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COOPERATIVE SOCIETIES AS A CONDUIT FOR ENHANCING AGRICULTURAL EXTENSION CAPABILITIES FOR IMPROVED CROP PRODUCTION

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ABSTRACT

Of late, the cooperative option has come into focus as a viable medium to effectively mobilize farmers to form groups and pool their resources together, so as to become more effective in agricultural production. It is against that backdrop that this study employed primary data obtained from a sample of 120 crop farmers in Iwo LGA of Osun State to ascertain their participation in cooperatives, assess their perception of cooperatives, identify the factors that significantly influence their decision to participate in cooperatives, and to investigate the challenges confronting cooperatives. The objectives were actualized using descriptive statistics, Likert type scale, binary logit regression and Kendall's coefficient of concordance, respectively. The results revealed that the level of participation of crop farmers in cooperative societies is low. However, respondents were of the perception that cooperatives provide easy access to loans, improve farmers' welfare, provides medium for exchange of knowledge, and provides access to information regarding best practices in crop production and marketing. Gender, land size, major occupation, and farming experience were the factors that exert significant influence on crop farmers' participation in cooperatives in Iwo LGA. Furthermore, inadequate capital emerged as the most severe constraint confronting cooperatives, whereas lack of appropriate medium for dissemination of information was the least pressing constraint. It is recommended that synergistic relationship involving the public sector, private actors and community members should be put in place, so as to create awareness and enlighten crop farmers regarding the potentialities of cooperative societies.

Keywords: Binary Logit Regression, Cooperative Societies, Crop Farmers, Iwo LGA

INTRODUCTION

Agriculture is unarguably a quintessential component of the economic superstructure of most nations in sub-Saharan Africa (SSA); of which Nigeria is not an exception. However, the percentage of uncultivated arable land area, as well as the proportion of wasting irrigable land mass gives credence to the characterization of the state of agriculture in Nigeria by the World Bank (2005) as that of "enormous untapped potentials." It is noteworthy that smallholder farmers remain the bedrock of agricultural production in Nigeria. Mohammed (2004) remarked that farmers in that category are burdened with high prices of farm inputs, inefficiency of farming techniques, inadequate production infrastructure, poor market, and heavy constraints in obtaining credits facilities. Moreover, the poor level of commercialization of agriculture, the continued dependence on family labour, as well as the small and fragmented nature of farm lands are key evidences of the resource-poor nature of the average Nigerian farmer (Omotesho *et al*., 2016).

In order to surmount these challenges, farmers in Nigeria, just as in other climes, have adopted the cooperative option as a viable way to effectively mobilize themselves and pool their resources together, so as to become more effective in agricultural production (Agenyour, 2014). In fact, cooperative societies (hereafter, cooperatives) has been a self-help tool used amongst humans since time immemorial, especially those of low income (Veerakumaran, 2005). Moreover, in many developing countries cooperatives constitute the pivot around which agricultural development policies are woven (Omotesho *et al*., 2016). Chambo (2009) asserted that the basic idea behind cooperatives is to strengthen farmers' market power relative to the buyer, thereby curtailing the monopsony power of the buyer. The basic idea is that cooperatives will strengthen the farmers' negotiation position, relative to the buyers, thereby reduce transaction costs faced by farmers. This will bring farmers closer to the market, enable them to benefit from comparative advantages, and perhaps even connect them to the international market (Alufohai, 2006). Hence, participation in cooperatives enable smallholder farmers to pool their resources together, jointly market their products, and by so doing gain economies of scale, thereby overcome the high transaction cost associated with their small individual sizes.

Furthermore, the potentials of cooperatives in enhancing access to farm credit and minimizing individual farmer's risk has been elucidated by Di Gregorio *et al*. (2004), as well as Adong *et al.* (2013). In a similar vein, Alufohai (2006) identify cooperatives

to be a better channel of credit delivery to farmers in terms of its ability to sustain the loan delivery function. In addition, cooperatives can be an adequate medium for donors to reach smallholder farmers, which generally is a group that is difficult to reach, given that they usually live in sparsely populated rural areas with weak infrastructures. Therefore, governments, private sector, extension agencies, non-governmental organization (NGOs) and other donor agencies rely on participation in groups, such as farmer cooperatives, as the most reliable means of reaching farmers (Omotesho *et al*., 2016).

In recognition of the potential impact of cooperatives in agricultural production, many countries have taken active step to encourage and mobilize farmers to organize themselves into cooperatives. The International Labour Organization (ILO, 2005) evinced that agricultural cooperatives are the most prevalent type of cooperatives in Nigeria, providing food-stuffs, financial services, as well as services to consumers. Services rendered by cooperatives differ according to the type of cooperative society. Banaag (2002) classified cooperatives into credit cooperatives, consumers' cooperatives, producers' cooperatives, marketing cooperatives, service cooperatives and multipurpose cooperatives. Although these cooperatives vary in type and membership size, all are formed to meet the specific objectives of members, and are structured to adapt to members' changing needs.

According to the World Bank (2014), participation is the medium through which stakeholders influence and share control over priority setting, policy-making, resource allocations and access to public goods and services. Ultimately, crop farmers' decision to participate in farmer cooperatives lies in the potential economic benefits of participating in such organization (Fulton & Giannakas, 2001). Likewise, participation of individual members of any organization is germane to the realization of the goals and expectations of that organization. Omotesho *et al.* (2016) stated that poor participation of farmers has been adduced to be partly responsible for the poor performance and subsequent failures of farmer cooperatives.

There abound a plethora of researches relating to the significance of farmer-based organizations (FBO), such as farmer cooperatives. However, despite the enumerated benefits of participation in cooperatives to farmers, and to the community at large, engagement of farmers in group activities is not guaranteed in many rural communities in Nigeria (Nwaobiala *et al*., 2014). Hitherto, not much studies have been carried out to investigate the factors that exert significant influence on crop farmers' participation in cooperatives, specifically using micro level data from Osun State. To that end, this study attempts to fill this gap in knowledge. In order to do so, the study specifically seek to ascertain crop farmers' participation in cooperatives, assess crop farmers' perception of cooperatives, identify the factors that significantly influence crop farmers' participation in cooperatives, and to investigate the challenges confronting cooperatives in the study area.

METHODOLOGY

Study area

The study was conducted in Iwo Local Government Area (LGA) of Osun State. The Local Government headquarters is located in Iwo; which is one of the biggest towns in Osun state. Iwo lies on the geographical coordinates of $7^0 38^{'}$N, $4^0 11^{'}$E, and shares boundaries with Lagelu, Aiyedire and Ola-Oluwa LGA's. The people of Iwo are mostly Muslims and basically Yoruba speaking. The total land area of Iwo town is 245km^2 (94.6sqm), with an estimated population of about 250,459 (National Population Commission {NPC}, 2006).

The climate in Iwo is of two distinct seasons, the rainy season (April-October), and dry season (November-march). The average rainfall is about 2000-2200mm, while the mean temperature is 32.5^{0}C. The main occupation of the people of Iwo is farming, with the major crops being maize, cowpea, yam, cocoa, cassava and oil palm. In addition, a good number of the populace are engaged in processing of crops, as well as trading activities.

Sampling techniques

A multi-stage sampling technique was employed in order to generate a representative sample of 120. The first stage was the purposive selection of Iwo LGA. Iwo was purposively selected because it is an agrarian community, as such providing an ample number of crop farmers for the study. The second stage involved random selection of 6 wards from Iwo LGA, namely; Oke Oba Ward 1, Oke Oba ward II, Oke-Adan I, Gidigbo Ward I, Gidigbo Ward II, Molete Ward III. The last stage involved random selection of 20 respondents in each ward constituting a total sample of 120 crop farmers.

Data collection and Analytical techniques

Primary data was employed for the study. The data was obtained with the aid of a well-structured interview schedule. Information was collected on the socio-economic characteristics of the respondents, crop farmers' participation in cooperatives, crop farmers' perception of cooperatives, as well as the constraints encountered by the cooperatives. Statistical analysis was carried out with SPSS version 20 for windows (IBM Corp, 2011).

Descriptive statistics (mean, frequency counts and percentages) was used to determine crop farmers' participation in cooperatives. Crop farmers perception of cooperatives was measured on a 5 point scale, which range from strongly agree (coded 5), Agree (coded 4), Undecided (coded 3), Disagree (coded 2) and Strongly Disagree (coded 1). The weighted mean score of 3 was obtained by adding up the point values of (5, 4, 3, 2 and 1) and then divided by the total number of values (5). The mean value was then used to rank the respondents' general perception about each of the statement. Any statement with a mean value of 3 and above was considered to have a general perception of agree, whilst any mean value below 3 is considered to have an overall perception of disagree.

Kendall's coefficient of concordance (*w*) mean rank was used to rank the constraint in order of severity and to test for the degree

of agreement between the ranked constraints. Furthermore, binary logistic regression was employed to determine the factors influencing crop farmers' participation in cooperatives. The model was specified as;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \beta_{10} X_{10} + \beta_{11} X_{11} + \beta_{12} X_{12} + \beta_{13} X_{13} + \mu$$

Where Y= cooperative membership (where 1 = yes, 0 = no); β_0, β_1 to β_{13} are the linear parameters; Xs are the independent variables, and μ= stochastic term.

Table 1: Variables Description and their A priori Expectation

Serial No.	Variables	Measurement	Expectation
1	Age	Actual age in years	+
2	Marital status	1=married, 0=others	+
3	Years of membership	Actual number in years	+
4	Household size	Actual number	+/-
5	Farm size	Actual size in acres	+
6	Farming experience	Actual number in years	+
7	Gender	1=male, 0=female	+
8	Education status	Years spent in formal education	+
9	Monthly Income	In Naira (₦)	+
10	Land acquisition	1= owned, 0= others	-
11	Major occupation	1= farming, 0=others	+
12	Religion	1=Muslim, 0=others	+/-
13	Farming scale	1= Commercial, 0=others	+/-

RESULTS AND DISCUSSIONS

Socioeconomic characteristics of the respondents

Table 2 shows that majority of the respondents, accounting for 49.2% were between the ages of 41-60 years, with mean age of 47.34 years. Males dominate crop farming in the study area, with a proportion of 76.7%. Just about 54% of the respondents were Christians, while the remaining 46.7% were Muslims. Most of the respondents (87.5%) were married, and majority (60%) had household size of 1-5 persons, with mean household size of 5. Precisely 35% of the respondents had tertiary education, 30% had secondary education, and 26.7% had primary education, whereas 6.7% of the respondents had no formal education.

Table 2 further reveals that less than half (40%) of the respondents indicated that farming is their major occupation. Other occupations such as civil service, business, artisanship, and petty trading accounted for 60%. The same proportion (33.3%) of the respondents had been actively involved in crop farming for a time duration ranging from 1-10 years and 11-20 years, with average duration of experience of 18 years. Majority (65%) of the respondents had farm size of 1-5acres, whilst 20% of the respondents had farm size of 6-10acres; with average farm size of less than 4 acres. Majority (52.5%) of the respondents were into subsistence farming, producing crops basically to feed their family. Table 2 also indicates that majority (30%) of the respondents had monthly income ranging between ₦21,000-30,000, 21.7% had a monthly income of ₦31,000-40,000, whereas 18.3% had a monthly income of ₦41,000-50,000, and 9.2% of the respondents had a monthly income of more than ₦50,000. By and large, the median income is ₦21,010; implying that half of the respondents earn monthly income below that amount and the other half earn monthly income above that amount.

Table 2: Socioeconomic Characteristics of the Respondents

Variable	Frequency	Percentage
Gender		
Male	92	76.7
Female	28	23.3
Total	120	100.0
Religion		
Christianity	64	53.30
Islam	56	46.70
Total	120	100.00
Marital status		
Single	6	5.0
Married	105	87.5
Widowed	9	7.5
Total	120	100.0
Educational status		
No formal education	8	6.7
Primary	32	26.7
Secondary	36	30.0
Tertiary	42	35.0
Others	2	1.6
Total	120	100.0
Main occupation		
Farming	48	40.0
Others	72	60.0
Total	120	100.0
Farming Scale		
Subsistence farming	63	52.50
Commercial farming	57	47.50
Farming experience (years)		
Mean = 18.24 ± 11.96		
Land size (acres)		
Mean = 3.65 ± 3.35		
Monthly income(₦)		
Mean=21,010		
Age (Years)		
Mean = 47.34 years ± 11.67		
Household size		
Mean = 5 ± 1.82		

Source: Survey result, 2018

Note; Due to the paucity of space the individual categories for age, household size, farming experience, land size, and monthly income are note presented on the table, however the data is available on request.

Crop farmers' participation in cooperative societies

Figure 1 shows that 39.2% of the respondents participated actively in one cooperative society or the other, while the other 60.8% do not belong to any cooperative society. This is an indication that, on the average, the participation of crop farmers in cooperatives, in Iwo LGA is low. Of the 47 respondents who participated actively in cooperative societies, 61.70% had been into cooperatives for a time duration ranging between 1-10 years, 34.04% had been into cooperatives for a period of 11-20years, 4.26% had been into cooperative societies for 21-30years. The average years of membership for the respondents in the study area is 10.27 years. It can therefore be presumed that the respondents that participated in cooperatives in the study area have an ample knowledge of what it is all about and its benefits.

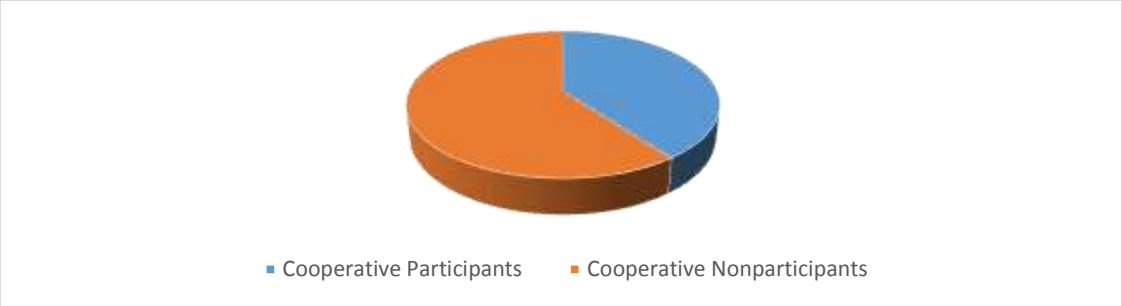

Fig. 1: Crop farmers' participation in cooperative societies

Source: Field Survey, 2018

Crop farmers perception of a cooperative societies

Table 3 indicates that, overall, the respondents agree with just about all the defining statements. The respondents overwhelmingly agree (mean=4.70) that participation in cooperative societies enable them to gain easy access to agricultural loans. They also revealed a strong agreement (mean= 4.59) with the defining statement; "cooperatives serve as a medium for social cohesion and moral support in the society." The mean value of 4.18 also indicates that, by and large the respondents agree that participation in cooperatives improve their welfare, in terms of access to inputs and generation of output. Furthermore, they perceive cooperatives as a medium for exchange of knowledge and ideas amongst its members, with a mean value of 4.02. They are also of the notion that cooperatives provide access to information regarding best practices in farm management, crop production and marketing of outputs, with a mean value of 3.55.

However, the respondents also have some negative perceptions about cooperatives, specifically with regards to certain aspects of management and leadership of the organization. The mean value of 3.76 shows that a good proportion of the respondents are of the notion that cooperatives are highly politicized. They are also of the belief that operation of cooperatives are based on favoritism, with a mean value of 3.74. Yet still, the respondents agree that management of cooperatives is tainted by corruption, with a mean value of 3.15. It is noteworthy that despite the fact the a large proportion of the respondents tend to see cooperatives in a negative light, as regards its management and leadership, a whooping proportion disagreed with the defining statement; "cooperative societies are just a fraud," with a corresponding mean value of 1.94.

Table 3: Crop framers perception of cooperative societies

Defining Statement	Mean	Standard Deviation	General perception
Cooperatives provide easy access to loans	4.70	0.48	Agree
Cooperatives serve as a medium for social cohesion and moral support in the society	4.59	0.49	Agree
Cooperative membership improve farmers welfare	4.18	0.48	Agree
Cooperative provides a medium for exchange of knowledge/ideas	4.02	0.39	Agree
Cooperatives are highly politicized	3.76	0.94	Agree
Operation of cooperatives are based on favoritism	3.74	0.86	Agree
Cooperative provides access to information regarding best practices in crop production/marketing	3.55	0.52	Agree
Management of cooperatives is tainted by corruption	3.15	1.14	Agree
Cooperatives are just a fraud	1.94	0.81	Disagree

Source: Survey result, 2018

Note; Due to the paucity of space the weighted score and corresponding frequencies for the respective scales (Strongly Agree, Agree, Neutral, Disagree & Strongly Disagree) were note presented on the table, however the data is available on request.

Factors influencing crop farmer's participation in cooperative societies

The result of the estimated parameters are presented in Table 4. The sign on almost all the variables make intuitive sense, and are in tandem with the a-priori expectation. The likelihood of crop farmers' participation in cooperatives in the study area increases with age, years of education, farm size, monthly income, farming experience, the respondent being a male, the respondent being married, crop farming being the major occupation of the respondent, and respondent growing crops basically for commercial purpose. On the other hand, the likelihood of participation declines with the increase in household size, the respondent being a Muslim, and self-ownership of land.

Gender was found to be positively related with crop farmers' participation in cooperatives, and significant at 10%. This implies that the likelihood of crop farmers' participation in cooperatives in the study area increases towards the male folks. This may be adduced to the conservative or orthodox structure of the community, wherein the degree to which females are allowed to interact with males in a forum such as cooperatives may be very minimal. In contrast, gender was found to be negatively related with smallholder farmers' participation in an IFAD community-based agricultural and rural development project in Katsina State, Nigeria (Abdullahi *et al*., 2015).

Further, land size was positively related with crop farmers participation in cooperatives and significantly so (p=0.10). The implication of this result is that, as the farm size increases, the level of cooperatives participation of crop farmers in the study area increases. A possible reason for such is that, as the farm size increases the stake of the farmer in the enterprise will most likely increase as well, as such he/she may find participation in cooperatives a welcome idea. Another plausible explanation is that, increase in farm size may connote an increase in level of income, which may enable the crop farmers to participate more in cooperatives. This finding is in consonance with the result of a study by Abdullahi *et al.* (2015), which showed a positive relationship between farm size and farmers participation in IFAD community-based agricultural and rural development project in Katsina State. Similar finding was also reported by Omotesho *et al*., (2016), in a study of the determinants of level of participation of farmers in group activities in Kwara State, Nigeria.

Farming experience was also found to be highly significant (p=0.01), and positively related to crop farmers participation in cooperatives. The positive sign signifies that as crop farmers in the study area accumulates years of experience, they are more likely to actively participate in cooperatives. Perhaps, the longer their involvement in crop production the more they tend to acknowledge the significance of participation in organizations such as cooperatives. Furthermore, major occupation was also positively related to crop farmers participation in cooperatives, with a highly significant coefficient (p=0.01). This indicates that those who take crop production to be their major occupation show a greater tendency of participation in cooperatives, as compared to those who engage in crop production as a minor occupation. This is quite a reasonable result, given that if crop farming is considered to be the major occupation, and by extension the main source of income, then farmers are likely to explore all possible avenues, such as cooperatives, that might yield positive outcomes for their crop enterprise.

The multiple coefficient of determination (R^2) of 0.453 indicates that 45.3% of variation in crop farmers' participation in cooperatives in the study area is jointly accounted for by the explanatory variables fitted to the model.

Table 4: Factors influencing crop farmer's participation in cooperative societies

Variables	Coefficient	Standard Error	ρ Value
Age	.033	.060	.588
Gender	1.579	.820	.054*****
Marital status	.145	1.439	.920
Household size	-0.096	.237	.686
Years of education	0.391	.449	.383
Land size	0.341	.175	.051*****
Years of membership	-0.027	.060	.656
Farming scale	1.284	.985	.193
Monthly income	.303	.450	.500
Religion	-.652	.655	.319
Major occupation	2.872	1.047	.006*******
Land acquisition	-.117	.181	.518
Farming experience	1.066	0.037	.000*******
Constant	-.703	2.922	.810
Adjusted R^2 = 0.453			

Source: Survey result, 2018.

Note, * and * indicates that a variable is significant at 1% and 10%, respectively**

Challenges confronting cooperative societies

True to form, inadequate capital, with a mean value of 1.46, emerged as the most pressing constraint confronting cooperatives in the study area, seconded by inadequate government support, with a mean value of 2.12. In third position was poor level of members' commitment, with a mean value of 3.72. Inadequate transparency in its undertaking (mean=3.80), as well as poor management by officials (mean=3.98) were ranked as fourth and fifth pressing constraints, respectively. Lastly, lack of appropriate medium for dissemination of information, with a mean value of 5.89, was the least pressing constrain encumbering cooperatives in the study area.

Kendall's coefficient of concordance (W) value of 0.692 signifies a strong degree of agreement amongst crop farmers that participate in cooperative societies as regards ranking of constraints confronting their respective cooperatives.

Table 5: Challenges confronting cooperative societies

S/No	Constraints	Mean Value	Ranking
1	Inadequate capital	1.47	1st
2	Inadequate government support	2.13	2nd
3	Poor level of members' commitment	3.72	3rd
4	Inadequate transparency in its undertaking	3.81	4th
5	Poor management by officials	3.98	5th
6	Lack of appropriate medium for dissemination of information	5.89	6th
	Kendall's coefficient (w^2)=0.692		

Source: Survey result, 2018

CONCLUSION

The study was carried out to analyze cooperative societies as a conduit for enhancing agricultural extension capabilities for improved crop production in Osun State. Descriptive statistics was used to evaluate crop farmer's participation in cooperatives in the study area. The results revealed that, by and large, the level of participation of crop farmers in cooperative societies in Iwo Local Government Area of Osun State was low. A five point Likert scale was used to examine crop farmer's perception of cooperative societies in the study area. Overall, the respondents agree that participation in cooperatives provide access to loans, improve farmers' welfare, provides medium for exchange of knowledge, and provides access to information regarding best practices in crop production and marketing. On the flip side, they were also of the notion that cooperative societies are highly politicized, management of cooperatives is tainted by corruption, and operation of cooperatives societies are based on favoritism. However, despite those negative view points, they generally do not perceive cooperative societies to be fraudulent. Furthermore, binary logistic regression was used to identify the determinants of crop farmers' participation in cooperative societies. Gender, land size, major occupation, and farming experience were the factors that exert significant influence on crop farmers' participation in cooperatives in the study area. Finally Kendall's coefficient of concordance was used to test the agreement among ranked constraints. Inadequate capital emerged as the most severe constraint confronting cooperative participants, whereas lack of appropriate medium for dissemination of information was the least pressing constraint.

Recommendations

Based on the results of the study, the following recommendation are proffered;

I. A model based on synergistic relationship involving the public sector, private actors, and community members should be put in place, so as to create awareness and enlighten crop farmers of the potentialities of cooperative societies. This can be actualized through campaigns, demonstrations, exhibitions, field visits, amongst others.

II. In addition, the same model and mediums can be used to address the disproportionate degree of female participation by educating the community as a whole, and specifically male headed households, on the significance of granting woman open access to cooperative societies. Participation in cooperative societies will go a long way in empowering woman by enabling them to be part of the policy making decision mechanism. This is likely to be a more wholesome approach than establishing separate cooperative societies to cater exclusively to the needs of woman.

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