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Poverty Profile and Social Capital Dimensions of Rural Farms Households in Akwa Ibom State, Southern Nigeria

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Abstract. The poverty profile of rural farm households belonging to association(s) in Akwa Ibom State, Nigeria's southern region, was examined. The analysis focused on the characteristics of these households, the dimensions of social capital, and the benefits derived from association membership. The results indicated that female-headed households and older farmers experienced higher poverty incidence, depth, and severity levels. Additionally, poverty dimensions were inversely related to increased formal education, farming experience, and farm size. Single farmers exhibited lower poverty than married, divorced, separated, and widowed farmers. The findings also revealed a direct relationship between the six dimensions of social capital analyzed and poverty incidence, depth, and severity among rural farm households in the study area. The relationship between the benefits obtained from association membership and poverty dimensions demonstrated that as farmers' income from the association, land acquired through the association, and quantities of seeds and fertility received from associations increased, poverty dimensions decreased proportionally. This suggests that the active participation of rural farm households in farm associations contributes to poverty alleviation. The findings highlight the significance of farmers' involvement in building social capital in reducing poverty incidence, depth, and severity. Furthermore, the level of farmers' engagement in association activities and the benefits derived from these activities impact the various dimensions of poverty.

Keywords: poverty; rural farm households; social capital; rural development; Nigeria.

INTRODUCTION

Social capital refers to the intricate networks of relationships among individuals within a specific society, facilitating the effective functioning of that society [1, 2, 3, 4]. It encompasses a collection of shared values and resources that enable individuals to successfully collaborate within a group to achieve a common objective [2]. Social capital can also be viewed as obtaining resources, favours, or information through personal connections [5]. It is often seen as a positive outcome of human interaction, resulting in tangible or intan-

gible benefits such as favours, valuable information, innovative ideas, seeds, fertilizer, parcels of land, and prospects [6, 5]. The value of social capital is derived from the positive relationships between individuals [7, 8, 9]. It can take various forms, including bonding, bridging, and linking [10, 11, 12]. Bonding social capital is formed within a group that shares common interests and goals, like the cassava farmers association. Bridging social capital, on the other hand, is established across different groups, such as cassava farmers collaborating with market agents to

achieve mutual objectives. Lastly, linking social capital involves connecting diverse groups, such as when cassava farmers connect with pepper and rice farmers. Social capital is recognized for enhancing the exchange of information across social ties facilitating the dissemination of ideas and opportunities.

The idea has gained prominence in development, particularly in initiatives aimed at grassroots involvement and empowerment, as well as in reaching out to impoverished populations [13, 14, 15, 16]. Various international organizations have shown great enthusiasm towards this concept, viewing it as a viable alternative to government or market-driven strategies, with the World Bank even referring to it as "the missing link" in development [17, 18, 19, 20, 21, 22]. Working through groups can also lower the costs associated with providing services to numerous individuals, thereby enhancing the efficiency of program outreach. Social capital is theorized to alleviate poverty through both micro and macro pathways, influencing the flow of valuable information to those in need and enhancing overall growth and income distribution at the national level [18, 23, 24, 25, 26]. Authors [27, 28] argued that social capital is advocated as a critical approach to poverty alleviation. The lack of suitable local-level institutions, coupled with the inadequacies of existing ones, often marginalizes the impoverished from participating in decision-making processes related to interventions and matters affecting their well-being [29]. As the primary source of economic and social support for its members, the family is the foundational element in creating social capital for the broader society [29]. Authors [30, 31, 32, 33, 34, 35, 36] have shown that membership in local associations decreases the likelihood of experiencing poverty.

Dimensions of social capital serve as indicators of social capital. These dimensions play a crucial role in determining the benefits received by members and also reflect the level of involvement of members within the association. They encompass various factors such as membership density, heterogeneity index, meeting attendance index, cash contribution, labour contribution, and decision-making index. Scholars and practitioners have extensively deliberated on social capital as a valuable resource for enhancing well-being. The author [30] highlighted the significant contribution of social capital to well-being. The author [37] noted a growing acknowledgement of

the impact of social capital on the well-being of individuals, households, communities, and nations. This acknowledgement implies that social capital should complement human and physical capital to realize the full benefits of any development program. Research conducted in Nigeria has revealed that the poor derive more significant advantages from participating in local associations [24]. In many States in Nigeria, the formation of groups is encouraged as a critical prerequisite for the impoverished to access specific public poverty reduction initiatives. Members of associations enjoyed numerous benefits, including access to loans at reduced interest rates and improved savings mobilization, leading to poverty reduction.

Poverty is widely recognized as a critical indicator of underdevelopment, and efforts to reduce it are often synonymous with progress [38, 24]. It is a pervasive issue affecting societies worldwide and poses a significant barrier to global development [39, 38, 40, 41]. According to the World Bank [41], in 2022, an alarming 712 million individuals lived in extreme poverty globally, defined as surviving on less than \$2.15 per day based on the international poverty line. The World Bank [41] notes that extreme poverty remains concentrated in Sub-Saharan Africa, conflict-affected regions, and rural areas. The report stresses the need for a comprehensive approach to addressing poverty, emphasizing the importance of improving access to healthcare, education, rural infrastructure, essential services, and digital technologies to enhance overall well-being. Both the World Bank [41] and the United Nations [42] have acknowledged the challenges in meeting the global goal of eradicating extreme poverty by 2030, as outlined in the Sustainable Development Goals (SDGs), with projections suggesting that nearly 600 million individuals will still be living in extreme poverty by that deadline.

Rural poverty is a pressing global issue, with a substantial 63 % concentrated in rural areas [42]. According to the [41, 42], poverty is more prevalent in rural regions, characterized by inadequate basic facilities, food insecurity, outdated farming methods, poor nutritional standards, limited access to financial services, challenges in educating children due to high costs, insufficient diet, unreliable electricity supply, and scarcity of clothing materials. Despite Nigeria's abundant resources and oil wealth, poverty remains a growing concern. Nigeria is acknowledged as one of the world's most resource-rich nations; how-

ever, its citizens are among the poorest globally [43, 44, 45, 46, 47, 48, 49, 50]. Authors [51, 52] reveal that Nigeria has the highest concentration of highly impoverished individuals in Africa, with a staggering 91 million people living in extreme poverty. Additionally, numerous Nigerian states face economic hardships. Despite being the sixth largest oil producer globally, approximately 70 % of Nigerians survive on less than one dollar per day [42].

Akwa Ibom State's government, one of Nigeria's constituent States, recognizes the significant impact of rural poverty and has implemented various programs and initiatives to alleviate poverty among vulnerable groups, mainly rural farm households. These initiatives include the distribution of fertilizers to farmers to improve crop yield and income, the establishment of the Akwa Ibom State Integrated Farmers Scheme (IFS) which provides economic loans to farmers, the rice rehabilitation project/counterpart funding, Fadama III Additional Financing for advancing cassava and rice production through cooperatives, the disbursement of over ₦350 million as micro-credits to farmers and artisans, and the procurement of craft and manufacturing equipment worth over ₦71 million for self-employed individuals, among others [53, 54, 55]. Despite these commendable efforts by the State government to improve the well-being of farmers and reduce their poverty level, there is a prevailing perception that the agricultural economy of the State has not experienced significant improvement, and there are still numerous challenges in various key areas that need to be addressed [52]. According to the findings [56] and the research [58], poverty incidence in Akwa Ibom State is experiencing a worrisome surge. This concerning trend has also been observed by authors from various regions of the country [59, 60, 35, 61]. However, it is of utmost importance to address whether the poverty situation among farmers in the State has shown significant improvement, particularly in light of the group/cooperative beneficiaries approach implemented by the State government in their intervention program for impoverished farmers. To unravel this complex issue, this study examines the poverty profile of rural farm households who are members of associations. The poverty profile of these farm households was examined based on their household characteristics, social capital dimensions, and the benefits they derive from their membership in these associations within the State.

METHODOLOGY

Study Area. The research was carried out in Akwa Ibom State, located in the southern region of Nigeria. In terms of governance, the State is divided into 31 Local Government Areas and encompasses 6 Agricultural Development Project (ADP) Zones, namely Oron, Abak, Ikot Ekpene, Etinan, Eket, and Uyo [62]. The climate in this region is tropical, characterized by two distinct seasons: the rainy season, which spans from April to October, and the dry season, which lasts from November to March. The annual precipitation ranges from 2000mm to 3000mm, and the average daily temperature is around 30°C. Due to this climatic pattern and the presence of fertile soil, the vegetation in Akwa Ibom State is highly suitable for cultivating a diverse range of food crops, including yam, rice, cassava, fluted pumpkin, cocoyam, okra, oil palm, and water leaf. Additionally, micro livestock such as poultry, pigs, goats, and sheep are commonly raised as supplementary sources of income. Agriculture serves as the backbone of the economy in this region.

Sample Size and Sampling Procedure. The study employed a multistage sampling technique to gather data. Initially, three out of the six Agricultural Development Project (ADP) Zones in Akwa Ibom State, namely Uyo, Ikot Ekpene, and Eket zones, were randomly selected in the first stage. In the second stage, two agricultural blocks were randomly chosen from each designated zone, resulting in six agrarian blocks. Subsequently, three circles were randomly selected from each block, amounting to 18 circles. Within each circle, the executive members of each association were contacted to obtain a list of households affiliated with their respective associations. The study area comprised six significant associations, each containing approximately 29 to 32 members. The list of members within each association served as the sampling frame, from which one-third of the households were selected for the study. Finally, in the last stage, ten households were purposively selected from each circle, resulting in 180 respondents for the study. Notably, the selected respondents belonged to at least one association and had farming as their primary occupation.

Nature of Data Collected and Method of Data Collection. The study's data primarily originated from primary sources, gathered through field surveys utilizing a meticulously designed questionnaire aligned with the study's objectives. In cases where respondents could not read or write,

individual interviews were arranged at their convenience. Questions were translated into the local language of each respondent. The data collection focused on households interacting with at least one social association. By implication, a respondent belongs to at least one social organization.

Analytical technique

Measurement of Poverty among farm households. The Foster-Greer-Thorbecke (FGT) [63] model was used to analyze the poverty status of the rural farm households in the study area. The FGT poverty index is generally expressed as thus:

$$P_{\alpha} = \frac{1}{n} \sum_{i=1}^q \left(\frac{Z - Y_i}{Z} \right)^{\alpha} \quad (1)$$

where n – total number of households in the population; q – the number of poor households; Z – the poverty line for the households; Y_i – Per capita household income for i^{th} farmer; α – poverty aversion parameter and takes on values 0, 1, 2; $\left(\frac{Z - Y_i}{Z} \right)$ – proportion shortfall in income below the poverty line.

Decomposition of poverty index. Following the Foster-Greer-Thorbecke (FGT) [63] model, household poverty can be decomposed into the following sub-units:

a) When $\alpha = 0$, then the FGT index is expressed as:

$$P_0 = \frac{1}{n} \sum_{i=1}^q \left(\frac{Z - Y_i}{Z} \right)^0 = \frac{1}{n} \sum_{i=1}^q \left(\frac{Z - Y_i}{Z} \right)^0 = \frac{q}{n} \quad (2)$$

This is called the incidence of poverty or headcount index, which measures the proportion of poor rural farm households that fall below the poverty line. This gives the headcount ratio or the incidence of poverty, which is the percentage of poor rural farm households whose per capita household expenditure is below the poverty line.

b) When $\alpha = 1$, then the FGT index is expressed as:

$$P_1 = \frac{1}{n} \sum_{i=1}^q \left(\frac{Z - Y_i}{Z} \right)^1 = \frac{1}{n} \sum_{i=1}^q \left(\frac{Z - Y_i}{Z} \right)^1 \quad (3)$$

This is called Poverty depth or Poverty gap index, which measures the extent to which rural farm households fall below the poverty line as a proportion of the poverty line. It reflects the incidence and depth of poverty or the proportion of the poverty line that the average poor will require to attain it.

c) When $\alpha = 2$, then the FGT index is expressed as:

$$P_2 = \frac{1}{n} \sum_{i=1}^q \left(\frac{Z - Y_i}{Z} \right)^2 = \frac{1}{n} \sum_{i=1}^q \left(\frac{Z - Y_i}{Z} \right)^2 \quad (4)$$

This is called the Poverty severity index, which measures the squares of the poverty gaps relative to the poverty line. The index measures the severity of poverty, which is the mean of the square proportion of the poverty gap. When multiplied by 100, it gives the percentage by which a poor farm household's per capita expenditure should be increased to push them out of poverty.

Measurement of Poverty Line. This separated rural farm households into poor and non-poor groups. As a benchmark, two-thirds of the mean per-capita income was used as a threshold. Households or farmers whose mean per-capita expenditure falls below the poverty line are considered poor, while those whose per-capita spending is on or above the benchmark are non-poor.

Household Per capita expenditure (HPCE) =
 $= \text{Total household Expenditure (THE)} / \text{Household Size (HHS)}$

Total Household per capita expenditure (THPCE) = Summation of HPCE

Mean Household Per Capita Expenditure (MHPCE) = THPCE / Number of households (n)

Then Poverty Line (PL) = $\left(\frac{2}{3} \right) (MHPCE)$

Dimensions of social capital. Specifically, the study utilized six dimensions of social capital to assess the participants' social capital. These dimensions include membership density, heterogeneity index, meeting attendance index, cash contribution, labour contribution, and decision-making index [64, 65]. The social capital dimensions are described as follows:

a) The Labour Contribution Index is calculated based on the number of days farmers dedicate to working for their respective groups within a year.

b) The Decision Making Index is determined by aggregating the subjective evaluations provided by households regarding their involvement in decision-making processes within the three most significant institutions to them. Each household's average response across these three groups is multiplied by 100.

c) The Heterogeneity Index is assessed using twelve distinct criteria, including factors such as neighbourhood, kin group, occupation, economic status, religion, political affiliation, gender, age group, education level, cultural practices, beliefs, and trust, as outlined by [64]. Each criterion is coded as 1 for a 'yes' response and 0 for a 'no' response, with a maximum score of 12 assigned to indicate the highest level of heterogeneity within each group.

d) The Membership Density Index is determined by calculating the number of active farmers members of existing groups. The proportion of group membership per individual is calculated by dividing the total number of groups each farmer belongs to by the total number of groups available in the study area.

e) The Meeting Attendance Index is calculated by summing the attendance of household members at meetings and dividing this by the total number of scheduled meetings per year, expressed as a percentage.

f) The Cash Contribution Index represents the total membership dues paid annually by the farmer across all social groups to which they belong.

RESULTS AND DISCUSSION

The estimated parameters of the poverty profile of poor farm households. Table 1 shows the incidence (P_0), depth (P_1) and severity (P_2) of poverty among poor rural farm household heads.

Table 1 – Poverty parameters of rural farm households

Poverty indices	Estimates
Mean household per capita expenditure (MHPCE)	41282.65
2/3 of MHPCE	27,521.77
1/3 of MHPCE	13,760.00
Poverty Incidence (P_0)	0.62
Poverty Depth (P_1)	0.22
Poverty Severity (P_2)	0.32
Poor Households (%)	60.56
Non-poor Households (%)	39.44
Total households	180.00

From the results, not all the poor households were equally poor. This agrees with the findings [66], which documented that poor households are not equally poor but vary in poverty.

The incidence of poverty among poor farm households was 62.00%. The depth of poverty shows the percentage of expenditure required to bring each individual below the poverty line up to the poverty line. It shows how much below the poverty line the average poor farm household was. This index measures 22.00% for the poor farm households. The implication is that if the average rural farmer is to be made non-poor, the per capita expenditure must be increased by at least 22.00%. The severity of poverty was put at 32.00%. This shows the spread of the poor farm households around the average poor farm household.

Poverty Profile based on farm Household Characteristics. Table 2 presents the poverty profile of rural farm households, focusing on their socioeconomic characteristics.

Table 2 – Socioeconomic characteristics and dimension of poverty

Socio-Economic Variables	Dimension of poverty		
	Incidence (P_0)	Depth (P_1)	Severity (P_2)
Sex of Household Heads (binary)			
Male	0.56	0.22	0.12
Female	0.64	0.41	0.23
Age of Household Heads (years)			
21- 40	0.51	0.27	0.14
41- 60	0.45	0.20	0.06
Above 60	0.68	0.26	0.16
Levels of Formal Education (years)			
None	0.66	0.16	0.14
Primary Education	0.62	0.09	0.11
Secondary Education	0.47	0.14	0.12
Tertiary Education	0.36	0.05	0.02
Marital status (binary)			
Single	0.45	0.11	0.10
Married	0.48	0.15	0.16
Divorced	0.50	0.12	0.31
Separated	0.61	0.19	0.21
Widow/Widower	0.67	0.21	0.13
Household Size (number)			
1 - 5	0.24	0.09	0.01
6 - 10	0.44	0.27	0.08
Above 10	0.69	0.32	0.18
Farming Experience (years)			
1- 10	0.71	0.18	0.22
11- 20	0.66	0.12	0.15
21- 30	0.63	0.09	0.13
Farm Size (in hectares)			
0.10 - 1.00	0.88	0.37	0.15
1.10 - 2.00	0.49	0.31	0.13
2.10 - 3.00	0.48	0.20	0.08
3.10 - 4.00	0.36	0.20	0.05

The poverty profile of these households was analyzed by considering their socioeconomic attributes. The findings revealed that not all poor households experienced the same poverty level; instead, there were variations in poverty among them. These results align with the research conducted by [66]. According to the results, female-headed farm households exhibited higher poverty incidence (P0), depth (P1), and severity (P2) compared to their male counterparts. Specifically, the poverty incidence, depth, and severity for female-headed households were 64%, 41%, and 23% respectively, while for male-headed households, they were 56%, 22%, and 12% respectively.

These findings indicate that the gender of the household head plays a significant role in determining the extent of poverty across different dimensions. Consequently, this information can guide policymakers in identifying areas with concentrated poverty and targeting appropriate interventions. These findings are consistent with the research conducted by [67], who reported that women farmers are more vulnerable to the effects of poverty than men. Authors [59, 60, 35, 61, 58] have reported similar results. Despite contributing to almost two-thirds of the world's work, women receive only one-tenth of the world's income and possess less than one-hundredth of the world's property [68]. Results align with the findings of UNDP [69], indicating that most of the world's poorest individuals are women. This finding is further supported by [70], which discovered that the poorest group in Nigeria has nearly 1.5 times more females than males. The poverty and marginalized social status experienced by rural women in most societies significantly contribute to chronic poverty, as highlighted by IMF [71].

Additionally, authors [72] reported that households led by women in rural areas are more susceptible to poverty. These results reinforce the assertion made by [24] that enhancing women's education is a crucial factor in empowering them. Women's education has a positive impact on child schooling and nutrition and plays a vital role in their development. Primary education is the foundation for acquiring the adaptable skills necessary to engage in knowledge-intensive economic activities. Individuals lacking access to primary education will likely be excluded from emerging opportunities.

Moreover, in societies where gender disparities in education persist, women face an increasing risk of lagging behind men in their ability to participate in development. However, the findings regarding higher poverty incidence, depth, and severity in female-headed farm households contradict the results [73], demonstrating that male-headed farm households experienced more poverty than their female-headed counterparts. Similarly, authors [66] reported in their respective studies that male-headed households were more likely to be impoverished than female-headed households.

The prevalence of poverty, as well as its depth and severity, was found to be highest among households with heads aged above 60 years, while it was lowest for households led by individuals aged between 41 and 60 years. The lower poverty rates (45.00%), depth (20.00%), and severity (6.00%) observed in the age group of 41-60 years could be attributed to the fact that this age group is typically more active and dynamic. Many individuals in this age bracket were involved in various non-farming activities to increase their income. They were also members of multiple associations, contributing to reducing poverty levels. On the other hand, the highest poverty incidence (68.00%) among household heads aged above 60 years may be due to the decline in physical capabilities, including the ability to engage in strenuous activities such as farming that comes with ageing. According to the World Bank [74], the age of the household head is directly linked to the poverty level, a finding supported by [75]. Older and younger individuals are less likely to be involved in farming than those in the active age group. The author [76] noted that elderly farmers often lack the risk-taking abilities and innovative mindset needed to address the challenges of agricultural production, and their capacity to engage in manual labour diminishes with age, ultimately leading to an increase in poverty levels. The result corroborates [44, 45, 46, 59, 35, 58].

The educational attainment of household heads significantly impacted the poverty levels within households. Those whose heads lacked formal education tended to experience higher levels of poverty. Conversely, there was a noticeable decrease in poverty levels as the years of formal education increased, with individuals holding tertiary degrees exhibiting the lowest poverty levels. These findings align with a previous study by [77]. Educated individuals are more likely to

embrace innovations that enhance productivity and income, ultimately alleviating poverty. Authors [57] suggested that the education level of household heads plays a crucial role in shaping the perception of poverty within households, indicating that higher education levels are associated with lower poverty levels. This conclusion is consistent with the research [78, 79], which highlighted education's influence on the overall poverty levels of rural farmers.

Furthermore, authors [80] argued that society benefits from education through spillover effects on present and future generations, increased occupational mobility, and economic growth. The authors also emphasized the importance of a skilled labour force in driving output growth. Authors [35, 58, 60] have reported similar results.

For marital status, widowed individuals had the highest poverty incidence at 67.00% and depth at 21.00%, while single household heads had the lowest levels of poverty incidence, depth, and severity. This could be attributed to single respondents typically having fewer household members, resulting in lower expenditures on food and non-food items. This finding aligns with research [60], indicating that married households spend more on food and non-food items than single households. The author [81] also suggested that poverty is positively correlated with family size.

Interestingly, households with larger family sizes experienced higher levels of poverty. Those with the most significant household sizes were the poorest and significantly contributed to overall poverty, while those with smaller household sizes were less affected by poverty. This contradicts the common belief that larger household sizes increase agricultural production and income. While this may be true sometimes, rural farmers overlook the negative aspects of having a larger household size. These results are consistent with the findings of [82], who noted that larger households are more likely to experience higher poverty levels.

The study's findings indicate a negative relationship between the number of years of farming experience and poverty incidence, depth, and severity. Specifically, respondents with 1-10 years of experience had higher poverty rates, with 71% experiencing poverty incidence, 18% experiencing poverty depth, and 22% experiencing poverty severity. On the other hand, respondents with 21-30 years of experience had lower pov-

erty rates, with 63% experiencing poverty incidence, 9% experiencing poverty depth, and 13% experiencing poverty severity. These results align with the researchers' initial expectations. The result implies that the number of years a farmer had been involved in farming could indicate the practical knowledge he had gained on how best to combine various inputs. This finding is consistent with a previous study [76, 72, 29], which has shown that farmers with longer years of experience better understand how to handle various challenges such as climate change, pests, and diseases. As a result, they are more skilled in managing their crops and livestock. However, these findings contradict the findings [56], who argued that as the farming experience increases, the age of the household head also increases. This, coupled with the physical demands of farming, may lead to decreased available energy for work. Consequently, this could result in a reduction in cultivable land and income and increase poverty.

Furthermore, the study found that households with larger farm sizes, specifically between 3.10–4.00 hectares, had lower poverty levels. This suggests that increased farm size leads to economies of scale and more investable funds in farm production. With higher income, household poverty levels can be reduced.

Poverty Profile According to Social Capital Dimensions. Table 3 displays the analysis of poverty status among the sampled households based on different dimensions of social capital.

Table 3 – Distribution of Poverty according to Social Capital Dimensions

Social capital dimensions	Dimension of poverty		
	Incidence (P ₀)	Depth (P ₁)	Severity (P ₂)
Cash Contribution (naira association)			
1,000 – 20,000	0.83	0.20	0.25
21,000 – 40,000	0.52	0.18	0.08
41,000 – 60,000	0.09	0.16	0.04
61,000 – 80,000	0.24	0.11	0.07
81,000 – 100,000	0.08	0.10	0.09
Labour Contribution (days)			
1– 20	0.93	0.14	0.05
21– 40	0.87	0.23	0.08
41– 60	0.76	0.11	0.04
61– 80	0.43	0.18'	0.08
Meeting attendance index (%)			
1– 20	0.67	0.81	0.32
21– 40	0.62	0.80	0.06

Social capital dimensions	Dimension of poverty		
	Incidence (P ₀)	Depth (P ₁)	Severity (P ₂)
41- 60	0.41	0.78	0.11
61- 80	0.13	0.38	0.23
Heterogeneity index (%)			
1 - 20	0.64	0.16	0.08
21 - 40	0.83	0.12	0.05
41- 60	0.92	0.15	0.06
61-80	0.61	0.06	0.09
Number of Associations			
1- 2	0.61	0.50	0.44
3- 4	0.48	0.41	0.30
5- 6	0.33	0.39	0.12
Decision-Making index (%)			
1- 20	0.85	0.41	0.79
21- 40	0.83	0.35	0.66
41- 60	0.72	0.23	0.51
61- 80	0.59	0.21	0.41

The findings reveal an indirect relationship between poverty and the level of cash contribution. It is observed that households with the highest cash contribution to their various associations had the lowest incidence, depth, and severity of poverty. Specifically, households contributing between ₦81,000 and ₦100,000 had poverty incidence, depth, and severity rates of 8%, 10%, and 9%, respectively. On the other hand, households contributing from ₦1,000 to ₦20,000 had significantly higher poverty incidence, depth, and severity rates of 83%, 20%, and 25%, respectively. This suggests that households with higher income levels are more likely to make substantial cash contributions and are less likely to be in poverty. These findings align with the research conducted by [24], which emphasized that households with higher income levels can contribute more significant amounts of cash to their associations.

Additionally, these households often earn income from off-farm businesses or salaried jobs, contributing to their overall financial stability and reducing the likelihood of poverty. Furthermore, when considering labour contributions, households that contributed more days of labour experienced lower levels of poverty. This can be attributed to the fact that the income generated from labour, such as contracts and group work, is typically distributed among those who actively participated. The results also indicate that individuals who frequently attended meetings had lower poverty incidence. Household heads who attended meetings less than 20% of the time had

the highest poverty incidence, depth, and severity rates of 67%, 81%, and 32%, respectively. This can be explained by the fact that individuals who actively participate in meetings are more likely to contribute valuable ideas and actively engage in the activities of the associations, ultimately leading to poverty reduction.

The heterogeneity index displayed no discernible pattern, indicating that heterogeneity within any given association does not significantly impact poverty levels among its members. This lack of impact may be attributed to the similarity in beliefs and culture across all groups. Therefore, poverty levels are not contingent upon the beliefs and culture of individuals within the community.

Household heads who were members of a more significant number of associations experienced lower poverty levels. For instance, those belonging to fewer than three associations had poverty incidence, depth, and severity rates of 61%, 50%, and 55%, respectively, while those belonging to 3 to 4 associations had rates of 48%, 41%, and 30%, respectively. As the decision-making index rose, poverty levels decreased. This is due to the accumulation of social capital and benefits from various associations, leading to an overall increase in benefits for members. Additionally, farmers attending meetings of different associations could positively contribute to initiatives that enhance benefits accumulation, resulting in poverty reduction. These findings are supported by [83, 84], who emphasized that exclusion from decision-making processes and lack of participation in political, business, and cultural activities often perpetuate poverty. Authors [43] argued that impoverished households frequently do not engage with welfare programs, hindering their ability to access progress. Poverty significantly influences household decisions, as noted by [43].

Dimensions of Poverty According to Benefits Derived from Membership of Association. The results in Table 4 present the profiling of the poverty status of the sampled households based on the benefits of social capital derived from the associations. Farm households were decomposed according to the income derived from association membership. The findings show that the higher the income derived, the lower the poverty incidence, depth and severity of households. For instance, households that derived income from the association in the range of ₦1,000 to ₦3,000 witnessed 65.00%, 63.00% and 55.00% of poverty incidence, depth and severity, respectively.

Table 4 – Distribution of the benefits derived from membership of an association according to poverty status

Social capital (benefits derived from being a member of an association)	Dimension of poverty		
	Incidence (P0)	Depth (P1)	Severity (P2)
Income Derived from Membership of Association (in naira)			
1,000 – 30,000	0.65	0.63	0.55
31,000 – 60,000	0.57	0.44	0.36
61,000 – 90,000	0.32	0.40	0.27
91,000 – 120,000	0.25	0.29	0.18
121,000 – 150,000	0.18	0.22	0.11
Level of Visits of Extension Agents			
Weekly	0.29	0.56	0.24
Monthly	0.45	0.64	0.46
Yearly	0.50	0.61	0.59
Very Rare	0.69	0.75	0.71
Interest Amount Paid on Loans (in naira)			
1,000 – 5,000	0.42	0.35	0.24
6,000 – 10,000	0.62	0.49	0.43
11,000 – 15,000	0.66	0.71	0.88
Farmland Acquired from the association (ha)			
>1.00	0.82	0.38	0.38
1.10 – 2.00	0.71	0.35	0.34
2.10 – 3.00	0.56	0.21	0.25
3.10 – 4.00	0.44	0.19	0.15
Loan Obtained from Association (in naira)			
1,000 – 30,000	0.66	0.34	0.43
31,000 – 60,000	0.46	0.32	0.39
61,000 – 90,000	0.38	0.26	0.21
91,000 – 120,000	0.25	0.22	0.12
121,000– 150,000	0.17	0.10	0.05
Seeds Acquired from the association (in kg)			
5 – 30	0.61	0.56	0.48
31– 60	0.22	0.38	0.24
61– 90	0.16	0.27	0.20
90 - 120	0.14	0.09	0.18
Fertilizer Acquired from the association (in kg)			
6– 20	0.59	0.44	0.41
21– 40	0.48	0.40	0.34
41– 60	0.43	0.35	0.30
61– 80	0.33	0.34	0.22

Besides, households who obtained income in the range of ₦120,000 and ₦150,000 had lower poverty indices at 18.00%, 22.00%, and 11.00% of poverty incidence, depth and severity, respectively. The finding implies that households that derived higher income from the association contributed more since most social associations' income is often shared proportionally to individual contribution. In addition, the results suggest that higher income reduces poverty, indicating that

association membership leads to poverty reduction.

Similarly, household increases in encounters with agricultural extension agents reduce the dimension of poverty indices among them. The result revealed that households rarely met extension agents, exhibiting 69.00%, 75.00%, and 71.00% poverty incidence, depth and severity, respectively. Meanwhile, households that frequently (weekly) encountered extension agents showed 29.00%, 56.00% and 24.00% poverty incidence, depth and severity, respectively. The result means that if the government of Akwa Ibom State can improve the efficiency of the extension agents, poverty among farm households will be reduced.

The poverty profile concerning the loan interest paid by farm households predicted a direct relationship. This connotes that as the amount of interest paid on a loan increases, the poverty indices of member beneficiaries increase correspondingly. For instance, households that paid between ₦11, 000 and ₦15, 000 as interest rate showed 66.00%, 71.00% and 88.00% poverty incidence, depth and severity, respectively, when compared to 42.00%, 35.00% and 24.99% for a household that paid between ₦1, 000 to ₦5,000 interest rate respectively.

The finding also revealed that as the size of land and loans acquired by households from their associations increase, their poverty levels reduce accordingly. This means that as the size of association land given to members increases, the poverty dimensions of members equally decrease. The association obtained a similar relationship between the quantity of seed and fertilizer disbursed. The result suggests that increased seeds and fertilizers acquired from the associations led to members' lower poverty incidence, depth and severity.

CONCLUSIONS

The research investigates the poverty profile of rural farm households in Akwa Ibom State, located in the southern region of Nigeria, based on household characteristics, social capital dimensions, and the advantages gained from association membership. Nigeria faces a significant challenge with rural poverty, earning the country a reputation as a global major centre for extreme poverty. Despite various programs introduced by the government and other organizations to ad-

dress rural poverty, particularly among farm households, the outcomes have not shown substantial improvement in the outputs and well-being of the farmers, as indicated by existing literature, especially in the country's southern region. This underscores the importance of exploring the connections between poverty dimensions and group dynamics indicators among farm households. The study employed the FGT methodology to create the poverty profile of farm households and assess six social capital dimensions: membership density, heterogeneity index, meeting attendance index, cash contribution, labour contribution, and decision-making index. The results indicated that 60.56% of farm households were classified as poor, significantly impacting the farmers' well-being. Female-headed households and older farmers exhibited higher poverty incidence, depth, and severity levels. Poverty dimensions were negatively correlated with increased formal education levels, farming experience, and farm size. However, single farmers had lower poverty incidence, depth, and severity than married, divorced, separated, and

widowed farmers. The findings also demonstrated a direct relationship between the six social capital dimensions analyzed and poverty incidence, depth, and severity among rural farm households in the study area. Upon further examination of the correlation between the advantages gained from membership in associations and the level of poverty, it was discovered that as the income of farmers from the association, the amount of land acquired through the association, and the quantities of seeds and fertility received from associations increase, the dimensions of poverty (such as poverty incidence, depth, and severity) decrease proportionally. This indicates that the active participation of rural farm households in structured farm associations contributes to alleviating poverty. The findings suggest that farmers' engagement in building social capital significantly reduces poverty incidence, depth, and severity. Moreover, the extent of farmers' participation in association activities and the benefits obtained from these activities impact the various dimensions of poverty.

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