showed low women participation in India due to limited access to resources.

The education of the household head had a positive and significant effect on the probability of joining farmer groups (Table 3). The coefficient showed that the literate

increased probability of joining farmer group (Table 3). The literate household heads were able to interpret information easily and hence make informed decisions. These results confirm those of Gitter *et al.* (2012) that showed a positive effect between education and membership in farmer groups.

The land size had a negative and significant effect on the probability of joining a farmer group (Table 3). The coefficient indicated that an increase in the land size reduces the probability of joining a farmer group (Table 3). These changes may be due to the lack of interest of large land owners in these farmer groups. However, land may act as collateral in some cases and thus is expected to have a positive effect on membership. Therefore this result contradicts those of Gwary *et al.* (2012) but confirm those of (Fischer & Qaim, 2012; Bernard & Spielman, 2009) which show that land size and group membership have a curvi- linear relationship.

Off farm income had a positive and significant effect on the probability of joining a farmer group (Table 3). The coefficient indicated that Farm income increased the probability of joining a farmer group (Table 3). Those farmers that had an off farm income had the ability to pay the fees required by the group. In addition they were able to perform the group activities and access further credit .These results therefore agree with those of Yang & Liu (2012) which showed a positive relationship between income and group membership.

Distance to the nearest market had a negative effect on the probability of joining a group (Table 3). The increase in distance to the nearest market leads to a reduction in the probability of joining a farmer group (Table 3). This reduction was due to increase in transaction costs that result from increasing market distance. This result confirms those of (Fischer & Qaim, 2012; Adong *et al*., 2012; Abbew & Haile, 2013).

CONCLUSION AND RECOMMENDATIONS

The results of the study showed that indigenous chicken marketing groups were a new intervention in Makueni County. These groups were medium in size and offered credit to members who paid a subscription fee. The Women group was the most preferred type of group, while credit access was the most common activity. Therefore the groups performed both an economic and social function. The results showed that most of the farmers in Makueni County sold the indigenous chicken at the farm gate. A few of the farmers had a formal contract with the buyers. The main constraint that was faced by the farmers was access to adequate credit. The probability of joining a farmer group was significantly affected by activity of group, age of group, access to market information, sex of household head, education of household head, land size, farm income and distance to the nearest market. Based on the results of the study it is recommended that Policy interventions should target Women groups and increase their funding. Secondly, it is recommended that access to market information be enhanced, by setting up strategic information centre. Thirdly, it is recommended that policy interventions must focus on increased farm income. Finally rural road infrastructure should be increased for easy market access.

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