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DETERMINANTS OF WOMEN PARTICIPATION IN THE APPEALS EMPOWERMENT PROGRAMME IN NORTHERN NIGERIA

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ABSTRACT

Women play a vital role in agricultural production and rural livelihoods in Nigeria, yet their participation in empowerment programmes remains limited by socio-economic and cultural barriers. This study examined the determinants of women's participation in the Agro-Processing, Productivity Enhancement and Livelihood Improvement Support (APPEALS) Programme in Kano and Kaduna States. Specifically, the study sought to: describe the socio-economic characteristics of women beneficiaries; assess their level of participation in programme livelihood activities; identify factors influencing their participation, and examine the constraints limiting effective engagement. Using a quantitative research method approach involving a survey of 278 women beneficiaries, descriptive statistics and a Tobit regression model were employed to analyse the objectives of the study. Findings revealed that women were mostly young to middle-aged, married, moderately educated, and strongly connected through associations, which enhanced their inclusion in the programme. Participation in farming, trading, processing, livestock and artisan activities was high, with approximately 84–85% of women demonstrating moderate to full engagement. Tobit regression results of the factors influencing participation showed that marital status ($\beta=0.390$), occupation ($\beta=0.600$), income-generating activities ($\beta=0.580$), association membership ($\beta=0.620$), years of residence ($\beta=0.020$), and urban exposure ($\beta=0.080$) significantly increased participation. However, constraints such as poor market access, limited extension contact, high input costs, cultural norms, inadequate training, and infrastructure deficits hindered full engagement. The study recommends strengthening cooperative structures, enhancing gender-sensitive extension services, and reducing structural barriers to foster inclusive women's empowerment.

Key words: APPEALS, Empowerment programme, Women, Participation

INTRODUCTION

Women play a central role in agricultural production, household food security, and rural livelihood systems across Sub-Saharan Africa. They contribute significantly to food processing, marketing, and small-scale farming, yet their involvement in formal empowerment and development programmes remains constrained by socio-economic and cultural barriers (FAO, 2023). Limited access to land, credit, extension services, and decision-making power continues to shape the extent and nature of women's participation in rural economic activities (Ajadi et al., 2020). These persistent inequalities have underscored the need for gender-responsive agricultural interventions aimed at enhancing women's productivity and economic resilience.

In Nigeria, several empowerment programmes have been implemented to strengthen rural livelihoods and promote gender inclusion. One such initiative is the Agro-Processing, Productivity Enhancement and Livelihood Improvement Support (APPEALS) Programme, supported by the World Bank and the Federal Government of Nigeria. The programme aims to improve agricultural productivity, promote value addition, and enhance livelihood outcomes for smallholder farmers, with a strong focus on women and youth (World Bank, 2023). Despite the programme's emphasis on gender mainstreaming, participation levels among women vary considerably across communities and socio-economic groups, particularly in northern Nigeria where cultural norms strongly influence women mobility, asset

ownership, and access to agricultural services (Kabeer, 2020).

Understanding the factors that influence women participation in agricultural empowerment programmes is therefore critical for strengthening inclusion and improving programme effectiveness. While previous studies have examined women empowerment, agricultural participation, and rural livelihood constraints in Nigeria, empirical evidence focusing specifically on the determinants of participation in the APPEALS Programme remains limited (Adewuyi & Omotesho, 2020; Ibro et al., 2021). This gap is more pronounced in northern Nigeria, where sociocultural dynamics and livelihood structures differ significantly from other regions.

Thus, this study aimed to address this gap by examining the following objectives: describe the socio-economic characteristics of women beneficiaries; assess their level of participation in programme livelihood activities; identify factors influencing their participation, and examine the constraints limiting effective engagement. Using quantitative research method, Findings from this research are expected to guide policy makers, programme implementers, and development partners in strengthening women's engagement in rural development interventions and reducing gender disparities in access to empowerment opportunities.

METHODOLOGY

Description of the Study Area

Kano and Kaduna States are located in northern Nigeria. Kano State is situated in the Sudan Savannah covering a land area of 20,760 sq km. It lies between latitude $10^{\circ} 30^1$ N and $13^{\circ} 0^1$ N and longitude $7^{\circ} 40^1$ E and $10^{\circ} 35^1$ E. is the most populous state with 20, 904, 894 people from the projected 2006 census population of 8, 401, 288 reflecting an annual growth rate of approximately 4.8%. Kaduna State on the other hand is situated on Nigeria's northern high plain also within the Sudan Savannah vegetation zone, its landscape features scattered trees, shrubs, and grasses with most loamy to sandy soils. The state lies between latitude $9^{\circ} 0^1$ N and $11^{\circ} 30^1$ N and longitude $6^{\circ} 0^1$ E and $8^{\circ} 00^1$ E. The annual rainfall is between 420mm-1,000mm and the temperature is averagely warm throughout the year (KNARDA, 2017). The wet season occurs between May to September while the dry season is from October to April. On the other hand, Kaduna State experiences a tropical climate consisting of

two distinct seasons , the rainy season is from May to October while the dry season is from November to April. Annual rainfall ranges from 1,000mm to 1,500mm, while temperature varies between 15° during harmattan months up to 35° during peak dry periods.

Both states are major agricultural hubs and key beneficiaries of the Agro-Processing, Productivity Enhancement and Livelihood Improvement Support (APPEALS) Programme. The region is characterised by smallholder farming, processing, and trading activities dominated by women, but constrained by cultural norms, limited access to productive resources, and environmental challenges (Ogunlela & Mukhtar, 2016; Federal Ministry of Agriculture and Rural Development [FMARD], 2020). Kano people valued communal living, have strong kinship which shapes their participation in agricultural cooperatives and women's groups while Kaduna State is ethnically diverse with major groups including Hausa, Gbagyi, Bajju, Atyap and Fulani, among others.

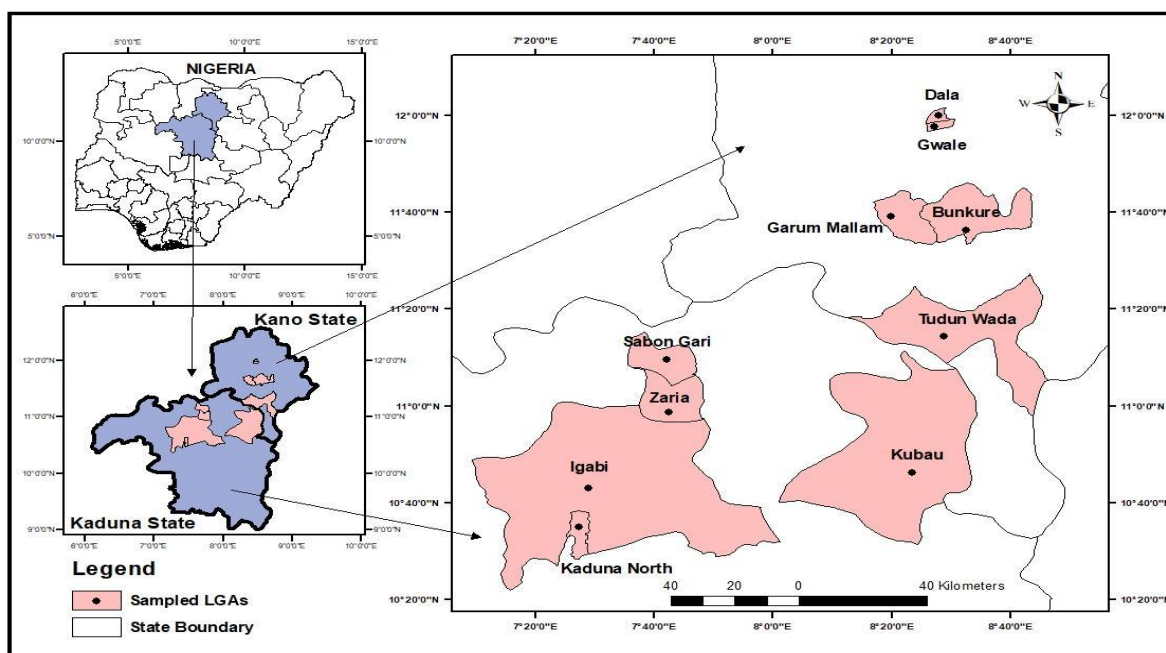


Fig1: Map of Kano and Kaduna States Showing the Sampled Areas

Sampling Procedure and Sample Size

Kano and Kaduna were purposively selected due to their high concentration of women beneficiaries and the operational presence of the APPEALS programme across several priority value chains. The first stage involved purposive selection of programme-benefiting Local Government Areas (LGAs) from Kano and Kaduna States based on the prevalence of female participation in the APPEALS Programme. The second stage involved

grouping of the women into different clusters based on the intervention. The third stage involved random selection of communities participating in APPEALS livelihood activities such as farming, trading, processing, livestock, and artisan work. In the final stage, women beneficiaries were randomly selected from the programme register. Using Raosoft calculator at 95 % confidence level and 5% error margin, a total of 278 women beneficiaries formed the sample size for the study out of 1,000 women participants.

Table 1: Sampling Procedure and Sample Size

State	LGAs	Total population	Sample size
Kano	Bunkure	50	14
	Dala	60	17
	Gwale	20	6
	Garum Malam	50	14
	Tudun Wada	50	14
Kaduna	Zaria	200	55
	Igabi	100	28
	Kaduna North	150	42
	Sabon Gari	200	55
	Kubau	120	33
		1,000	278

Source: Field Survey, 2024

Data Collection

Primary data were collected using a structured questionnaire administered through the Computer-Assisted Personal Interviewing (CAPI) method. Data collected covered socio-economic characteristics, participation levels, and income before (2019/2020) and after (2022/2023) participation in APPEALS.

Pretest of the Research Instrument

The instrument for data collection was pretested in selected rural communities in Kano and Kaduna States using a total of 28 respondents, comprising 8 respondents from Kano and 20 from Kaduna. This represents approximately 10% of the study sample size, which is considered adequate for pretesting. The pretest was conducted to assess the clarity, relevance, and reliability of the instrument, and necessary adjustments were made based on the feedback obtained.

Validity and Reliability of the Instrument

The instrument for data collection was subjected to face and content validity with the assistance of experts from the Faculty of Agriculture, Federal University Dutsin-Ma. Four academic staff, two each from the Departments of Agricultural Extension and Rural Development and Agricultural Economics, reviewed the instrument to ensure its relevance, clarity, and adequacy in addressing the study objectives. Their inputs led to necessary modifications of the instrument. To ensure reliability, the split-half method was employed. The pretested instrument was divided into two halves, and the consistency of the responses was assessed using the Spearman–Brown prophecy formula. The result indicated that the instrument was reliable for the study.

Measurement of Variables

The dependent variable was level of participation in the APPEALS Empowerment Programme, and it was measured using women engagement in five livelihood activities: farming, trading, processing, livestock production, and artisan work. Participation in each activity was classified into three ordered categories: low (1), moderate (2), and high (3). The scores were aggregated to obtain an overall participation index, which was treated as a censored variable for Tobit regression analysis.

Marital status was measured as a dummy variable (married = 1, otherwise = 0). Years of residence represented the number of years the respondent had lived in the community and was measured as a continuous variable. Occupation was measured based on the respondent's primary livelihood activity. Involvement in income-generating activities was measured as a binary variable (yes = 1, no = 0). Household size was measured as the total number of persons living in the household. Urban exposure was measured as the number of years the respondent had lived in an urban area. Association membership was measured as a dummy variable (member = 1, non-member = 0). Social participation was measured as participation in community or social groups (yes = 1, no = 0).

DATA ANALYSIS

Descriptive Statistics

Descriptive statistics, including means, frequencies and percentages were employed to summarize and present the data collected from respondents. This analytical technique was used to describe the socio-economic characteristics of women participating in the APPEALS empowerment programme in the study area and assess their level of participation.

Inferential Statistics

Tobit regression model

Tobit regression analysis was employed to determine the factors influencing the level of participation of women in the APPEALS empowerment programme. This method was chosen because the dependent variable, which is the level of participation, is a censored variable, where values are limited within a specific range, making Ordinary Least Squares (OLS) estimation inappropriate. The Tobit model estimates both the probability of participation and the extent of participation simultaneously, thus providing more reliable results when dealing with censored data. The explicit Tobit regression model for the factors influencing the level of participation in the APPEALS Programme is given as:

$$Y_i^* = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \beta_4 X_{4i} + \beta_5 X_{5i} + \beta_6 X_{6i} + \beta_7 X_{7i} + \beta_8 X_{8i} + \mu_i$$

Where: Y_i^* = latent (unobserved) continuous variable representing the level of participation in the APPEALS Programme

Y_i = observed level of participation such that:

$$\begin{cases} 0 & \text{if } Y_i^* \leq 0 & \text{(no participation)} \\ Y_i^* & \text{if } 0 < Y_i^* < U & \text{(partial participation)} \\ U & \text{if } Y_i^* \geq U & \text{(maximum participation)} \end{cases}$$

Independent variables, X_1 = Marital status, X_2 = Years of residence in the community, X_3 = Occupation, X_4 = Involvement in income-generating activities, X_5 = Social participation index, X_6 = Household size (number of persons), X_7 = Urban experience (years) and X_8 = Association/cooperative membership. The error term $\mu_i \sim N(0, \sigma^2)$ is assumed to be independently and normally distributed.

RESULTS AND DISCUSSION

Socio-economic Characteristics of Women Participants of APPEALS Programmes

Table 2 presents the socio-economic characteristics of women beneficiaries of the APPEALS programme in Kano and Kaduna States. These characteristics are important because they influence both the level and pattern of participation in agricultural empowerment initiatives. The findings show that the majority of the women were within the age range of 28–37 years (37.1%), followed by those aged 18–27 years (30.6%), with a mean age of 34.1 years. This suggests that the programme predominantly attracts women in their economically active and productive years, who are more capable of adopting innovations and participating effectively in livelihood activities. This may be because women within this age bracket are typically more energetic, economically motivated, and actively involved in household livelihood decisions, which increases their responsiveness to empowerment programmes. This finding is consistent with the report of

Adewuyi S. A. and Omotesho O. A. (2020), who observed that younger and middle-aged women are more actively engaged in agricultural interventions due to their higher labour capacity and economic drive.

Household size was relatively large, with most respondents having between 5–7 members (41.7%) and a mean of 7 persons, which implies that larger household sizes may increase the demand for income and food, thereby motivating women to participate in empowerment programmes. This could be attributed to the fact that women in larger households often bear greater responsibility for food provision and welfare, which pushes them to seek additional livelihood opportunities. This finding agrees with Ajadi K. O. et al. (2020), who noted that household pressure significantly influences women’s participation in income-generating activities.

The results further show that respondents had long years of residence, with a mean of 22.1 years, indicating strong community attachment. This implies that such women are more likely to be aware of and participate in development programmes within their locality. This may be because long-term residents are more socially integrated and better connected to local information networks, making them more responsive to programme opportunities. This finding supports the position of Weinberger K. and Jütting J. (2001), who emphasized that social embeddedness enhances participation in group-based interventions.

Urban exposure was moderate, with most respondents having spent 5–8 years in urban areas (36.3%) and a mean of 6.6 years. This suggests that many women have some level of exposure to new ideas, markets, and innovations, which can enhance participation in empowerment programmes. This could be due to the fact that urban experience broadens knowledge, improves confidence, and increases awareness of economic opportunities. This finding is in line with Kabeer Naila (2020), who highlighted that exposure to diverse environments enhances women’s agency and participation in development programmes.

Table 2: Distribution of Socio-economic Characteristics of Women Participants of APPEALS Programmes

Socio-economic Variables	Frequency	Percentage (%)
Age (years)		
18–27	85	30.6
28–37	103	37.1
38–47	56	20.1
≥48	34	12.2
Mean(SD)	34.1(10.23)	
Household Size		
2–4	78	28.1
5–7	116	41.7
8–10	48	17.3
≥11	36	12.9
Mean(SD)	7(4.81)	
Years of Residence		
5–13	111	39.9
14–22	80	28.7
23–31	49	17.6
32–40	38	13.8
Mean(SD)	22.1(10.22)	
Urban Exposure (years)		
1–4	96	34.5
5–8	101	36.3
9–12	55	19.8
13–16	26	9.4
Mean(SD)	6.6(4.85)	
Marital Status		
Single	68	24.5
Married	167	60.1
Divorced	25	9.0
Widow	18	6.4
Educational Status		
Primary	37	16.2
Secondary	122	42.5
Tertiary	54	23.8
Quranic	65	17.5
Membership of Association		
Member	210	75.4
Non-member	68	24.6
Social Participation		
Yes	250	90.0
No	28	10.0

Source: Field survey, 2024

The majority of respondents were married (60.1%), indicating that programme beneficiaries are predominantly women with family responsibilities. This implies that marital status plays an important role in participation. This may be because married women often have greater access to household resources and spousal support, which facilitates their involvement in livelihood activities. This finding agrees with Bot M. D. et al. (2024), who identified marital status as a significant determinant of women's participation in agricultural programmes.

Educational attainment showed that most respondents had secondary education (42.5%), followed by tertiary education (23.8%), indicating a relatively literate population. This implies that education enhances women's ability to understand training, adopt innovations, and comply with programme requirements. This may be

because education improves access to information, decision-making ability, and openness to new practices. This finding is consistent with the report of Food and Agriculture Organization (2023), which noted that education significantly improves participation in agricultural interventions.

Membership in associations was high (75.4%), while social participation was also strong (90%), reflecting a high level of social capital among the respondents, which implies that group membership and social networks play a crucial role in facilitating women's participation in empowerment programmes. This may be because associations provide access to information, credit, training, and collective support, which enhances engagement. This finding corroborates the work of Weinberger K. and Jütting J. (2001), who emphasized that group membership

significantly improves participation in development initiatives.

Participation in APPEALS Livelihood Activities

Figure 2 examines the extent to which women participated in different livelihood activities supported by the APPEALS Empowerment Programme. Understanding the levels of engagement provides insight into how effectively the programme reached its beneficiaries. The results presented in Figure 2 show that women demonstrated a strong level of engagement across the major livelihood activities supported by the APPEALS Empowerment Programme. Participation was highest in farming (55.04%) and trading (51.06%), both of which recorded the largest proportion of women in the high-participation category. Processing (48.65%), livestock (48.48%), and artisan activities (46.90%) also exhibited substantial involvement, indicating that majority of the women were either fully or moderately engaged in programme activities. These findings suggest that APPEALS successfully reached its target beneficiaries by providing training, inputs, and enterprise support that enabled women to improve their livelihood outcomes. High participation in farming and trading is unsurprising given women’s established skills, cultural familiarity with these activities, and the strong market opportunities available in Kano and Kaduna States

where agriculture forms a primary income base for rural households (Adewuyi & Omotosho, 2020).

Moderate participation was also considerable, averaging 34% across the livelihood activities, particularly in artisan work (37.93%) and livestock production (36.36%). This level of involvement shows that while many women engaged with the programme, some were unable to participate fully, possibly due to time constraints, limited capital, household responsibilities, or selective interest in certain aspects of the programme. Low participation was recorded among a smaller share of beneficiaries (averaging 16%), especially in livestock production (15.15%) and artisan work (15.17%), suggesting that structural barriers—such as cultural restrictions, mobility limitations, and resource shortages may still hinder some women from maximising the programme benefits. Overall, the combined high and moderate participation rates (approximately 84–85%) demonstrate that the APPEALS empowerment programme made meaningful progress in engaging women in livelihood enhancement activities. And this is consistent with earlier findings that women in northern Nigeria show strong interest in agricultural empowerment when programmes align with their needs and provide accessible support (Oladejo, 2018).



Figure 1: Participation in APPEALS Livelihood Activities

Factors Influencing Level of Participation in APPEALS Programme.

Table 3 presents the Tobit regression estimates of factors influencing beneficiaries’ level of participation in the APPEALS Programme. The model recorded an R-squared value of 0.435, showing that 43.5% of the variation in women’s participation is explained by the variables included in the analysis. The Chi-square statistic was highly significant ($p < 0.01$), confirming the overall explanatory power of the model. Six variables were statistically significant. Marital status ($\beta=0.390, \rho=0.006$) positively influenced participation, meaning married women were more likely to participate than unmarried respondents, likely due to greater social support and access to household resources. This aligns with Bot et al. (2024),

who identified marital status as a key determinant of women’s involvement in agricultural programmes. Occupation ($\beta =0.600, \rho=0.010$) also showed a strong positive effect, indicating that women engaged in farming, trading, or processing were more likely to participate, consistent with Sasa, Adebayo, and Maurice (2023). Similarly, engagement in other income-generating activities ($\beta=0.580, \rho=0.005$) significantly enhanced participation, supporting findings by Mutua and Nyaga (2021), who reported that economically active women are more responsive to empowerment initiatives.

Association membership ($\beta=0.620, \rho=0.003$) had one of the strongest positive effects, demonstrating that cooperative networks greatly enhance awareness,

motivation, and access to programme benefits; this agrees with Weinberger and Jütting (2001). Years of residence ($\beta = 0.020$, $\rho = 0.027$) and urban exposure ($\beta = 0.080$, $\rho = 0.022$) were significant at the 10% level, suggesting that long-term residents and women with prior urban experience were more likely to participate due to improved social integration and broader exposure to development opportunities. Household size ($\beta = 0.050$, $\rho = 0.096$) had a weak positive effect, while social participation ($\beta = 0.150$, $\rho = 0.586$) was not statistically significant. The results show that women's participation is jointly shaped by socio-

economic factors (marital status, household size), economic engagement (occupation and income-generating activities), and social capital variables (association membership, years of residence, urban exposure). These insights underscore the need for programme strategies that target the socially integrated, economically active, and cooperative-affiliated women, while also designing flexible and inclusive approaches for unmarried and less connected individuals to enhance participation in the APPEALS Programme.

Table 3: Tobit Regression Estimate for Factors Influencing Level of Participation in APPEALS Programme

Variable	Coeffi	Std Err	T-value	P-value
Constant	0.510	0.149	3.422	0.001***
M/Status	0.390	0.140	2.786	0.006***
Years of Residence	0.020	0.009	2.222	0.027**
Occupation	0.600	0.230	2.609	0.010**
Income-gen Acts	0.580	0.205	2.829	0.005***
Soc Part	0.150	0.275	0.545	0.586NS
HHS	0.050	0.030	1.667	0.096NS
Urban Exp	0.080	0.035	2.286	0.022*
Association	0.620	0.210	2.952	0.003***
R-Sq = 0.435				
Chi2 = 0.000				
Log likelihood = -496.01				

*, **, *** indicate significant level at 10%, 5% and 1%, respectively

Constraints Affecting Women Participation in the APPEALS Empowerment Programme

Findings revealed several interconnected constraints that significantly limited women's engagement in the APPEALS empowerment programme. These constraints mirror those reported across gender empowerment and agricultural-support literature in Nigeria and sub-Saharan Africa (Kabeer, 2020; Ajadi et al., 2020). Participants identified poor market access, limited extension services, high cost of inputs, and restrictive cultural norms as the most pressing barriers. Poor market access was the most frequently reported constraint (57.6%), with women noting persistent challenges in selling produce and sourcing affordable inputs. Even when empowered with skills, women emphasized that market limitations undermined their ability to fully benefit from programme support. This finding reinforces earlier research showing that weak rural market linkages remain a critical obstacle to women's agricultural participation (FAO, 2019).

Limited access to extension services (50.4%) was also highlighted as a major constraint, pointing to gaps in the delivery of technical advice, information dissemination, and practical training. High cost of farm inputs such as seeds, fertilizers, and agro-chemicals further exacerbated women's economic vulnerability, an issue widely acknowledged in gender-agriculture studies (Ajadi et al., 2020). Participants also reported the influence of cultural and gender norms, which restricted mobility, decision-

making power, and access to productive resources. Inadequate training and capacity building, poor rural infrastructure (including roads and storage facilities), and time constraints due to household responsibilities were additional barriers. These findings support earlier work documenting how socio-cultural expectations and domestic workloads limit women's participation in agricultural empowerment programmes (Ajadi et al., 2020).

The underscores the multifaceted challenges affecting women's participation in the APPEALS programme. Addressing these barriers through improved market linkages, subsidized inputs, gender-sensitive extension services, infrastructure development, and support systems that reduce women's time burden is essential for enhancing programme effectiveness and ensuring inclusive empowerment outcomes.

CONCLUSION

This study concludes that women participation in the APPEALS Empowerment Programme is significantly shaped by key socio-economic and institutional factors with marital status, occupation, income-generating activities, association membership, years of residence, and urban exposure emerging as important predictors of engagement. These results highlight that women who are economically active, socially connected, long-term residents, or have some degree of urban exposure are

more likely to participate fully. However, the findings reveal persistent constraints which including poor market access, limited extension contact, high input costs, cultural norms, inadequate training, poor infrastructure, and time burdens, that continue to hinder women's involvement.

RECOMMENDATIONS

Based on the findings of this study, it is recommended that the APPEALS Programme and similar interventions strengthen cooperative and association structures to enhance women's participation, given the significant role of group membership in improving access to information and resources. There is also a need to expand gender-sensitive extension services to address the constraint of limited technical support, while improving market linkages to overcome challenges related to poor market access. In addition, policies aimed at reducing the high cost of farm inputs, such as subsidies and accessible credit facilities, should be implemented to enable women to fully engage in programme activities. Finally, efforts should be made to address socio-cultural barriers through community sensitization and inclusive strategies, as cultural norms were found to restrict women's mobility and access to productive resources.

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