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ASSESSMENT OF SOCIAL CAPITAL FORMATION: A CASE STUDY OF FADAMA III AF PROJECT INTERVENTION IN SOKOTO STATE, NIGERIA

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ABSTRACT: *The major focus of this paper was to evaluate social capital formation and its implications to the achievement of Fadama III AF project among Fadama III AF beneficiaries in Sokoto state. Respondents for the study were drawn from seven local government areas of Sokoto state. The survey was conducted using structured questionnaire administered by trained enumerators. To ensure clarity and interpretability, the questionnaire were pre-tested on 40 respondents from the target population, before the main survey. Cluster/group level data via structured questionnaire was used for the study. Two hundred & sixty (260) respondents were randomly selected for the study and 242 questionnaires were used for the survey. The analytical tools used in the methodology include the descriptive statistics, Chi-square test and correlation analysis. The result on socio-economic characteristics showed that the average age of the respondents was 43.64 years while the variable for education has a value of 9.24 years, average of 6 years and maximum of 12 years. For household size, the average value was 7.23 people indicating that the respondents maintain fairly large households and the value for years of experience was 24 indicating that the respondents had long years of experience in farming with a minimum of 3 years and a maximum of 60 years. Mean for the number of skills acquired due to Fadama III AF intervention was 2.4 while the variable for the duration of Fadama III AF training was 2.35 days with a minimum of 0 and maximum of 10 days. This implied that each beneficiary received training for at least 3.3 days and some were trained for a maximum period of 10 days. Result of the study on determinants of social capital formation showed less than 1% of the respondents reported that they were discriminated against based on social status. On other variables of group cohesion, transparency and social inclusion, the respondents reported positive signs of group cohesion. A chi- square value of 90 was obtained and the results of chi-square test showed that there was a significant association (P<.001) between the status of the respondents and the intervention they received. The result of the spearman correlation showed positive and strong association between leadership trust and beneficiary performance. A spearman rho value of 0.635 was obtained. Similarly, there was a correlation between leadership trust and beneficiaries' income. The value of the correlation coefficient was 0.328 indicating a moderate relationship. Leadership transparency and beneficiaries' performance had a rho value of 0.607 showing a strong and positive correlation. The study recommends that the peculiarities and the role of women in our society should always be taken into account through formation of separate groups exclusively for women, more emphasis should be given to the issue of natural resource management as well as climate education/adaptation*

KEYWORDS: Social capital, Fadama III AF, project, intervention, Sokoto

INTRODUCTION

Fadama project is a comprehensive action program developed by the Federal Ministry of Agriculture in collaboration with the State government, local governments and other key stakeholders(donors, private operators and NGO's). The project is financed with the support of the World Bank and the Federal government of Nigeria under the supervision of the National Fadama

Development Project (National Fadama Development Project, 2020). Fadama is a hausa word meaning areas with flood plains and shallow aquifers suitable for irrigation agriculture. The first Fadama project (Fadama 1) focused exclusively on irrigation farming while both Fadama II and III are more of agricultural diversification programs providing financing for the diverse livelihood activities which the beneficiaries themselves identify and designed with appropriate facilitation support (National Fadama Development Project, 2020). After its successful completion of Fadama III, the project was extended to cover the current project Fadama III Additional Financing. The Fadama III AF officially closed as at 31st December 2019. Years of operation and huge investments in both human and financial resources makes it important to review the extent to which the project had impacted the beneficiaries' and constraints in implementing the project.

The Project Development Objective for Fadama III AF like other previous programs was also to increase the productivity and incomes for users of rural lands and water resources within the Fadama areas in the beneficiary territoty in a sustainable manner. However, additional financing was slightly different in strategy. It was designed to focus on improving farm productivity and income of clusters of farmers engaged in priority staple food crops namely rice, cassava, sorghum and horticulture in selected states with high potential to produce them. The target yield was also raised from 20% in Fadama III project to 40% in Fadama III AF. The new strategy seeks to attract private investment in agro processors, agrodealers, public & private service providers and other commercial aspects of agriculture around farms to stimulate economic activities of the areas. It links the small-holder farmers to out-grower schemes and uptakers with the aims of providing them access to organized market. The method of operation shifts more on market driven model not supply driven. In the market-driven model, funders support the development of a market for business services. They can do so by supporting business development services to develop and commercialize their products, or by providing resources to potential clients to hire service providers.

Social capital was examined in this study in relation to the activities of Fadama III AF project implementation activities in the intervention areas, and its consequent outcomes on the targeted beneficiaries. Attention is paid to the level of social capital generated by the beneficiaries and its relevance to the communities. On the overall, the main objective of the study was to assess social capital formation and its implications to the achievement of Fadama III AF project development objectives in Sokoto State.

METHODOLOGY

This section began by presenting a brief description of the geography, climate and vegetation of Sokoto State. Next a brief highlight on the study sampling and data collection procedure, statistical analysis and model estimation techniques and models applied to empirically achieve the objectives of the consultancy mission was given.

Study area

Sokoto State is situated to the extreme North-western part of the country. It is located approximately between latitudes 11° 30" to 13° 50" N and longitudes 4° 00" to 6° E. The state shares common boundaries with the republic of Niger to the North and West, Zamfara State to the East and Kebbi State to the South. The state is made up of 23 local government areas covering approximately 23,000 Kilometres Square, with a total population of 3,702,697 people based on 2006 National Population Census which was the most current population census conducted in the country (Jibrilla et al., 2019).

Geology, Relief and Drainage

According to Davis (1982), this area is underlain by unconsolidated and consolidated sedimentary and cretaceous rock formations of recent origin, which rest on the crystalline Basement Complex rocks. Most of the area is also covered by a thin layer of sandy dry soils largely derived from the underlying sedimentary rock (Davis 1992). The Rima River from northwest creates a vast area of lowland, called Fadama to the northern part of the town, where all year cultivation is practiced. The geology of the present rock material under the influence of the Rima River, greatly influences the formation of a good fertile soils both on the Fadama (mostly alluvial) and the upland (sandy top and clayey sub-soils) which is responsible for the high agricultural output (Singh & Babaji, 1990). The drainage pattern of the area can best be described as radial, with major rivers in the area such as river Rima and river Sokoto to together with their tributaries taking their sources from the south-eastern part of the North-central plateau. There are also man-made dams in the area such as Goronyo, Wurno and Shagari dams including the drying Kalmalo and Kware lakes.

Climate:

The climate of Sokoto state can be best described as the tropical continental climate (Davis 1982). In this area, rainy season last, for between four to five months, from mid-May to mid-October. Mean annual rainfall generally ranges between 500mm to 1300mm and is generally associated with uncertainty and variability. Rainfall is highest in July and August, which accounts for 85% of the annual total, and the season is characterized by late arrival, early cessation and long spells of drought. Dry season starts in October with the cold harmatan wind, which lasts till March, after which the hot period sets in and lasts till the rain starts [Ibid]. Temperature is generally high, with the month of April as the hottest month when temperature reaches a peak of 35°C and sometimes above 38°C . However, temperature falls to as low as 18°C between the months of November and February, particularly, in the early morning hours. During this period, the weather is dry and dusty with very poor visibility of less than 500 meters (Davis 1982).

Vegetation:

The natural vegetation of the area is a typical of Sudan savannah type, characterized by a dominance of grasses interspaced by trees and shrubs. During the rainy season, the trees and grasses are green but eventually wither and die during the dry season. The dominant tree species includes the thorny acacia species, neem, locust bean, mango, baobab, etc. all of which have great

economic importance as sources of food, medicine, twine and fuel wood among others. Alongside the natural vegetation also there exists agro-ecosystem which constitutes an important component of vegetation in the area. This human managed vegetation comprises crops such as millet, guinea corn maize, beans and ground nuts that are cultivated almost throughout the area during the rainy season as well as irrigated crops such as rice, wheat and vegetables that cultivated in some locations during the dry season (Jibrillah *et al.*, 2019).

Socio-economic activities:
Mainly three ethnic groups' cohabit Sokoto state. The Hausas (about 50%), Fulani (43%) and other peoples from different parts of the country, constitutes about 7% of the population. Majority of the people in the study area are Muslims, and there is a clear evidence of inter marriages amongst the residents as a result of a long period of existence and religious affiliation. Farming is the major occupation in the area, with animal rearing by the Fulani people, accounts for over 80% of the economic activities in the area. A number of people engage in fishing particularly along Rivers Sokoto, Rima, and along some smaller steams and pools that are seasonal and hold water only during the rainy season. However, almost everybody in the area is engaged in one form of non-farming activity or the other both during the wet and dry season to basically supplement the dwindling income derived from both lowland and upland farming (Jibrillah *et al.*, 2019). On the upland, grains, such as millet, guinea corn, maize, and legumes such as cowpeas and groundnut are cultivated. On the Fadama, crops such as tomato, onions, garlic, wheat and rice are cultivated under irrigation.

Population and sampling:
The population for this study consisted of farmers of all age groups, gender and diversified social, economic and health status who are beneficiaries of Fadama III AF intervention across all the 23 local government areas of Sokoto state. The units of analysis were individual farmers in production groups. The sampling frame was a list of farmers in the production clusters/production groups obtained from Fadama III AF office. Two hundred & sixty respondents were randomly selected for the study in the end 242 useable surveys was realized.
The 23 local government areas in the state were stratified into three in line with the senatorial zones. Two local government areas were selected in two senatorial zones and three local government areas were selected in the other senatorial zone using systematic random sampling. The local government areas selected for the study are presented in Table I:

Table 1: Local government areas sampled for the study

S/No	Senatorial zone	Local government areas	Sampled LGA	Useable survey
1.	Sokoto central	Binji,Gudu,Kware,Silame, Sokoto-North, Sokoto south,Tangaza, Wamakko	Kware	39
2.	Sokoto east	Gada, Goronyo,Gwadabawa, Illela, Isa,Rabah, Sabon Birni,Wurno	Gwadabawa, Illela, Rabah	40 21 45
3.	Sokoto south	Bodinga, Dange shuni,Kebbe, Shagari,Tambuwal,Tureta,Yabo	Kebbe, Tambuwal, Yabo	38 11 48
		Total		**242**

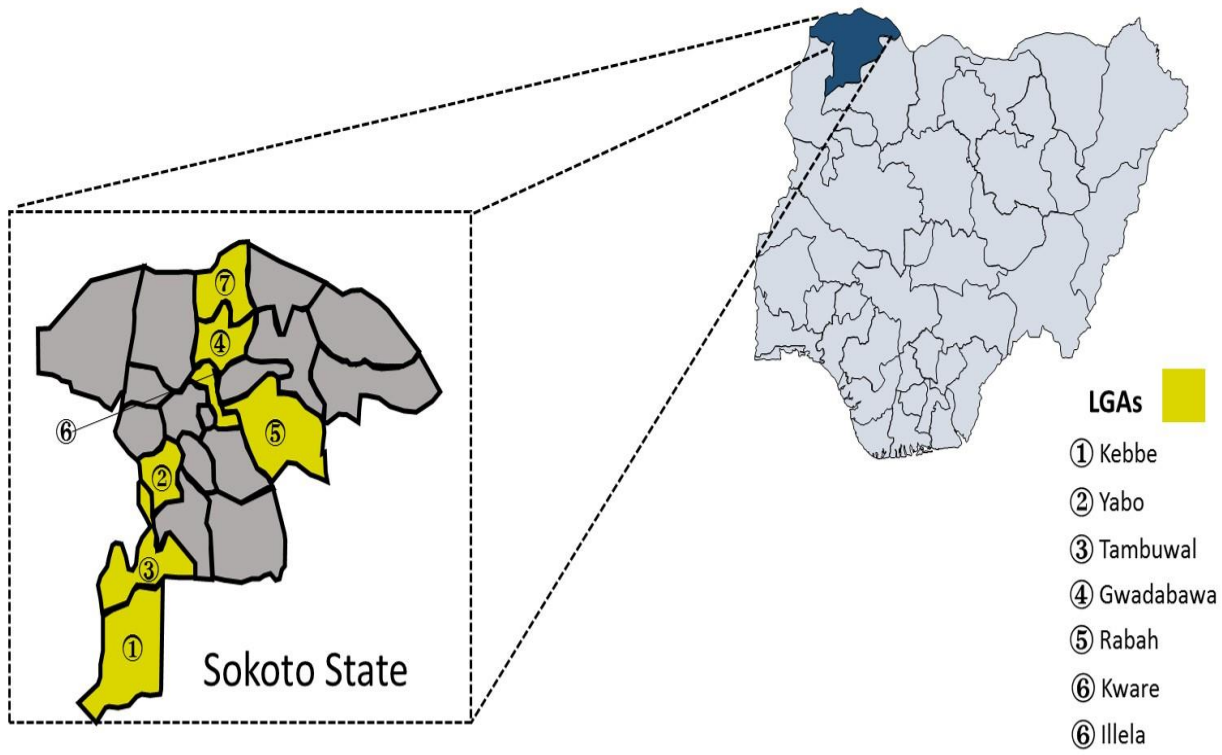

Figure 1: Map of Sokoto state showing the sampled local government areas

Data collection: The survey was conducted in January 2020, using a structured questionnaire by trained enumerators. To ensure clarity and interpretability, the questionnaire was pre-tested on 40 respondents from the target population, before the main survey. Permission was sought from the respondents before each interview and no incentives were provided to the respondents for completing the questionnaire. The questionnaire survey was the most appropriate choice giving the circumstance of the study. Data for the study was collected in 7 local government areas of Sokoto state.

Instrument for data collection: Cluster/group level data via structured questionnaire was used for the study. The questionnaire was designed to collect data on the farming activities of the beneficiaries operating in producer groups under the intervention of Fadama III AF in order to observe the impact of the intervention on the farming activities of the beneficiaries. The research design is presented in Table 2.

Table 2: Research design & analytical tools

S/NO	Objective	Research design	Analytical tool
1.	To determine the socioeconomic characteristics of the farmers	Descriptive survey	Descriptive statistics
2.	Assess the success of Fadama III in creating social capital among the beneficiaries	Causal design	ANOVA & Chi-square test
3.	Assess the adherence to the principles of group formation & social inclusion	Causal design	Correlation analysis

Models specification

The objectives of the study were achieved using Descriptive statistics, ANOVA, Chi-square and correlation analysis

Chi-square test

- O = the Observed (actual) value
- E = the Expected value

equation 2

$$\chi^2 = \sum \frac{(o-e)^2}{e}$$

Spearman Rank Correlation

$$\rho = 1 - \frac{6\sum d_i^2}{n(n^2-1)}$$

equation 3

where n is the number of data points of the two variables and d_i is the difference in the ranks of the i^{th} element of each random variable considered. The Spearman correlation coefficient, ρ, can take values from +1 to -1.

- Aρ of +1 indicates a perfect association of ranks
- Aρ of zero indicates no association between ranks and
- Aρ of -1 indicates a perfect negative association of ranks.

The closer ρ is to zero, the weaker the association between the ranks.

Econometric estimation

In scientific enquiry a model is an essential means by which researchers estimate or specify statistical relationships that exist between econometric quantities which relate to a particular economic phenomenon under investigation. With an econometric model the impact and relationships between variables could be observed. Common problems however exist in the estimation of econometric variables such as the potential problems with estimation of the regression models which might lead to the violation of the basic assumptions of regression models these include multi-collinearity, heteroscedasticity, outliers and measurement errors. To correct for these and ensure estimation efficiency, this study deals with the problems which are typical to most survey. For example the data is tested for normalcy using skewness and kurtosis normality test, outliers were also identified and removed from the dataset. SPSS statistical package, STATA version 14, and excel were used to estimate the models for the study.

RESULT AND DISCUSSION

Socioeconomic characteristics of the respondents

A summary of the basic statistics of the dataset for the variables used in the study was presented in Table 3. The result showed that the average age of the respondents was 43.64 years with a minimum of 20 years and maximum of 80 years. This showed that most of the respondents were relatively young. The variable for education has a value of 9.24 years, average of 6 years and maximum of 12 years this indicates that the respondents do not acquire high level of education, but only acquired primary education. For household size the average value was 7.23 people indicating that the respondents keep fairly large household. The minimum number of household was 0 and the maximum is 25. The value for the variable of experience was 24 indicating that the respondents had long years of experience in farming. The minimum years of experience were 3 years and the maximum was 60 years. The value of the mean of yield increase due to Fadama III intervention was 2072 kg; it has a minimum value of 80kg and a maximum of 64,000 kg. This shows a significant increase in output due to Fadama III AF intervention. Income increment due to Fadama III AF intervention was ₦191,191 a minimum of ₦8000 and a maximum of ₦400, 000. Mean for the no of skills acquired due to Fadama III intervention was 2.4 the minimum was 1 and maximum was 6. This shows that the respondents acquired at least one skill due to Fadama III intervention. The variable for the duration of Fadama III AF training 2.351 days a minimum of 0 maximum of 10 days. This implied that each beneficiary received training for at least 3.3 days and

some were trained for a maximum period of 10 days No of media broadcast per week were 1.636 minimum of 0 and a maximum of 7. Incremental yield due to mass media has an average of 1.22 a minimum of 0 and a maximum of 3. No of innovations acquired due to Fadama III AF mass media programs has a mean of 2.04 minimum of 0 and a maximum of 5. The mean for the group asset value was ₦88,417 a minimum of 0 a maximum of ₦800, 000. The mean for the group size was 13.9 a minimum of 10 and a maximum of 30.

For the number of media broadcast the result showed that Fadama III AF sponsored program were broadcast at least twice a week and some programs were broadcast at least seven times a week in various media outfits. This showed that Fadama III activities are disseminated frequently to its beneficiaries. The study also included a variable for depth of coverage by the media to give an indication of the depth of coverage of Fadama III AF activities. Result showed that Fadama programs were deeply covered by media. For the number of innovations due to mass media result of the study showed that the beneficiaries learned at least two innovations from the media activities of Fadama III AF the maximum number of innovations learned were 5. This indicated that the beneficiaries learned some farming skills from the media activities sponsored by Fadama III AF. To give an indication of the value of assets acquired by the beneficiaries the study included a variable for asset value. Result of the study showed that on the average beneficiaries acquired assets worth eighty eight thousand four hundred & seventeen naira. The maximum asset acquire by the beneficiaries was worth eight hundred thousand naira only. This showed that Fadama III AF intervention has improved the income status and the living standard of the beneficiaries.

Table 3: Descriptive statistics for the variables used in the study

S/NO	Variable	Mean	Minimum	Maximum	Std. error
1.	Age	43.64	20	80	0.718
2.	Education	9.24	6	12	0.258
3.	Household size	7.231	0	25	0.304
4.	Experience	24.12	3	60	0.731
5.	Farming status	1.81	1	2	0.025
6.	Incr. yield due to Fadama intervention	2072.06	80	64000	295.251
7.	Incr. income due to Fadama interv.	191135	8000	400000	19187.83
8.	Election style	2	1	3	0.029
9.	Leadership trust	5.929	4	7	0.048
10.	Group transparency	5.917	4	7	0.049
11.	Member relationship	5.954	4	7	0.046
12.	No. of skills acq due to Fadama interv.	2.400	1	6	0.068
13.	Perfor. due to Fadama intervention	5.946	4	7	0.046
14.	Group management satisfaction	6.041	4	7	0.044
15.	Satisfaction with Fadama support	6.045	5	7	0.043

16.	Fadama-Beneficiary Relationship	6.012	5	7	0.042
17.	Business plan compliance	4.157	0	7	0.174
18.	Duration of Fadama Training	2.351	0	10	0.099
19.	Relevance of Training	3.305	0	4	0.072
20.	No of media Broadcast/week	1.636	0	7	0.054
21.	Depth of Mass Media Coverage	2.061	0	3	0.059
22.	Incremental Yield due to Mass Media	1.220	0	3	0.044
23.	No of Innov. acq. due to Mass Media	2.04	0	5	0.080
24.	Group Asset Value	88417.36	0	800000	8603
25.	Group Size	13.89	10	30	0.213
26.	Effectiveness of Group Communic.	5.9	4	7	0.053
27.	Sustainability Likelihood	5.3	4	7	0.062

Source: Field survey 2020; Note: Discrimination on social status; 0= equality; 1= Inequality: Discrimination on tribe & religion; 0=equality; 1= Inequality: Group non observance of rules; 1=Non observance; 0=Observance: Election style; 1=Imposition; 2=Nomination; 3=Election: Level of membership distrust; 0=Distrust; 1= Trust: Level of leadership trust; 1-7 showing increasing level of trust: Lack of transparency in leadership; 0= No transparency; 1= Transparency: Member relationship; 0=Unfriendly; 1=Cordial.

Social Capital Formation in Fadama III AF

Social capital has been described as ‘‘the glue that binds society together’ Bourdieu (2011) defined social capital as “the sum of resources, actual and virtual, that accrue to an individual or a group by virtue of possessing a durable network of institutionalized relationships of mutual acquaintance and recognition”. Bourdieu’s definition focuses on the individual and suggests that social capital consists of the social networks that enable individuals to gain access to resources possessed by other actors, and the quantity and quality of those resources.

In order to assess the success of Fadama III AF in creating social capital among the beneficiaries, the study first identified if the determinants of social capital exist among the beneficiaries and in the second stage of the analysis explored the relationship between the determinants of social capital among the beneficiaries. The determinants of social capital formation were presented in Table 4.

Table 4: Determinants of social capital formation among Fadama III AF beneficiaries

S/NO	Determinants of social capital	Frequency	Percentage
1.	Members group equality	240	100%
2.	Discrimination on social status	2	> 1%
3.	Discrimination on political differences	0	0%
4.	Group compliance on rules & regulations	230	95%
5.	Election of leadership by voting	71	30%
6.	Equality on voting right	236	98%
7.	Trust among members	235	97%
8.	Group trust on leadership	98	40.5%
9.	Group level of transparency	95	39%
10.	Group cordiality	90	37%
11.	Farming skills acquisition	96	40%
12.	Improved performance	95	39%
13.	Member satisfaction	97	40%
14.	Declaration of group asset value	153	63%
15.	Presence of effective group communication	78	32%
16.	Sustainability likelihood	81	33%

Source: Field survey 2020; Note Total number of respondents=242

Result of the study showed less than 1% of the respondents reported that they were discriminated against based on social status. On other variables of group cohesion, transparency and social inclusion, the respondents reported positive signs of group cohesion.
Chi-square test was used to measure the relationship between the determinants of social capital and in addition, observed the impact of the determinants of social capital (Table 5).

Table 5: Results of Chi-square test for association between determinants of social capital

S/NO	Variable	Chi-square value	P<.001	Association
1.	Membership status (Ben/Non ben) vs. Intervention status (supp. /not supp.)	96.00**	0.000	There was a significant association between membership status & intervention
2.	Membership status vs. No. of skills acquired	45.55**	0.000	There was a significant association between membership status & number of skills acquired
3.	Membership status (Ben /Non ben.) vs. Availability of training	24.02**	0.000	There was a significant association between membership status & training

Source: field survey 2020; Note: ** sig at 5%. Chi- square here was appropriate because the sampling method was random, the variables were categorical and expected frequency count was at least 5 in each cell.

In the first model the relationship between variables of membership status (beneficiaries/non beneficiaries) and that of intervention (supported/not supported) by Fadama III AF was tested. A chi- square value of 90 was obtained and the results of chi-square test showed that there was a significant association (P<.001) between the status of the respondents and the intervention they received. This implied that respondents who belong to Fadama producer groups are qualified for Fadama III support. When the variable of membership status was tested against number of skills acquired, it was found that there was a significant association between belonging to Fadama III AF producer group and the number of skills acquired. The chi-square value was 45.5 and the association was statistically significant (P<.001). This result showed that respondents who received intervention are more likely to acquire farming skills and innovations. Similarly, respondents who were supported by Fadama III AF were more likely to receive training to improve their farming. This result agrees with Cimdins (2015). This result was obtained when chi-square was used to test the association between the variable for membership status and that of training. The value of the chi-square test was 24 and the result was statistically significant (P<.001).

Adherence to Principles of Group Formation, Social inclusion, Transparency & Accountability

The study identified factors that promote farmer group cohesion and sustainability and infer from the respondents whether the formation and operations of their groups were guided by these factors and if observance of these factors made a positive impact on the groups. The result (Table 6) is consistent with (Wollebaek & Selle, 2003).

Table 6: Adherence to group formation, social inclusion & transparency

S/No	Variable	Scale	Frequency	Percentage
1.	Discrimination on social status	Nominal	12	5
2.	Discrimination on tribe & religion	Nominal	17	7
3.	Group non observance of rules	Nominal	6	2.5
4.	Election style	Ordinal	72	30
5.	Equality of voting rights	Nominal	6	2.5
6.	Level of membership distrust	Likert	8	3.3
7.	Level of leadership distrust	Likert	29	12
8.	Level of opacity in leadership	Nominal	49	20
9.	Relationship between members	Nominal	72.6	30

Source: field survey, 2020

A variable for discrimination based on social status was included in the study. It was shown that only 5% of the respondents reported that they were discriminated against based on their social status. 7% of the respondents reported religious or tribal discrimination. 2.5% of the respondents reported non observance rules & regulations. 30% of the respondents were not happy with the style that is used to elect their leaders. Similarly, 2.5% of the respondents complained about inequality in the right to vote. Only 3.3% of the respondents showed their distrust to their fellow members. On leadership trust 12% of the respondents do not trust their leaders. On the level of transparency among members 20% of the members reported that there is no transparency in running the groups. 30% of the respondents are of the opinion that relationship between members is not cordial. Despite the grievances by some few members, majority of the respondents showed their satisfaction with the way their groups were managed.

Adherence group formation, social inclusion and transparency on the performance of Fadama III AF beneficiaries.

This study uses the spearman correlation analysis to measure the degree and direction of the relationship between variables of group formation social inclusion and transparency. The objective of this analysis is to assess the impact of adherence to group formation, social inclusion and transparency on the performance of Fadama III AF beneficiaries. The Spearman's correlation, represented by ρ or by r_R, is a nonparametric measure of the strength and direction of the association that exists between two ranked variables. It measures the extent to which two variables fluctuate together A positive correlation indicates the extent to which those variables increase or decrease in parallel. A negative correlation indicates the extent to which one variable increases as the other decreases. The result of the spearman correlation for the study is presented in Table 7. The result showed a positive and strong association between leadership trust and beneficiary performance. A spearman rho value of 0.635 was obtained. Similarly, there was a correlation between leadership trust and beneficiaries income. The value of the correlation coefficient was 0.328 indicating a moderate relationship. Leadership transparency and beneficiaries' performance had a rho value of 0.607 showing a strong and positive correlation. For the variables of transparency and increase in the beneficiaries' income the association was moderate and positive. All the results were statistically significant. The result showed that for the beneficiaries group to function well the factors of group cohesion, transparency and social inclusion are important. The result also indicated that leadership trust and transparency are important determinants of group performance as in (Mateju, 2002).

Table 7: Spearman correlation analysis on group formation, social inclusion & transparency

S/NO	Variables	Spearman's rho value (ρ)	p-value	Association
1.	Leadership trust vs Performance	0.635	0.000	Strong
2.	Leadership trust vs increase in income	0.328	0.000	Medium
3.	Transparency vs performance	0.607	0.000	Strong
4.	Transparency vs increase in income	0.322	0.000	Medium

Source: Field survey 2020

Fadama III AF intervention and the concept of free rider

Free rider is an economic concept that occurs when people are benefiting from resources, goods, or services that they do not pay for. Free riders are those who utilize goods without paying for their use. Public services commonly face a free rider problem because consumption of the service by one individual does not necessarily reduce the availability of the service to others, and it is impossible to prevent other consumers from consuming the service as well.

An example of a free rider benefit created by Fadama III intervention is that, there were many farmers in the intervention communities who do not belong to any Fadama III AF producer groups or clusters that benefits from the intervention of the project without expending any effort to do so. Activities such as mass media programs, advisory services and knowledge sharing between beneficiaries and non-beneficiaries created numerous benefits in the project cycle. Spill-over benefits that accrued to the farmers include improved techniques, such as improved seeds, methods of fertilizer application, nursery systems, etc. The positive impact created by the concept of free rider is discussed as part of the successes of Fadama III AF. This study discovered that many non beneficiaries' benefitted from Fadama III AF in many ways especially in the area of learning new farming techniques and use of improved seeds through mass media and direct contact with the beneficiaries.

Implication to Research and Practice

- To take into account the peculiarities of the role of women in our society and the formation of separate association exclusively for women.
- More emphasis should be given to the issue of natural resource management as well as climate education and adaptation.
- Farm resource use efficiency should be harnessed to improve production and minimize waste.

CONCLUSION

The purpose of this research was to assess the social capital formation and their implications to the achievement of Fadama III AF project development objectives. To achieve its goal, the study

employs robust scientific tools in its analysis. Findings of the study showed that social capital was created by Fadama III AF Project as a result of the formation of the Farmer groups. Several forms of social capitals were created to the extent of which the average Fadama III AF beneficiary stands out among other farmers in performance and experience. One surprising finding of the study was the positive spillover effect the project made to other farmers not captured as the beneficiaries of Fadama III AF.

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