

## GENDERED PERSPECTIVES ON ACCESS TO AGRICULTURAL EXTENSION SERVICES: VOICES FROM WOMEN FARMERS IN AKWA IBOM STATE, NIGERIA

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### ABSTRACT

*Agricultural extension services are pivotal for improving productivity and livelihoods, yet women farmers in Akwa Ibom State face persistent gendered disparities in accessing these services. This study examined women farmers' perceptions of extension services, their experiences with access, the barriers they encountered, the coping mechanisms they adopted, and the strategies they employed for improvement. A qualitative design was employed using in-depth interviews, focus group discussions, and key informant interviews across six farming communities in three agricultural zones of Akwa Ibom State, complemented by direct field observations. Findings revealed that women perceive extension services as valuable for enhancing farming practices but experience challenges such as infrequent visits, long travel distances, male-biased training content, and exclusion from decision-making spaces. Gender-related barriers included restrictive cultural norms, domestic responsibilities, limited mobility, lack of spousal support, financial constraints, and institutional shortcomings such as low female extension staffing. In response, women employed various coping strategies, including sharing peer knowledge, mobilizing collective resources, blending indigenous knowledge with extension advice, leveraging mobile technology, and negotiating with household heads. Suggested strategies for improving inclusivity included recruiting more female extension officers, organizing women-only training sessions, utilizing ICT platforms alongside digital literacy support, scheduling trainings around domestic responsibilities, and providing economic incentives such as transport stipends and microcredit. The study concluded that while extension services hold transformative potential, gendered structural barriers undermine equitable access. It was therefore recommended that policymakers and extension agencies institutionalize gender-responsive delivery models to ensure inclusive participation and sustainable agricultural development.*

**Keywords:** women farmers, agricultural extension, gender barriers, coping strategies, gender-responsive extension.

### INTRODUCTION

Cassava is a staple food in Africa, Latin America, and Asia, with Nigeria and Thailand being Agricultural extension services remain a cornerstone for enhancing agricultural productivity, improving rural livelihoods, and fostering sustainable development across sub-Saharan Africa. They serve as the crucial link between research, policy, and farmers by facilitating access to innovations, information, and productive resources (Ekanem *et al.*, 2022; Asanwana and Uloh, 2025a).

However, access to these services is rarely uniform, as gender continues to shape how men and women farmers benefit from extension support. Decades of research have established that women farmers face systemic disadvantages in accessing agricultural information, technologies, and credit, despite their significant contributions to agricultural production (Olufemi, 2019; Umoh *et al.*, 2021; *et al.*, 2015; Nkanta *et al.*, 2025). These inequalities are often reinforced by cultural norms, institutional biases, and the gender-blind design of extension systems (Okorie and Ekanem, 2020; Dabkiene, 2025). Consequently, extension services that fail to account for gendered perspectives risk excluding women farmers from critical innovations needed to strengthen food security and resilience.

The gendered nature of access is not merely about resource distribution but also about the structural and relational dynamics that influence who participates, decides, and benefits from agricultural development interventions. Recent scholarship emphasizes that extension should be humanized, participatory, and gender-responsive to overcome the entrenched barriers women face in agriculture (Ekanem *et al.*, 2020; Lwamba *et al.*, 2022). Yet, while policies increasingly acknowledge the need for inclusivity, evidence suggests that implementation often falls short of ensuring equitable access (Hidrobo *et al.*, 2024). In many rural settings, women continue to encounter obstacles such as limited land rights, inadequate access to finance, and exclusion from farmer organizations, which restrict their effective engagement with extension agents (Ifeanyi-Obi and Uloh, 2025; Ongachi and Belinder, 2025). These realities underscore the need to move beyond generalized extension models towards strategies that deliberately address gender disparities in rural advisory systems.

In Akwa Ibom State, Nigeria, these concerns are particularly pronounced. Women farmers, who play a vital role in food production and household sustenance, often experience restricted access to extension services due to gender-related socio-cultural norms, institutional gaps, and uneven policy implementation (Udo *et al.*, 2024; Obot *et al.*, 2022). Evidence from studies in the state highlights that while extension is recognized as a vital driver of agricultural productivity and rural development, women remain underrepresented among beneficiaries of training, innovation platforms, and credit-linked advisory services (Ukpong *et al.*, 2019; Umeh *et al.*, 2018). The consequence is a widening gender gap in productivity, income, and empowerment outcomes that undermines broader development goals (Abdisa *et al.*, 2024; Jeevanasai *et al.*, 2023). If left unaddressed, these gaps risk perpetuating cycles of poverty, weakening household food security, and diminishing the potential of extension to contribute to inclusive rural transformation (Asanwana and Uloh, 2025b; Emmanuel *et al.*, 2025). Furthermore, existing literature has not sufficiently captured women farmers' lived experiences and coping strategies in navigating barriers to extension access in Akwa Ibom State. Obot *et al.* (2022) examined women's involvement in farming activities, while Harry (2022) assessed gender participation in public and private extension delivery systems.

Similarly, Asanwana and Uloh (2025b) investigated how gender-responsive agricultural extension policies contribute to the empowerment of rural women. Although these studies provide useful insights, there remains a paucity of research that foregrounds women's voices in exploring the specific gendered barriers they encounter and the adaptive mechanisms they employ in accessing extension services. This gap limits the ability of policymakers and extension agencies to design interventions that respond to the realities of women farmers on the ground, and addressing this limitation is critical to ensuring that agricultural extension contributes to equitable development and gender empowerment in the state.

Against this backdrop, the present study was designed to explore women farmers' perceptions of agricultural extension services in Akwa Ibom State, examine their experiences in accessing these services, identify the gender-related barriers that hinder effective access, assess the coping strategies employed by women in navigating these challenges, and suggest gender-responsive strategies for improving equitable access to extension services in the state.

## **METHODOLOGY**

The study was conducted in Akwa Ibom State, Nigeria, a predominantly agrarian state in the South-South geopolitical zone, where smallholder farming is the main livelihood activity. The study consisted of rural women farmers engaged in small-scale agricultural production in the state. A multi-stage sampling procedure was employed to ensure representativeness across the diverse agro-ecological and socio-cultural contexts. From the six agricultural zones of Akwa Ibom State, three zones were purposively selected to reflect variation in farming systems and accessibility of extension services. Within each selected zone, one agricultural extension block was randomly chosen, and from each block two farming communities were selected, giving a total of six communities. Within these communities, participants for in-depth interviews (IDIs), focus group discussions (FGDs), and key informant interviews (KIIs) were purposively identified to capture diverse experiences of women farmers, local actors, and extension stakeholders.

In total, 24 women farmers were engaged in IDIs, complemented by three FGDs consisting of 18–24 participants, nine local-level KIIs, three state-level KIIs, and direct observations of farming and extension activities in 3–6 community contexts. This sample size was deemed appropriate for qualitative inquiry, as it allowed for depth and diversity of perspectives while reaching thematic saturation (Ekanem and Inyang, 2018; Kabir *et al.*, 2018). Similar studies on women's access to agricultural services in Nigeria and sub-Saharan Africa have employed comparable sample sizes, noting that qualitative designs prioritize information richness over statistical generalization (Ajadi *et al.*, 2015; Somanje *et al.*, 2021). Data were collected using semi-structured instruments tailored to each method: interview guides for IDIs and KIIs, discussion guides for FGDs, and an observation checklist for field visits.

These tools explored women's perceptions of extension services, their experiences in accessing them, the gendered barriers they encountered, the coping strategies they adopted, and suggestions for improvement. Triangulation of data collection methods was adopted to enhance validity and capture both individual and collective voices, consistent with best practices in gender and extension research (Doss, 2001; Cook *et al.*, 2021).

All data were transcribed and organized thematically using a framework approach that combined inductive coding from field responses with deductive categories based on the study objectives. Thematic analysis was employed to identify recurrent patterns, supported by illustrative quotes that foregrounded women's lived experiences. Interpretations were refined through iterative cross-checking across data sources to ensure consistency and credibility. The qualitative design was considered appropriate as it privileges the voices of marginalized groups and provides nuanced insights into gendered dynamics of agricultural extension, which cannot be fully captured through quantitative surveys (Lwamba *et al.*, 2022; Dabkiene, 2025).

## RESULTS AND DISCUSSION

### Women's Perceptions of Agricultural Extension Services

Women farmers in Akwa Ibom State generally perceive agricultural extension services as valuable when accessible, particularly in helping them adopt improved practices (Table 1). However, they expressed concern that extension programmes often emphasize crops cultivated by men, such as yams and oil palms, while providing limited support for vegetables and other crops commonly grown by women. Accessibility also emerged as a challenge, with participants reporting infrequent visits by extension agents and long distances to training venues, which limited their participation. Women valued respectful communication and the use of local languages by extension officers, which made learning more inclusive and effective. They also appreciated when misconceptions were corrected, such as proper fertilizer use or planting methods, as this helped them improve their confidence in applying recommended practices.

The findings highlight both the potential and limitations of extension services as experienced by women farmers in Akwa Ibom State. The recognition of extension as a useful tool for supporting farming practices aligns with evidence from Rivers State and Northern Ghana, which shows that extension interventions become effective when farmers can access them consistently (Elenwa *et al.*, 2025; Danso-Abbeam *et al.*, 2018). However, women's concern that extension often neglects crops central to their livelihoods reflects a long-standing gender gap in the prioritization of agricultural innovations, as observed by Doss (2001) and reaffirmed in more recent reviews on gendered barriers in agriculture (Dabkiene, 2025). This suggests that extension agents in the state continue to operate with implicit biases that reinforce male-dominated farming systems, limiting their relevance for women.

Respectful engagement and the use of local language were highly valued, as they built confidence and made extension messages easier to understand, especially for older and less literate women. This supports Cook *et al.*'s (2021) argument that culturally sensitive communication fosters trust and facilitates knowledge transfer. Women also noted the importance of extension in correcting misconceptions, which strengthened their willingness to adopt recommended innovations.

The dissatisfaction with discontinued or poorly followed-up programmes points to weaknesses in policy implementation and programme design. Similar frustrations have been documented in Kaduna State and other regions, where farmers questioned the sustainability of extension support without consistent follow-up (Abdulwahab *et al.*, 2023). For women in Akwa Ibom State, such discontinuity not only reduces confidence in extension but also reinforces perceptions of being left behind in agricultural development processes, echoing the concerns of Asanwana and Uloh (2025b) regarding the limited gender responsiveness of extension policies in the state.

**Table 1. Women farmers' perceptions of agricultural extension services**

| Themes                                    | Sub-Themes                         | Illustrative Quotes (with Source)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Interpretation / Implication                                                                                           |
|-------------------------------------------|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| Perceived Relevance of Extension Services | Useful for improved practices      | <p>"The extension officer showed us how to plant cassava in lines. I noticed my yield was better." (IDI-WF03, Ikpe Okon – Ikot Ekpene Zone)</p> <p>"After learning spacing for maize, I harvested more than before." (FGD-WF, Minya – Eket Zone)</p> <p>"They taught us how to control pests with neem solution, which saved money." (KII, Female Cooperative Leader – Uyo Zone)</p> <p>"They mostly teach about oil palm and yam for men, but little about vegetables which we women grow." (FGD-WF, Minya – Eket Zone)</p> | Women view extension as a valuable source of improved farming practices that enhance skills and outcomes when applied. |
|                                           | Limited attention to women's crops | <p>"Our cassava and vegetable work is not given priority compared to men's palm trees." (KII, Female Cooperative Leader – Uyo Zone)</p> <p>"Sometimes the training topics do not match what we farm, like our okra and pepper." (IDI-WF07, Nung Ette – Uyo Zone)</p>                                                                                                                                                                                                                                                         | Women perceive extension as less relevant when it sidelines crops central to their livelihoods.                        |

|                               |                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                               |
|-------------------------------|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| Communication Style and Trust | Respectful and culturally sensitive engagement | <p>“The officer explained in Ibibio, so I understood well. It made me feel carried along.” (IDI-WF12, Ikot Udu – Ikot Ekpene Zone)</p> <p>“When they use our language, even the older women feel confident to ask questions.” (FGD-WF, Nung Ette – Uyo Zone)</p> <p>“Speaking in Ibibio helped even those who cannot read follow the training.” (KII, Extension Officer – Eket Zone)</p> <p>“Before, we thought fertilizer must be poured plenty, but the officer showed us to measure small. It saved us money.” (IDI-WF06, Owot Uta – Uyo Zone)</p> | Respectful communication and use of local language build confidence, inclusivity, and deeper learning.        |
|                               | Correction of misconceptions                   | <p>“They taught us that planting in lines does not waste land, instead it increases harvest.” (KII, Extension Officer – Ikot Ekpene Zone)</p> <p>“I used to believe chemicals spoil cassava, but they explained proper dosage to us.” (FGD-WF, Minya – Eket Zone)</p> <p>“We see extension officers once in many months. Sometimes a whole season passes before they return.” (IDI-WF08, Owot Uta – Uyo Zone)</p>                                                                                                                                     | Extension plays a corrective role by dispelling misconceptions and strengthening confidence in new practices. |
| Accessibility and Follow-up   | Infrequent contact and weak continuity         | <p>“They start a program and stop halfway. We are left to continue on our own.” (FGD-WF, Ikpe Okon – Ikot Ekpene Zone)</p> <p>“They introduced improved cassava, but nobody came back to see how we were doing.” (IDI-WF11, Ikpe Okon – Ikot Ekpene Zone)</p>                                                                                                                                                                                                                                                                                         | Inconsistent visits and lack of follow-up reduce trust and limit sustainability of extension services.        |

Source: Field data, 2024.

Note: IDI = In-depth Interview; FGD = Focus Group Discussion; WF = Woman Farmer. Participant codes (e.g., IDI-WF03) indicate interview sequence, community, and zone. Communities: Ikpe Okon, Ikot Udu (Ikot Ekpene Zone); Ikot Ekong, Minya (Eket Zone); Owot Uta, Nung Ette (Uyo Zone).



### **Experiences of Women in Accessing Services**

Women farmers' experiences with agricultural extension services in Akwa Ibom State reflect a mix of opportunities and persistent challenges (Table 2). Accessibility was a recurring concern, as training sessions were often held at distant venues, making participation costly and time-consuming. Additionally, infrequent visits by extension agents weakened trust and reduced the relevance of the support. Information delivery was better received when officers used local languages; however, women frequently reported relying on male intermediaries, which restricted their direct access to knowledge. Gender roles also shaped access: domestic responsibilities constrained women's availability, while extension priorities often emphasized crops grown by men, sidelining those central to women's livelihoods. Despite these challenges, many women acknowledged applying knowledge from extension, such as improved spacing techniques, which enhanced their farming practices. However, irregular follow-up and poor continuity of programs undermined sustained learning and reduced confidence in the services provided.

The findings reveal that while women farmers benefit from extension services when they are accessible, structural and cultural barriers continue to limit their equitable participation. The long distances to training centers and irregular contact with extension agents mirror constraints identified in Ghana and Zambia, where farmers described services as inaccessible and inconsistent (Somanje *et al.*, 2021; Maahe and Antwi, 2022). These limitations reduce trust and weaken adoption of innovations, highlighting the logistical fragility of public extension systems in sub-Saharan Africa (Hamisu *et al.*, 2017).

Women's exclusion from discussions on crop priorities further illustrates the gender bias embedded in the extension agenda, which frequently privileges male-dominated crops at the expense of those central to women's livelihoods. This reflects broader patterns described by Dabkiene (2025) and Doss (2001), who argue that technology and service design often marginalize women farmers' needs, such as access to improved vegetable and cassava varieties, timely training that accommodates domestic schedules, and credit schemes tailored to small-scale enterprises. Without correcting these biases, extension risks reinforcing rather than reducing gender disparities.

The acknowledgement of applying extension knowledge, particularly in practices such as spacing, corresponds with findings from Rivers State and Northern Ghana that show how extension enhances farmers' skills and improves cultivation methods (Elenwa *et al.*, 2025; Danso-Abbeam *et al.*, 2018). Yet, the frustration expressed about discontinuity of programs is consistent with Abdulwahab *et al.* (2023), who noted that weak follow-up undermines sustainability. Such programmatic gaps erode trust in extension and discourage consistent participation.

Table 2. Experiences of women farmers in accessing agricultural extension services

| Theme                     | Sub-Theme                        | Illustrative Quotes (with Zone/Community Codes)                                                                                                                   | Interpretation / Implication                                                                                       |
|---------------------------|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| Accessibility of Services | Long distance to training venues | “Most of the trainings are held in the local government headquarters. For us in the village, it is costly and far.” (IDI-WF07, Minya – Eket Zone)                 | Distance and transport costs limit women’s regular attendance, particularly those with childcare responsibilities. |
|                           |                                  | “Sometimes the venue is two villages away; I cannot leave my children and go that far.” (FGD-WF, Nung Ette – Uyo Zone)                                            |                                                                                                                    |
|                           | Limited frequency of visits      | “Some women drop out halfway because transport is too expensive.” (KII, Female Cooperative Leader – Ikot Ekpene Zone)                                             | Infrequent contact reduces trust and weakens continuity of support.                                                |
|                           |                                  | “Extension agents only come once in a long while. Sometimes we plant and harvest before seeing them again.” (FGD-WF, Nung Ette – Uyo Zone)                        |                                                                                                                    |
| Information Delivery      | Lack of continuity in programs   | “We expected them monthly, but they came only once in the whole season.” (KII, Female Cooperative Leader – Ikot Ekpene Zone)                                      | Irregular follow-up undermines sustainability of learning outcomes and erodes women’s trust.                       |
|                           |                                  | “Sometimes a whole year passes without any visit in our community.” (IDI-WF02, Ikot Ekong – Eket Zone)                                                            |                                                                                                                    |
|                           | Reliance on intermediaries       | “Sometimes they introduce a new practice and never come back to check if we are doing it well.” (FGD-WF, Nung Ette – Uyo Zone)                                    | Women’s direct access to information is restricted, reinforcing gender gaps.                                       |
|                           |                                  | “We were given new cassava cuttings, but after that, nobody monitored us again.” (IDI-WF11, Ikpe Okon – Ikot Ekpene Zone)                                         |                                                                                                                    |
| Information Delivery      | Reliance on intermediaries       | “It looks like they abandon us after starting the programme.” (KII, Community Women Leader – Uyo Zone)                                                            | Women’s direct access to information is restricted, reinforcing gender gaps.                                       |
|                           |                                  | “Many times they first call the men for meetings. We women later hear from our husbands.” (FGD-WF, Ikot Ekong – Eket Zone)                                        |                                                                                                                    |
|                           |                                  | “The message usually goes through men before it reaches us.” (IDI-WF05, Owot Uta – Uyo Zone)                                                                      |                                                                                                                    |
| Information Delivery      | Reliance on intermediaries       | “Sometimes extension officers prefer to talk to the male leaders, leaving women to wait for secondhand information.” (KII, Female Cooperative Leader – Eket Zone) | Women’s direct access to information is restricted, reinforcing gender gaps.                                       |
|                           |                                  |                                                                                                                                                                   |                                                                                                                    |



|                                    |                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                |
|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| Limited opportunities for feedback | <p>“We want to ask questions, but there is little time for us.” (FGD-WF, Ikot Udu – Ikot Ekpene Zone)</p> <p>“Sometimes they just talk and leave; we cannot clarify our doubts.” (IDI-WF12, Minya – Eket Zone)</p> <p>“Only community leaders are given time to speak, not ordinary women.” (KII, Community Women Leader – Eket Zone)</p> | Limited feedback channels prevent women from clarifying issues, reducing the usefulness and inclusivity of extension services. |
|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|

Source: Field data, 2024.

Note: IDI = In-depth Interview; FGD = Focus Group Discussion; WF = Woman Farmer. Participant codes (e.g., IDI-WF07) indicate interview sequence, community, and zone. Communities: Ikpe Okon, Ikot Udu (Ikot Ekpene Zone); Ikot Ekong, Minya (Eket Zone); Owot Uta, Nung Ette (Uyo Zone).

## Gender-Related Barriers

Women farmers face multiple barriers that limit their access to agricultural extension services (Table 3). Cultural and gender norms shaped interactions, as men were often the first point of contact for extension officers, leaving women to receive information secondhand. Restrictions on women’s mobility further curtailed participation, especially when husbands discouraged travel to distant meetings. Household responsibilities such as childcare and food preparation also conflicted with training schedules, while a lack of spousal support reduced encouragement to attend. Economic barriers included high transportation costs and limited control over farm income, which made it difficult for women to implement extension advice, even when it was received. Institutional shortcomings compounded these challenges: extension services often prioritized male-dominated crops like oil palm over women’s vegetable production, and the shortage of female extension agents made communication less culturally comfortable. Collectively, these barriers reinforced women’s marginal position in extension programmes and limited their ability to benefit fully from agricultural innovations.

The barriers identified reflect the intersection of cultural norms, domestic responsibilities, economic constraints, and institutional biases that restrict women farmers’ engagement with extension services. The prioritization of men as primary contacts by extension agents echoes findings by Ajadi *et al.* (2015) and Akpan (2015), who argue that patriarchal structures limit women’s direct access to productive resources. Similar to observations in Katsina State, where women’s farming contributions were undervalued (Viashima and Daniel, 2025), the testimonies from Akwa Ibom show how entrenched gender norms position women as secondary recipients of information. Restrictions on mobility and lack of spousal support reinforce what Gidudu *et al.* (2014) and Chigbu (2019) describe as cultural gatekeeping, where women’s autonomy in agricultural decisions is curtailed. Household responsibilities reducing participation mirror Dabkiene’s (2025) review, which highlights the disproportionate care burden as a systemic barrier to women’s agricultural engagement. Economic barriers, particularly a lack of control over farm income, confirm Adefila *et al.* (2024) and Ukpong *et al.* (2019), who noted that women’s financial dependence often constrains their ability to act on extension advice. This mismatch between receiving knowledge and being able to apply it underlines structural inequality in resource control.

Institutional biases were also evident, as extension priorities favored cash crops grown mainly by men, sidelining crops central to women's livelihoods. This pattern has been emphasized by Doss (2001) and reaffirmed in recent gender reviews (Dabkiene, 2025), which argue that innovation agendas often neglect women's farming realities. The shortage of female extension staff resonates with Cook *et al.* (2021), who noted that humanizing extension requires not only cultural sensitivity but also gender representation within services. Similar trends were observed in Ghana and Zambia, where farmers reported male-biased extension systems that overlooked inclusivity (Somanje *et al.*, 2021).

These findings suggest a system in which social and institutional arrangements combine to perpetuate gender inequities in access to agricultural knowledge and resources. The implication is that extension in Akwa Ibom State, while operational, lacks the gender responsiveness necessary to serve women equitably, reinforcing concerns raised by Asanwana and Uloh (2025b) that policies must move beyond technical delivery to address structural barriers that exclude women.

**Table 3. Gender-related barriers hindering women farmers' access to agricultural extension services in Akwa Ibom State**

| Barrier Theme              | Specific Barriers                        | Illustrative Quotes (with Zone/Community Codes)                                                                                                                                                                                                                       | Interpretation / Implication                                                                              |
|----------------------------|------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| Cultural and Gender Norms  | Male dominance in farmer groups          | <p>"When the extension officer comes, he first meets the men. Women are called later, if at all." (IDI-WF08, Ikot Okon – Ikot Ekpene Zone)</p> <p>"In meetings, men's questions are taken first; sometimes we women just keep quiet." (FGD-WF, Minya – Eket Zone)</p> | Reinforces women's secondary position in decision-making and limits direct information flow.              |
|                            | Restrictions on women's mobility         | <p>"My husband does not like me traveling far for meetings, so I miss many trainings." (IDI-WF05, Ikot Ekong – Eket Zone)</p> <p>"Some husbands feel it is not safe for women to move around, so they stop us." (KII, Community Women Leader – Uyo Zone)</p>          | Limits women's participation in centralized extension activities and reduces autonomy in decision-making. |
| Household Responsibilities | Time burden from childcare/domestic work | <p>"By the time I finish cooking and taking children to school, the meeting is over." (FGD-WF, Nung Ette – Uyo Zone)</p> <p>"We want to attend but housework and farming clash with the training schedule." (IDI-WF04, Owot Uta – Uyo Zone)</p>                       | Household and care roles reduce women's availability for extension programs.                              |
|                            | Lack of spousal support                  | <p>"Sometimes my husband says farm trainings are a waste of time for women." (IDI-WF03, Owot Uta – Uyo Zone)</p> <p>"If my husband does not support me, I cannot leave the house for training." (FGD-WF, Ikot Udu – Ikot Ekpene Zone)</p>                             | Negative spousal attitudes discourage women's participation and undermine confidence in extension.        |

|                        |                                  |                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                      |
|------------------------|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| Economic Constraints   | High transportation costs        | <p>“The venue is too far and transport fare is high. I just use the money for food instead.” (IDI-WF10, Ikot Udu – Ikot Ekpene Zone)</p> <p>“Many of us cannot afford the fare every time, so we miss out.” (FGD-WF, Nung Ette – Uyo Zone)</p> <p>“Even when I get advice, I cannot buy fertilizer without my husband’s approval.” (FGD-WF, Minya – Eket Zone)</p> | Financial limitations reduce women’s ability to attend extension meetings.                                           |
|                        | Limited control over farm income | <p>“Sometimes the money from sales is collected by men, so we cannot use it to follow the advice given.” (KII, Female Cooperative Leader – Ikot Ekpene Zone)</p> <p>“They talk more about cash crops like oil palm. Our vegetable farming is rarely discussed.” (IDI-WF07, Ikpe Okon – Ikot Ekpene Zone)</p>                                                       | Women’s financial dependence constrains their ability to act on extension recommendations.                           |
| Institutional Barriers | Male-biased extension agenda     | <p>“The trainings mostly focus on yam and palm; crops women grow are not taken seriously.” (FGD-WF, Minya – Eket Zone)</p> <p>“We hardly see female extension officers. Sometimes it is easier for us to talk to women than men.” (FGD-WF, Nung Ette – Uyo Zone)</p>                                                                                               | Women’s livelihood crops are overlooked, reducing the relevance and inclusivity of extension services.               |
|                        | Low female extension staffing    | <p>“If there were more female officers, women would open up freely and participate better.” (KII, Extension Supervisor – Uyo Zone)</p>                                                                                                                                                                                                                             | Lack of female staff reduces cultural sensitivity and discourages women from fully engaging with extension programs. |

Source: Field data, 2024.

Note: IDI = In-depth Interview; FGD = Focus Group Discussion; WF = Woman Farmer. Participant codes (e.g., IDI-WF08) indicate interview sequence, community, and zone. Communities: Ikpe Okon, Ikot Udu (Ikot Ekpene Zone); Ikot Ekong, Minya (Eket Zone); Owot Uta, Nung Ette (Uyo Zone).

## Coping Strategies

Women farmers adopted diverse coping strategies to manage constraints in accessing extension services (Table 4). Informal knowledge networks were central, with peers and family members ensuring information circulation when women were unable to attend meetings. Adaptation through practical experimentation and blending of extension advice with indigenous practices enabled women to mitigate risks and maintain continuity in farming decisions. Collective action emerged as another important strategy, with women pooling resources for transportation and approaching extension officers as groups to strengthen their bargaining power. Increasingly, technology was used to overcome distance barriers, with mobile phones and WhatsApp groups facilitating low-cost access to information. Household negotiation also played a role, as some women secured spousal approval by framing training attendance as beneficial to household income. These coping strategies collectively illustrate resilience and resourcefulness in navigating systemic barriers to agricultural extension.

The findings demonstrate that women farmers rely on socially embedded and adaptive strategies to offset limitations in extension access. The prominence of informal knowledge networks reflects patterns observed in Ghana and Zimbabwe, where women utilized peer-to-peer learning and kinship ties to disseminate agricultural information in contexts of service gaps (Yiridomoh and Owusu, 2021; Magwegwe *et al.*, 2024). Such strategies reflect collective resilience but also highlight dependence on secondary information channels, which may dilute technical accuracy.

Practical experimentation and knowledge blending illustrate adaptive agency, where women balance modern practices with traditional wisdom. Similar processes have been reported in Ethiopia and Southern Nigeria, where women adjusted farming practices incrementally to reduce risks in uncertain environments (Adimassu and Kessler, 2016; Ifeanyi-Obi, 2023). This pragmatic approach underscores the role of indigenous knowledge as a complementary resource rather than a competing one.

Collective action strategies, such as pooling resources for transport and engaging extension agents as groups, align with evidence that social capital enhances bargaining power and resource access in rural contexts (Dabkiene, 2025; Adefila *et al.*, 2024). These practices suggest that while individual women face structural barriers, solidarity within women's groups can amplify their voice and visibility in extension systems.

The use of mobile phones and WhatsApp groups to communicate with extension officers resonates with findings from **Abuja and Akwa Ibom State in Nigeria**, as well as from Ghana, where ICTs are increasingly enabling smallholder farmers to bypass physical and institutional barriers (Joel *et al.*, 2025; Pealore, 2022; Asanwana *et al.*, 2025). However, reliance on digital mediation may inadvertently widen disparities between women who have access to ICTs and those who do not, reinforcing existing inequalities.

Household negotiation as a coping mechanism reflects the enduring influence of patriarchal norms, where women must secure approval from their spouses to participate in agricultural programs. This dynamic echoes Chigbu (2019) and Gidudu *et al.* (2014), who show that women's agency is often negotiated within household power structures. While such strategies allow participation, they simultaneously entrench male gatekeeping in decision-making processes.

Table 4. Coping strategies employed by women farmers in navigating challenges to extension service access in Akwa Ibom State

| Coping Strategy Theme       | Specific Practices                           | Illustrative Quotes (with Zone/Community Codes)                                                                                                                                                                                                                                                                        | Interpretation / Implication                                    |
|-----------------------------|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|
| Informal Knowledge Networks | Peer-to-peer learning through women's groups | <p>"If I miss the meeting, my friend explains what the officer said." (FGD-WF, Ikot Ekong – Eket Zone)</p> <p>"In our women's group, those who attend share with others." (KII, Women Leader – Uyo Zone)</p> <p>"My son who attends the training tells me what to do on the farm." (IDI-WF04, Owot Uta – Uyo Zone)</p> | Ensures diffusion of extension knowledge within social circles. |
|                             | Reliance on family members for information   | <p>"Sometimes my husband explains what the officer said when I cannot go." (FGD-WF, Minya – Eket Zone)</p> <p>"Even if they don't teach us, we try small portions first before planting much." (IDI-WF08, Minya – Eket Zone)</p>                                                                                       | Compensates for restricted mobility and time limitations.       |
| Adaptation of Training      | Practical trial-and-error farming            | <p>"I test the new method on a small plot before expanding." (FGD-WF, Ikot Udu – Ikot Ekpene Zone)</p> <p>"We combine the advice with what our mothers taught us." (FGD-WF, Ikot Udu – Ikot Ekpene Zone)</p>                                                                                                           | Encourages local experimentation with reduced risks.            |
|                             | Localized knowledge blending                 | <p>"The extension officer says one thing, but we also use our traditional ways alongside." (IDI-WF05, Ikot Ekong – Eket Zone)</p> <p>"We contribute money so one person can go and bring the message back." (FGD-WF, Nung Ette – Uyo Zone)</p>                                                                         | Balances modern extension knowledge with indigenous practices.  |
| Collective Action           | Pooling resources for transport              | <p>"Sometimes we pay for a vehicle together so we can all attend." (IDI-WF10, Ikot Udu – Ikot Ekpene Zone)</p> <p>"When we go as a group, the officer listens better than when we go alone." (IDI-WF11, Ikpe Okon – Ikot Ekpene Zone)</p>                                                                              | Reduces economic burden while maintaining group access.         |
|                             | Group advocacy to extension officers         | <p>"Our cooperative invited the officer, and he responded faster than when individuals call." (FGD-WF, Minya – Eket Zone)</p> <p>"Sometimes I just call the officer on phone instead of traveling." (IDI-WF06, Owot Uta – Uyo Zone)</p>                                                                                | Strengthens women's bargaining power with institutions.         |
| Use of Technology           | Mobile phone consultations                   | <p>"We ask questions through phone calls when meetings are far." (FGD-WF, Ikpe Okon – Ikot Ekpene Zone)</p> <p>"Our youth help us post training dates in the WhatsApp group." (FGD-WF, Ikot Ekong – Eket Zone)</p>                                                                                                     | Low-cost, time-saving alternative for accessing advice.         |
|                             | WhatsApp groups for updates                  | <p>"I get new ideas from the WhatsApp group we created with the extension officer." (KII, Female Cooperative Leader – Uyo Zone)</p>                                                                                                                                                                                    | Expands reach of extension information through ICT.             |

|                       |                         |                                                                                                                                                                                                                                           |                                                                                                 |
|-----------------------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| Household Negotiation | Seeking spousal support | <p>“If I tell my husband the training will help our income, he agrees to let me attend.” (IDI-WF02, Owot Uta – Uyo Zone)</p> <p>“Sometimes I ask my husband to escort me so he will allow me to go.” (FGD-WF, Ikot Ekong – Eket Zone)</p> | Increases participation by leveraging decision dynamics, though within patriarchal constraints. |
|-----------------------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|

Source: Field data, 2024.

Note: IDI = In-depth Interview; FGD = Focus Group Discussion; WF = Woman Farmer. Participant codes (e.g., IDI-WF04) indicate interview sequence, community, and zone. Communities: Ikpe Okon, Ikot Udu (Ikot Ekpene Zone); Ikot Ekong, Minya (Eket Zone); Owot Uta, Nung Ette (Uyo Zone).

## Gender-Responsive Strategies

Women farmers suggested several strategies to make extension services more inclusive (Table 5). They emphasized the need for more female extension agents and women-only training sessions to enhance comfort and active participation. Flexible training schedules and community-based venues were recommended to ease conflicts with domestic responsibilities and reduce mobility barriers. Participants also highlighted ICT tools, such as mobile phones, WhatsApp, and radio, as useful for reaching women who could not travel, alongside calls for training in digital literacy to reduce their dependence on others. Economic support through transport stipends, group mobility, microcredit, and input distribution was considered crucial for translating training into practical applications. Finally, participants emphasized the importance of engaging men, traditional leaders, and community authorities in sensitization efforts to create supportive household and institutional environments that foster women’s participation.

The strategies identified align with broader calls for gender-responsive extension systems that move beyond technical delivery to address structural inequalities. The demand for female extension agents and women-only trainings reflects findings by Ragasa (2014) and Witinok-Huber *et al.* (2021), who argue that gender-sensitive staffing and safe learning spaces improve women’s participation and confidence. Such preferences also mirror the emphasis by Asanwana and Uloh (2025a) that extension delivery in Akwa Ibom requires gender mainstreaming at the policy level to achieve equitable outcomes.

Flexibility in scheduling and venue choice responds to the dual burden of production and domestic responsibilities, echoing Nyberg *et al.* (2025), who note that institutional arrangements must accommodate women’s time use to close participation gaps. The emphasis on ICT-based access resonates with Ifeanyi-Obi and Corbon (2023) and Asanwana *et al.* (2025), who found that digital tools offer cost-effective ways to reach women but require targeted training to avoid reinforcing digital divides. Similar patterns have been observed in Tunisia, where gender-responsive digital initiatives increased women’s independence in accessing agricultural advice (Ragetlie *et al.*, 2022).

Economic support strategies, including stipends and credit linkages, reflect recognition that knowledge without resources limits adoption. This supports the argument of Bryan *et al.* (2024) and Boudalia *et al.* (2024) that women’s empowerment in agriculture requires



coupling extension with financial mechanisms to reduce vulnerability and enable the application of innovations. The integration of inputs or small loans during training also strengthens the practicality of extension, consistent with findings from Danso-Abbeam *et al.* (2018) that extension has stronger effects when embedded within livelihood support schemes.

Household and community sensitization strategies highlight the influence of patriarchal structures, as women continue to negotiate access with husbands and community leaders. This aligns with Chigbu (2019) and Gidudu *et al.* (2014), who state that male gatekeeping often s and restricts women's access to resources. Involving men and traditional leaders in awareness campaigns, as suggested by participants, aligns with Cook *et al.* (2021), who describe the importance of "humanizing extension" by recognizing cultural dynamics rather than focusing solely on technical dissemination.

**Table 5. Gender-responsive strategies for improving equitable access to agricultural extension services**

| Strategy Theme                 | Specific Recommendations from Participants      | Illustrative Quotes (with Zone/Community Codes)                                                                                                                                                                                                                                                                                                                                                                                                                              | Policy/Programmatic Implications                                                     |
|--------------------------------|-------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| Inclusive Extension Delivery   | Recruit and deploy more female extension agents | <p>"Women understand us better, so if we see more female officers, we will attend trainings." (FGD-WF, Minya – Eket Zone)</p> <p>"Sometimes we keep quiet with male officers, but with women we speak freely." (IDI-WF06, Owot Uta – Uyo Zone)</p> <p>"Female officers encourage shy women to join." (KII, Women Leader – Uyo Zone)</p> <p>"Sometimes we are shy to talk when men are there, but if it is only women, we learn freely." (IDI-WF07, Nung Ette – Uyo Zone)</p> | Promotes trust, cultural sensitivity, and greater participation among women farmers. |
|                                | Organize women-only training sessions           | <p>"In women-only meetings, we share our problems better." (FGD-WF, Ikot Ekong – Eket Zone)</p> <p>"We gain more confidence when we learn among ourselves." (KII, Female Cooperative Leader – Ikot Ekpene Zone)</p> <p>"If they bring the training to our village square, more women will attend." (FGD-WF, Ikot Udu – Ikot Ekpene Zone)</p>                                                                                                                                 | Enhances confidence, active engagement, and open dialogue in training spaces.        |
| Flexible Scheduling and Venues | Conduct trainings closer to communities         | <p>"We need the training nearer to us; traveling far is a big problem." (IDI-WF11, Ikpe Okon – Ikot Ekpene Zone)</p> <p>"When meetings are close by, women do not depend on husbands for transport." (FGD-WF, Minya – Eket Zone)</p>                                                                                                                                                                                                                                         | Reduces transport/mobility barriers, allowing broader participation of rural women.  |

|                                       |                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                          |
|---------------------------------------|------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| ICT-Enabled Access                    | Align training times with women's domestic schedules                   | <p>"Morning is when we do housework; afternoon is better for training." (IDI-WF03, Owot Uta – Uyo Zone)</p> <p>"Evening meetings clash with cooking for the family, so afternoon is best." (FGD-WF, Nung Ette – Uyo Zone)</p> <p>"If trainings avoid market days, more women can attend." (KII, Women Leader – Eket Zone)</p> <p>"Even if I cannot travel, I can still listen to radio or check messages on phone." (FGD-WF, Ikot Ekong – Eket Zone)</p> | Increases attendance by accommodating women's domestic and productive roles.             |
|                                       | Expand use of mobile phones, WhatsApp, and radio                       | <p>"We want training information sent as text messages." (IDI-WF09, Nung Ette – Uyo Zone)</p> <p>"Radio helps women who cannot read messages." (FGD-WF, Ikot Udu – Ikot Ekpene Zone)</p> <p>"If they teach us how to use phone applications, we will not depend on our children." (IDI-WF11, Ikpe Okon – Ikot Ekpene Zone)</p>                                                                                                                           | Broadens outreach and complements face-to-face extension delivery.                       |
|                                       | Provide ICT literacy support for women farmers                         | <p>"Many women don't know WhatsApp; we need training." (FGD-WF, Owot Uta – Uyo Zone)</p> <p>"ICT workshops should include older women." (KII, Female Extension Officer – Uyo Zone)</p>                                                                                                                                                                                                                                                                   | Empowers women to independently access, interpret, and use agricultural information.     |
| Economic Support Mechanisms           | Introduce transport stipends or group mobility schemes                 | <p>"If government supports transport, we will not miss trainings." (FGD-WF, Owot Uta – Uyo Zone)</p> <p>"We contribute money for one bus, but support will help us all go." (IDI-WF05, Minya – Eket Zone)</p> <p>"Transport stipends will encourage more rural women." (KII, Cooperative Leader – Ikot Ekpene Zone)</p>                                                                                                                                  | Addresses financial and mobility barriers that limit equitable participation.            |
|                                       | Link women farmers to microcredit and inputs during extension programs | <p>"If training comes with seeds or small loans, it will help us practice what we learn." (IDI-WF05, Minya – Eket Zone)</p> <p>"Sometimes we are trained but have no money to buy inputs." (FGD-WF, Ikot Ekong – Eket Zone)</p> <p>"Credit tied to training will motivate us to attend." (KII, Women Group Leader – Uyo Zone)</p>                                                                                                                        | Increases adoption of innovations and enhances livelihood outcomes.                      |
| Household and Community Sensitization | Engage men in awareness campaigns on women's participation             | <p>"If husbands know the training will benefit the family, they will allow their wives to attend." (FGD-WF, Ikot Udu – Ikot Ekpene Zone)</p> <p>"Sometimes men think training is for them; awareness can change that." (IDI-WF04, Owot Uta – Uyo Zone)</p> <p>"Sensitization will reduce quarrels at home over training attendance." (KII, Village Head – Minya – Eket Zone)</p>                                                                         | Promotes supportive household dynamics and reduces resistance to women's inclusion.      |
|                                       | Involve traditional and community leaders in advocacy                  | <p>"If the village head supports, women will feel free to join." (IDI-WF09, Nung Ette – Uyo Zone)</p> <p>"When chiefs endorse it, women are more encouraged." (FGD-WF, Ikpe Okon – Ikot Ekpene Zone)</p> <p>"Community leaders can help mobilize women." (KII, Extension Officer – Uyo Zone)</p>                                                                                                                                                         | Institutionalizes gender inclusivity within local governance and traditional structures. |

Source: Field data, 2024.

Note: IDI = In-depth Interview; FGD = Focus Group Discussion; WF = Woman Farmer. Participant codes indicate interview sequence, community, and zone. Communities: Ikpe Okon, Ikot Udu (Ikot Ekpene Zone); Ikot Ekong,

## CONCLUSION AND RECOMMENDATIONS

Women farmers in Akwa Ibom State recognize the value of agricultural extension services, particularly in enhancing knowledge and improving farm productivity. However, access is constrained by gendered barriers, including male-biased service delivery, cultural norms, household responsibilities, limited mobility, economic constraints, and insufficient female extension personnel. Despite these challenges, women demonstrate resilience by employing coping strategies such as forming peer networks, engaging in collective action, conducting practical experimentation, and utilizing tools. Their experiences highlight both the potential and the limitations of current extension programs in addressing women's agricultural needs. Based on the findings, the following strategies are recommended to improve equitable access to agricultural extension services:

1. **Recruitment of Female Extension Agents:** Federal and State Ministries of Agriculture, in collaboration with Agricultural Development Programmes (ADPs), should increase the recruitment, training, and deployment of female extension personnel to improve communication, trust, and comfort for women farmers.
2. **Organization of Women-only Training Sessions:** Extension service providers (ADPs, NGOs, and donor-funded projects) should organize women-only training sessions to encourage women's active participation, reduce intimidation in mixed gatherings, and build confidence in learning.
3. **Flexible Scheduling and Community-based Training Venues:** Local Government Councils and ADPs should decentralize training venues by bringing sessions closer to rural communities (e.g., village squares, women's meeting halls). Training schedules should be adjusted to align with women's domestic responsibilities, preferably in the afternoons or non-market days.
4. **Leveraging ICT Tools and Digital Literacy Support:** ADPs, ICT-focused NGOs, and donor agencies should expand the use of ICT platforms (mobile phones, WhatsApp, community radio) for extension delivery. They should also organize digital literacy training specifically for women farmers, especially older and less literate ones, to ensure equitable access.
5. **Provision of Economic Support Mechanisms:** Government agencies and rural finance institutions should introduce transport stipends, group mobility schemes, and link women to microcredit schemes. Extension programmes should integrate input provision (seeds, fertilizers, small loans) alongside training to enable practical adoption of recommended practices.
6. **Household and Community Sensitization:** Community leaders, traditional rulers, and extension officers should jointly conduct sensitization campaigns targeting men and households. These campaigns should emphasize the benefits of women's participation in extension for household food security and income, thereby creating supportive environments.

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