

# Gendered Analysis of ICT-Enabled Agricultural Extension and Advisory Services: The Case of Agro-Tech Smart Ex Model

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## **Abstract**

There are contested claims over the issue of gender gap in access and control over productive resources including extension and advisory services. This paper focuses on a gendered value chain analysis within the Agro-Tech SmartEx Model implemented in Ghana and identifies gender gaps and opportunities for integrating gender in testing business (Agro-Tech SmartEx) Model with farmers and other value chain actors. A total sample size of 402 respondents within the maize and rice value chains were interviewed one-on-one and 16 focus group discussions were held. Comparatively, study findings show that male farmers have more access to extension and services delivery than their female counterparts. Barriers to women access to extension and services delivery could be categorised into (i) socio-cultural norms and value system, (ii) lack of access to productive assets particularly land and so end up having smaller farm sizes (iii) gendered associations with crop type, a situation where crops requiring more fertilizer inputs are the preserve of males and few financially endowed women (iv) Lack of resources (v) Heavy workloads and multitask relating to farm work, care giving, and time spent on household chores. To make the Agro-Tech SmartEx Model more gender responsive and reach out to more women, it is recommended that the services package should be tied to gender roles and responsibilities along the value chain; a gradual process of payment mechanism particularly for women smallholder farmers should be instituted regarding capacity to pay for e-extension and services delivery as well as placing emphasize on marketing and market outlets issues that can engage women.

## **Introduction**

Grameen Foundation (GFUSA) and Farm Radio international implemented a private-sector led ICT-enabled extension service project that sought to extend the reach of agriculture information, improve the efficiency of local extension by training agents in effective outreach, and promote the adoption of good agricultural practices. The GFUSA Project used 2-pronged approaches in its implementation to reach out to the targeted groups and beneficiaries, (i) Agent mediated approach, and (ii) Direct to farmer approach which was handled by Farm Radio International. The e-extension package covered actor needs along the selected commodity value-chains (maize and rice) including farm management support knowledge, linkages with credit providers and market outlets and Interactive platforms for information sharing among others. In an attempt to scale-up the Agro-Tech Smart Ex model, there was

the need to conduct a gendered analysis and come up with strategies to reach-out to more women.

Worldwide, women play an important role in agriculture but they are still marginalized in terms of access to agricultural extension and rural advisory services. Studies have shown that extension agents tend to approach male farmers more often than female farmers because of cultural restrictions and also because of the general misconception that extension advice will eventually “trickle down” from male heads to other household members (Meinzen-Dick *et al.*, 2010). Agricultural sector analysis showed that less than 20% of the representative sample of 372 value chain actors interviewed in 12 districts in Ghana accessed extension services (MOFA/WAAPP, 2014). Male farmers have more access to extension services than their female counterpart (28.2% men against 12.3% women accessing extension services in agricultural production) (*ibid*).

The socio-cultural barriers to extension services delivery limiting women access have been discussed extensively in a case study of the three Northern Regions in Ghana (Quaye *et al.*, 2017 unpublished). The study identified fundamental issues such as gendered associations with some crop types. For example, men are more economically endowed than the females, they are able to afford the relatively high cost of the technologies and inputs required in maize cultivation. While Soyabean cultivation on the other hand is associated with females because its cultivation requires less expensive technologies and inputs. Women and the youth not having adequate access to land and therefore end up cultivating small farm sizes, inadequate recognition to the specific roles of women for proper targeting and empowering strategies among others.

Although the existing literature is not specific on what kinds of extension services are more preferred by women in the agricultural value chain, it is clear that there has been inadequate recognition to the specific roles of women for proper targeting with extension services in the agricultural value chain. This knowledge gap will be addressed in the current study. In scaling-up the Agro-Tech Smart Ex model project activities, some pertinent questions had to be answered in this gendered analysis. The question of why limited participation of women and the youth in both implementation approaches needed answers and provide innovative solutions and strategies of reaching out to more female actors along the commodity value chains with e-extension and advisory services.

## ***Objectives***

### **The study objectives were to**

- identify gender roles and responsibilities in the maize and rice value chains;
- investigate the level of access to agricultural extension and services by gender;
- identify the barriers to access agricultural extension services by gender; and
- establish how to reach out to more women with the AgroTech Smart-Ex Model

## Methodology

A systematic approach was followed in this assignment. Two initial meetings were held with the program team of Grameen Foundation and Farm Radio international to discuss the Scope of Work and to establish a common understanding on the expected outcomes. Issues relating to sampling, research questions to interrogate and logistics arrangement for data collection as well as itinerary for fieldwork were thoroughly discussed and properly documented.

Four survey instruments were developed for the field work as indicated below:

- Structured questionnaire for farmers
- Structured questionnaire for agents and Outgrower Businesses (OBs)
- Structured questionnaire for Traders; and
- Semi-Structured questionnaire for focused-group discussions

Each set of questionnaire was designed to collect data on the socio-economic profile of the respondents, awareness of the Agro-Tech Smart Ex- Model, perceptions about performance, willingness to pay for e-extension services delivery, challenges and how to reach out to more women and the youth. The questionnaires were reviewed together with the project team of Grameen Foundation and Farm Radio international before multiplication for field use.

In collaboration with GFUSA partners three (3) regions were selected for the survey. These include Northern, Brong Ahafo and Volta regions of Ghana. A purposive sampling strategy was employed among the following units:

- Field agents engaged in the mediated e-extension delivery;
- Listeners clubs/groups involved in Farm Radio direct to farmer intervention;
- Individual farmers/beneficiaries by gender;
- Market Queens and potential service providers;
- Other out-grower schemes; and
- Program (e-extension package) designers and implementers.

The fieldwork span a period of 14 days including travels starting May 23, 2016. The data collection team included a staff each from Farm Radio International and Grameen Foundation. A total sample size of 402 respondents of the above mentioned value chain actors were interviewed one-on-one. In addition to this sample, 5 non-beneficiary outgrower farmers and 16 focus group discussions were conducted.

The Data collected from the field were cleaned, analysed in SPSS and exported into excel for the generation of graphs and cross-tabulations. For practical and utility of data purposes, the analysis were limited to descriptive statistics, cross-tabulation analysis and reflexivity to bring out the gender diversity and answers to core research questions. Issues of willingness to pay

for e-extension delivery, gender responsive interventions through radio and the business oriented agents supported to sustain their businesses were central to the analysis of the survey data.

## Findings

### *Demographic profile of respondents*

Table 1 gives a summary of demographic profile of the respondents particularly farmers. About 73% of the farmer sample interviewed were household heads, 70% males and mainly above 35 years of age. The youth in the farmers' sample size constituted approximately 25%. About 43.8% of the farmers interviewed had not been in school, 34.5% had primary education, 18% had secondary education, and 3.2% had tertiary education. Over 90% of the farmers belonged to groups/association. Only 18.8% of the farmers have smart phones although the use of mobile phones particularly among male farmers is common.

Table 1 Demographic Characteristics of Respondents

Categories	Response			
	Farmers n=351	Traders n= 39	Agents n=11	OBs n= 6
<b>Position in the Household</b>				
Head	72.8%			
Member/Dependent	27.2%			
<b>Sex</b>				
Male	69.9%	33.3%	90.0%	83.3%
Female	30.1%	66.7%	10.0%	16.7%
<b>Age (Years)</b>				
Below 18	0.9%	0.0%	0.0%	0.0%
18 – 35 (Youth)	24.9%	28.2%	72.7%	0.0%
35-60	62.7%	69.2%	27.3%	83.3%
Above 60	11.6%	2.6%	0.0%	16.7%
<b>Level of Education</b>				
None	43.8%	59.0%	0.0%	0.0%
Primary	34.5%	30.8%	10.0%	0.0%
Secondary	18.0%	10.3%	10.0%	66.7%
Tertiary	3.2%	0.0%	70.0%	33.3%
Others	0.6%	0.0%	10.0%	0.0%
<b>Major Occupation</b>				
Farming	96.5%	5.1%	18.2%	66.7%
Agro-processing	0.9%	0.0%	0.0%	16.7%
Trading	1.7%	94.9%	9.1%	0.0%
Other Services	0.3%	0.0%	18.2%	0.0%
Formal Employment	0.6%	0.0%	54.5%	16.7%
<b>Ownership of Smart Phone</b>				
Yes	18.8%	100.0%	90.0%	100.0%
No	81.2%	0.0%	10.0%	0.0%

Source: Field Survey (2017)

### *Overview of Agricultural Extension and Advisory Services Delivery and Some stylized Facts*

Gradually, the traditional extension methodologies are giving way for the new approaches, a paradigm shift is evolving with the introduction of ICT-Enabled agricultural extension delivery. Abdul-Raheem and Worth (2016) found that public sector extension in West Africa is

undergoing a transformation including decentralization and outsourcing extension services in the context of adopting a pluralistic system of extension delivery.

Extension and advisory services delivery in Ghana has evolved from the traditional methods of Farmer Field Schools (FFSs) and on-farm demonstrations which are associated with high cost and limited scale of outreach to the use of community based extension services delivery and e-extension systems. The community-based rural agricultural extension model is based on the idea of providing specialised and intensive technical training to agricultural extension services volunteers in a community who provide extension services with occasional support from a supporting organization. The still evolving e-extension approaches use Information and Communication Technology (ICT) to improve outreach and performance. Basically the use of mobile software application for smallholder farmer management and delivery of agricultural extensions services. The debate on whether or not e-extension can be fully commercialised and meet the huge demand for extension services delivery particularly among smallholder farmers by gender is still relevant.

In Ghana, Manfre et al (2013) rapid scoping assessment found very positive aspects of extension and services delivery, as well as some significant weaknesses and deficiencies. Extension assets identified included some examples of good extension practice in a number of public sectors and NGO's run extension programs that employ key approaches like market-oriented extension and use of innovative ICT approaches. Ghana is home to some promising private sector input marketing and market access approaches, which have the virtue of being financially sustainable. The assessment also identified some gaps including weak coordination at the national level, inefficient performance from the public sector extension services and the over-focus on production increases, without sufficient concern for farm-level profitability, which was necessary to induce further agricultural innovations and thereby boost productivity.

Nevertheless there are gaps in the ability of some current extension programming efforts to reach out to women farmers, gaps in the training and capacity of MoFA Agricultural Extension Agents (AEAs) and other extension field agents, training in the area of ICT use and applications, as well as in extension process skills. Suggestions were made for extension program structures that are explicitly and consciously farmer-led and market-driven given the decentralized governmental extension structure.

Jones et al (2017) reported that gender inequality continues to constrain women's opportunities in the agricultural sector, both in terms of achieving food security and increasing agricultural productivity. They further explained that investment in gender-responsive programming which promotes women's empowerment can help to overcome these constraints. Farnworth et al (2017) also supports gender-equitable strategies for achieving more balanced use of agro-inputs such as fertilizers. Mudege et al (2015) explored the interaction between extension services and gender relations in order to suggest ways and strategies that can be useful in ensuring that extension services are gender-equitable and empowering for women. Findings from their study show that underlying gender norms and cultural norms mediate access to extension services and information. A situation where some men regard themselves as representatives of their households and therefore could receive

first-hand information for further dissemination to their female counterparts. It was also realised that gender norms related to household decision-making had an impact on the ability of women to access training opportunities. Mudege et al (2015) suggests that agricultural extension should not be a purely technical programme focusing only on good agricultural practices but also embed modules aimed at addressing social practices that disadvantage some people, particularly women, as well as adopt gender sensitive recruitment methods that do not rely on male-biased recruitment channels for extension delivery services.

#### *Gender and How to reach out to more women*

Using the gender framework by Farnworth and Mahama (2012), this research considers that the rationale for working towards gender equity in agricultural commodity value chains lies in the understanding that the majority of agricultural production systems are structured by gender roles and responsibilities. The question that ought to be answered is how can the AgroTech SmartEx model be gender responsive and what are the specific mechanisms to overcome some of the gender-based constraints to women's effective participation in the Agro-Tech model. Gender is a social construct and it defines what it means to be a man or a woman in a given society at a particular time.

Responding to the research objectives, research findings are structured along the following themes:

- Gender roles and responsibilities in the maize and rice value chains;
- Access to agricultural extension and services by gender;
- Barriers to access agricultural extension services by gender; and
- How to reach out to more women with the AgroTech Smart-Ex Model.

#### *Gender roles and responsibilities in the maize and rice value chains*

Production – Most of the smallholder farmers into maize are males due to high inputs requirements and cost implication. For the specific activities the gender roles are specified below:

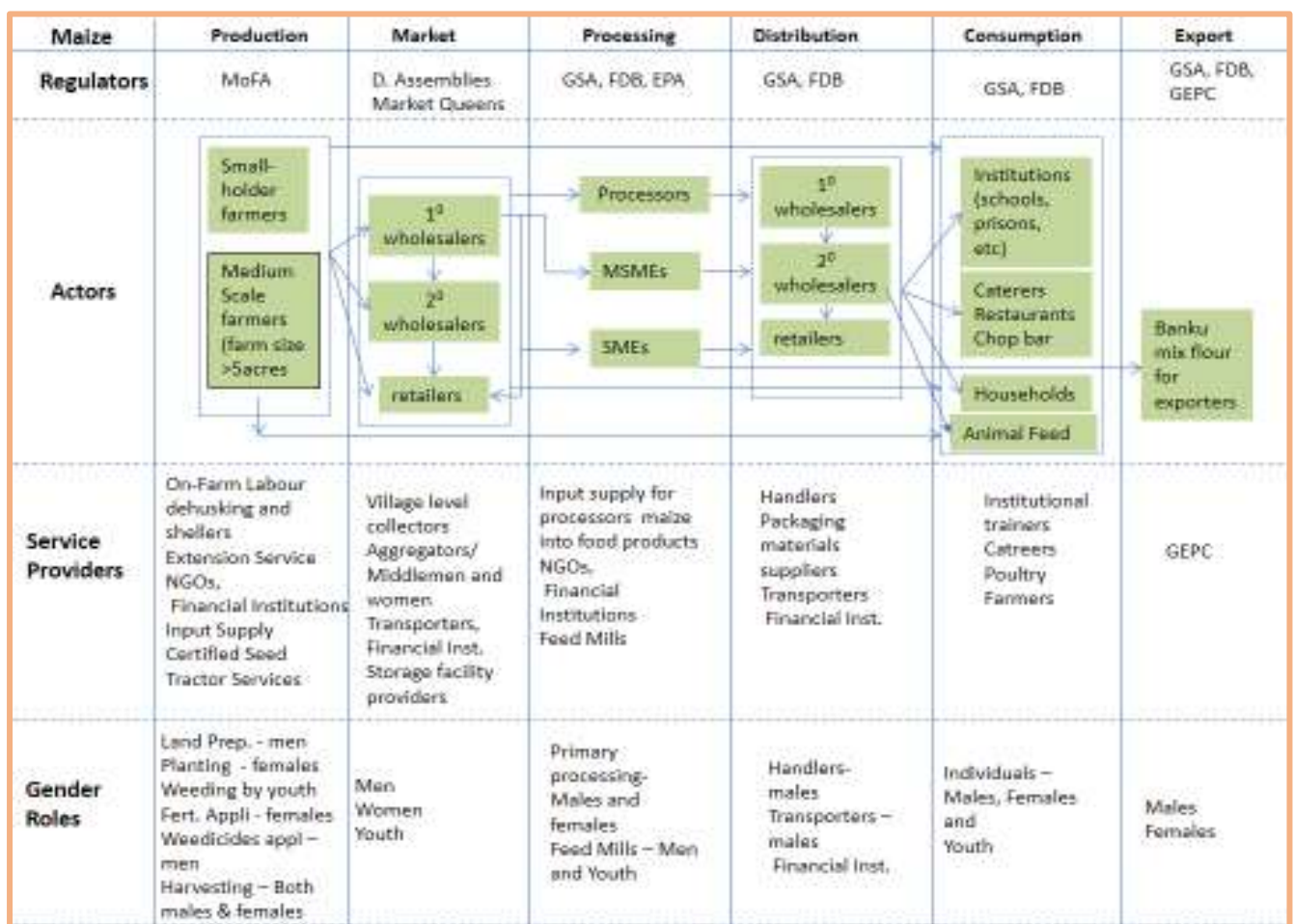
- Land clearing and preparation – Mainly done by males
- Planting – mostly done by females
- Weeding – Youth
- Application of Fertilizer - mostly done by women and youth
- Application of weedicides and pesticides – Males
- Harvesting – males and Females
- Primary processing (Dehusking, shelling & Sorting) – Males and females

Women faced a lot of challenges at the production stage of the commodity value chain. Women usually cultivate small farm sizes due to lack of access to land. Other challenges

include limited access to credit, input supply and other productive assets such as technology, machinery. For example, women interviewed complained about inadequate access to tractor services. In addition there socio-cultural issues limiting women access to extension and services delivery in the surveyed areas.

Marketing – Farm level bulking is usually done by both men and women. Aggregators for onward transportation to markets could also be men or women but in most cases the outgrower businesses (OBs) and their agents in the Agro-Tech Smart Ex Model were largely men. Mostly men have access to large silos and warehouses for grain storage. The men constitute a little over 90%. The OBs have links with buyers with predictable and regular demand requirements, such as poultry farms and feed mills.

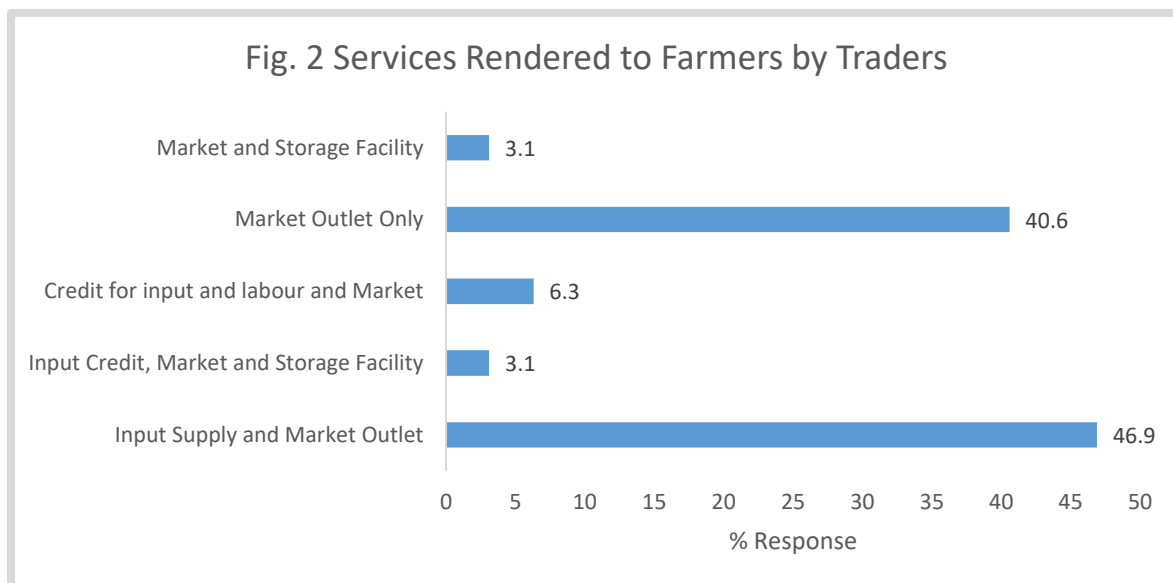
Fig 1. Maize value chain showing gender roles



Source: Author’s Compilation; June 2017

The research team interacted with traders in Techiman, Amartin, Tamale and Kwamikrom Markets to understand their relationships with farmers, how to reach out to female farmers and assess the potential in using traders as OBs with the Agro-Tech Model. About 72% of

the traders interviewed were women. About 96.9% of the traders interviewed had regular customers who supplied grains and Figure 2 shows the services rendered to farmers by the traders interviewed.



**Source: Field Survey (2017)**

Processing – In the case of maize primary processing after harvesting is done by both males and females. However, processing maize into products for human consumption is dominated by females. Processing maize for animal feed, an industry also dominated by males.

In the rice subsector, parboiling is predominantly done by women in the three regions of the North in Ghana. It is possible to design a program to meet the needs of women in the rice processing value chain who are also organised into identifiable groups. In the Volta region where rice is straight milled, rice processors are organised into groups for ease identification, supply to mills, market linkages and networked for external support either financial and/or technical. Some of the traders showed interest in participating in the AgroTech Smart Ex Model. They were of the view that the program will be beneficial to their farmer’s and also help them to make additional income.

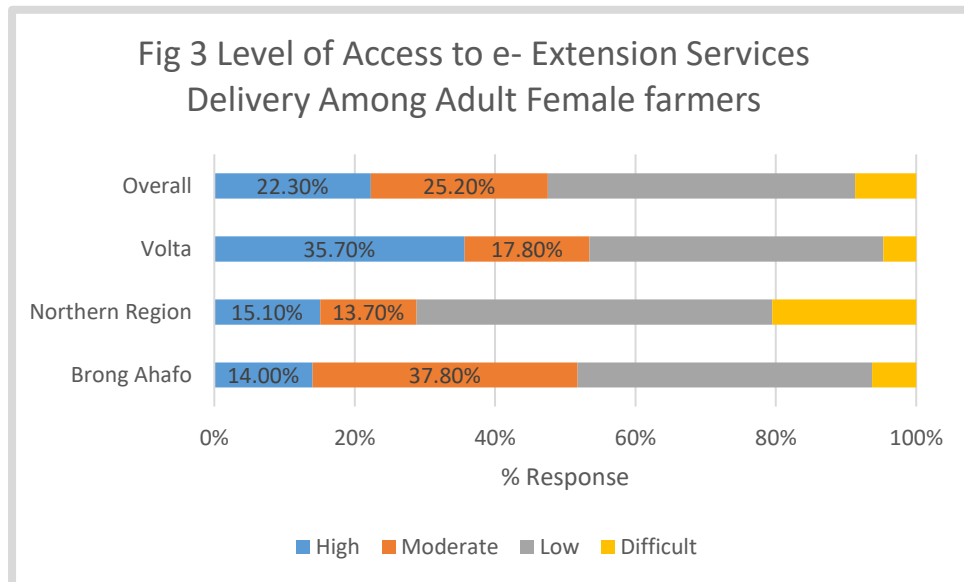
#### *Level of Access to extension and services delivery*

Farmers interviewed were asked to describe the level of access to e-Extension given the rating 1=High 2=Moderate 3 = Low 4 = Difficult. Responses in Figures 3, 4 and 5 show that

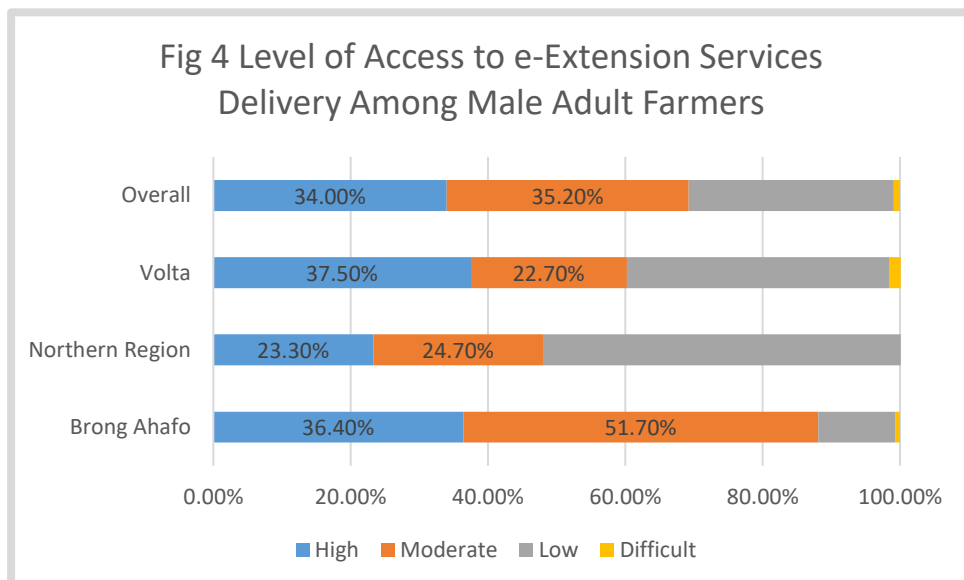
Comparatively, adult male farmers have more access to extension and services delivery than their adult female counterparts. In the case of adult female, 22.3% and 25.2% of the adult female farmers interviewed rated access to extension and services delivery high and moderate respectively. In the case of adult male farmers, 34.0% and 35.2% of the adult male



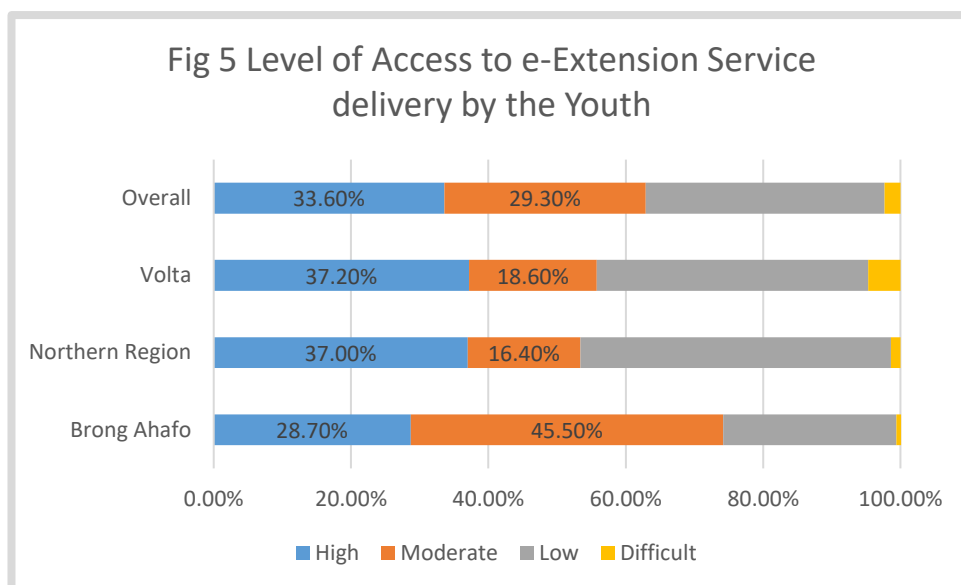
farmers interviewed rated access to extension and services delivery high and moderate respectively. In the case of youth farmers, 33.6% and 29.3% of the youth farmers interviewed rated access to extension and services delivery high and moderate respectively. Adult female’s access to extension and services delivery was generally low in the Northern Region as compared to other regions surveyed.



**Source: Field Survey (2017)**



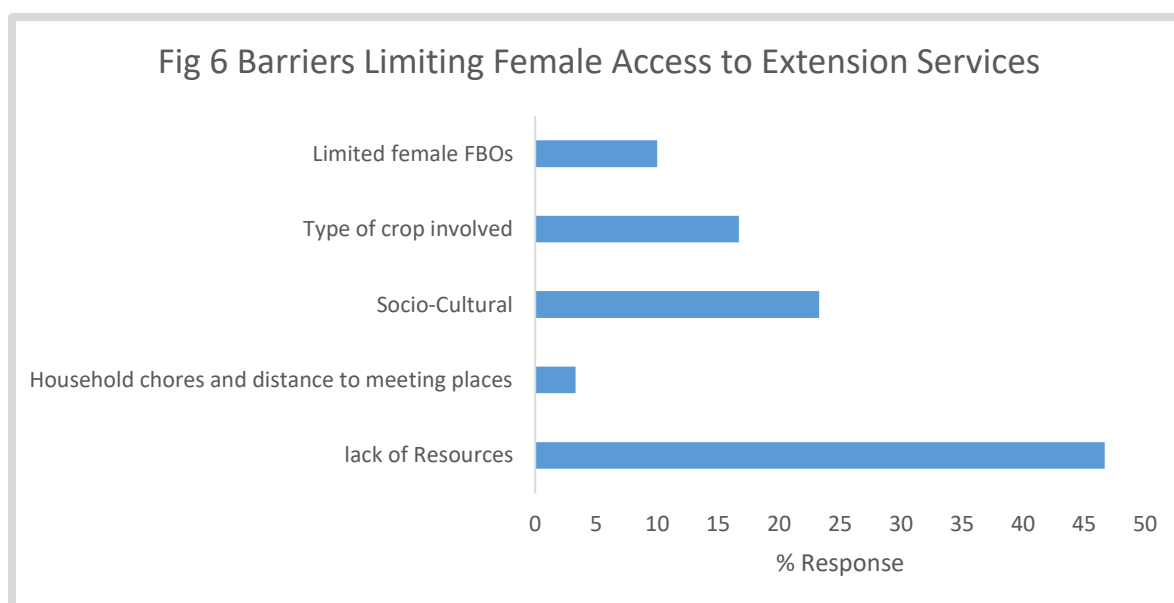
**Source: Field Survey (2017)**



Source: Field Survey (2017)

*Barriers limiting female farmers to access agricultural extension and services*

Barriers to women access to extension and services delivery could be categorised into (i) socio-cultural norms and value system, (ii) lack of access to productive assets particularly land and so end up having smaller farm sizes (iii) gendered associations with crop type, a situation where crops requiring more fertilizer inputs are the preserved of males and few financially endowed women (iv) Lack of resources (v) Heavy workloads and multitask relating to farm work, care giving, and time spent on household chores.



Source: Field Survey (2017)

From the focus group discussions summarized in Table 2 factors limiting women access to extension and services delivery in Brong Ahafo Region are bulleted below:

- Lack of market access, inadequate agro-chemicals and lack of financial services;
- Type of crops to grow or plant, for example Cowpea and soyabean and sometimes maize for women. But yam is cultivated by men. Men who cultivate maize are more than women. Other male dominated crops are Tomatoes, pepper and garden eggs;
- Low level of education and engagement with household duties;
- Some women are unaware of extension services delivery package of Agro-Tech Model;
- Some husbands want their wives to do their house chores while they listen and teach them;
- In mixed groups men want to take leadership roles, sometimes men want to take input package on behalf of their wives;
- Poor network or communication, most females do not own radio sets and sometimes busy with household activities when program is being aired.

From the focus group discussions summarized in Table 2 factors limiting women access to extension and services delivery in Northern Region are bulleted below:

- Lack of finance and lack of access to radio sets;
- Limited by Socio-cultural factors;
- Gendered association of crop types. From Quaye *et al.*, (2017 unpublished) culturally the man in male headed households is responsible for the food security needs of the entire family which is provided via the cultivation of maize crop (main staple crop). Because the men are more economically endowed than the females, they are able to afford the relatively high cost of the technologies and inputs required in maize cultivation. Cowpea and Soyabean cultivation on the other hand are associated with females because their cultivation requires less expensive technologies and inputs;
- Women support their husbands on the farm in some communities, they do not own their own farms and are responsible for the collection of sheanuts;
- Women are not mostly interested in e-extension unless they are specifically targeted; and
- Women lack of financial capital to go into serious farming. Their farm sizes are too small to attract extension attention given the fact that extension agents are limited in numbers.

From the focus group discussions summarized in Table 2 factors limiting women access to extension and services delivery in Volta Region are bulleted below:

- Lack of market access, inadequate agro-chemicals and lack of financial services.
- Women are not mostly interested in e-extension and lack of financial capital.
- No access to radio sets
- Poor usage or under-utilizing of smart phones.

**Table 2 Analysis of Group Discussion**

Name of Community	Membership	How to reach out to more women			
		Factors Limiting females	Strategies to overcome	Programs offering extension services	Best Extension delivery channel to women
1. Ahodwo/ Nkwanta South Volta Region	25	Lack of market access, inadequate agro-chemicals and lack of financial services.	Financial aid or access to credit facilities.	COCOBOD and SADA.	Agents and radio will best meet the need of female farmers.
2. Ahyiyem  Brong Ahafo Region	217	Type of crops to grow or plant (Cowpea and maize for women)	Farmer Based Organizations (FBO's) should be used for women.	Ministry of Food and Agriculture (MoFA), AGRICARE, Advance and ESOKO.	Farmer Based Organizations (FBO's) and Radio extension.
3. Amantin  Brong Ahafo Region	144	Low level of education and engagement with household duties.	Awareness creation and sensitization, provision of extension agents and adequate supply of inputs (seeds and fertilizers).	Crop Research Institute, Ministry of Food and Agriculture (MoFA), Advance and World Vision.	Radio programs and agroTech agents.
4. Ampemkrom  Brong Ahafo Region	17	Low level of education, poor network or communication, females have a lot of household duties to perform.	Establishing a better communication network, provision of radio sets and number of radio stations to help farmers to call in, change in the time the program is aired, local dialect should be used during the program.	Ministry of Food and Agriculture (MoFA) for (spraying, fertilizer subsidizing, teaching and encouraging good agricultural practices), ESOKO for (pre-financing of inputs), Hunger Project for (good agriculture product and post-harvest training)	Radio programs and AgroTech agents.
5. Aworopata  Brong Ahafo Region	30	Only one radio for females to access and mostly engaged with household activities when program is being aired.	Establishing good communication network, electricity poles, provision of radio sets (all members need one), time for airing the program should be changed to around 6pm.	Ministry of Food and Agriculture (MoFA) for (spraying, fertilizer subsidizing, teaching and encouraging good agricultural practices), ADVANCE and Federation for (inputs and fertilizer subsidy program, community savings and loans, good agronomic programs, and storage practices programs)	Radio programs and AgroTech agents.

Name of Community	Membership	How to reach out to more women			
		Factors Limiting females	Strategies to overcome	Programs offering extension services	Best Extension delivery channel to women
6. Bihinayili/ Savlegu District  Northern Region	35	Lack of finance and lack of access to radio sets.	Women should have access to radio, awareness creation and sensitization of e-extension services and provision of farm credit facilities.	SARI, MIDA and RING	Radio programs and AgroTech agents.
7. Damabi No.3  Northern Region	105	Limited by Socio-cultural factors.	Use advocacy groups to educate community leaders	Ministry of Food and Agriculture (MoFA), CARD through CEFEX and Centre for Agriculture and Rural Development.	Role of women in extension services (eg. Processing)
8. Dema Nkwakyire  Brong Ahafo Region	30	Division in types of crops to farm.	Women need extra support such as inputs.	Ministry of Food and Agriculture (MoFA), AGRICARE, and ADVANCE.	
9. Fiaso  Brong Ahafo Region	25	Women are afraid of losses.	Reach out to women in groups.	Ministry of Food and Agriculture (MoFA), ADVANCE, ABOPA, Hunger Project, Heifer International.	Extension through groups.
10. Kintampo – Glompe  Brong Ahafo Region	50	Females do not own radio sets	Females need radio sets and other languages such as “Gogomba” should be used.	Ministry of Food and Agriculture (MoFA).	Theoretical and practical delivery channels (Agro-tech agents and radio extension).
11. Takrabe (Biakoye district)  Brong Ahafo Region	34	No access to radio sets.	Women should be provided with radio sets to help them tune in and listen to the program, the program should be aired at 7:30pm instead of 8:00pm and they should be enrolled on an adult education program.	“Worawura” Rice Mill	Extension agents.
12. Kpassa/ Nkwanta Volta Region	40	Women are not mostly interested in e-extension and lack of financial capital.	Awareness creation of e-extension, provision of radio sets and provision of credit facilities.	Planting for Food and Jobs.	Agro-tech agents and radio.

Name of Community	Membership	How to reach out to more women			
		Factors Limiting females	Strategies to overcome	Programs offering extension services	Best Extension delivery channel to women
13. Kwamikrom Volta Region	17	Poor usage or under-utilizing of smart phones.	Provision of radio sets, training on the usage of smart phones.	None	Agro-tech agents and radio.
14. Satani/ kumbungu District Northern Region	70	Socio-cultural factors.	Women empowerment.	Ministry of Food and Agriculture (MoFA), CARD through CEFEX and Centre for Agriculture and Rural Development.	Role of women in extension services. E.g. processing.
15. Taaho/ Nkoronsa North Brong Ahafo Region	48	Inability to own radio sets, most females are busy with household chores, inadequate input supply.	Provision of radio sets, females should manage time to be able to listen to the program, multi-language with regards to radio program.	Ministry of Food and Agriculture (MoFA) for constructing three boreholes, Akyea FM, Farm Radio and Grameen Foundation.	Radio and especially agro-tech agents.
16. Zugu-Yepligu Northern Region	34	Women support their husbands on the farm, collection of sheanuts.	Provision of resources to women.	Ministry of Food and Agriculture (MoFA) and Centre for Agriculture and Rural Development.	Farmer Based Organizations (FBO's).

**Source: Field Survey (2017)**

## **Strategies to bridge the gender gaps in extension delivery: perspectives of Outgrower Business and Agents**

*The following were suggested by agents and OBs using Agro-Tech Smart Model:*

- Awareness creation and sensitization of farmers;
- Initiate women empowerment programs, for example educating women on income generating activities in the agricultural value chain;
- Adult Education;
- Female should be encouraged to attend the meetings, training and motivation for women farmers;
- Men should be able to give a lot of assistance to the women at home;
- Proper scheduling of meetings in terms of convenience of venue and time for women;
- Provision of adequate extension officers, provision of credit and education on credit access and financial management;
- Provision of mechanized equipment and provision of better roads; and
- There should be a separate group for the women, their husbands should be sensitized to allow their women to participate more in extension programs.

*Strategies to bridge the gender gaps in extension delivery: Perspectives of farmers using Agro-Tech Smart Model*

The following were suggested by farmers interviewed:

- Use advocacy group to educate community leaders on removal of socio-cultural barriers;
- Design extension programs to take advantage of gender associated crops – For example cowpea and soybeans for women as well as females cultivating cassava, groundnut and pepper;
- Reach out to women through female farmer groups; Some female groups are linked to VSLA and/or trading activities these channels can be used to reach out to more women;
- Use male champions in sensitization programs;
- Establishing a better communication network, provision of radio sets and number of radio stations to help farmers to call in;
- Change in the time the program is aired, local dialect should be used during the program;
- Women need extra support such as inputs; and
- Women should have access to radio, awareness creation and sensitization of e-extension services and provision of farm credit facilities.

## *Strategies to bridge the gender gaps in extension delivery: Perspectives of other outgrower farmers*

Exploring the possibility of reaching out to more women, the farmers interacted with indicated that majority of the female farmers in their outgrower schemes are not educated and hence explaining technical information to them requires more effort than reaching out to men. They also confirmed that generally female farmers are less resourced than their male counterpart which affect farm sizes and production levels. Hence the females will be more interested in micro-finance and village level credit schemes that ride on social networks and operates at the doorsteps of their target beneficiaries.

From the farmers view it easier to engage with women in groups, the contact person for extension and advisory services should be familiar with the targets communities and be well-resourced to visit female farmers on-site. Awareness creation and sensitization about the availability and how to access the extension and advisory services are critical.

### **Discussions**

From the literature, there are some stylized facts about gender and African Agriculture that have been elaborated in Lambrecht *et al* (2017). These stylized facts that have been observed to be subject to changes over time (Doss 2001) due to socio-economic dynamics include the fact that:

- women have limited access to land and lose out when land becomes more commercialized which have been established by Doss *et al.*( 2015);
- crops can be classified as men's crops or women's crops, whereby the former are usually cash crops and the latter subsistence crops;
- men have more access to modern agricultural inputs compared to women; and
- rural women's occupations are mainly limited to unpaid on-farm labor and household work, while men engage in remunerated on- and off-farm activities.

With respect to the above-stylised facts on gender gap in access and control over land, Lambrecht *et al* (2017) found that there have been some changes over time. In Ghana and Mozambique, around 30 percent of all agricultural plots are under women's control as opposed to 70 percent men (De Brauw 2015; Doss 2002), as are 15 percent in Kenya (Konstantinidis, and Barenberg 2014). Goldstein and Udry (2008) show that women farm lower-quality land in Ghana, but this result is not confirmed by evidence from De Brauw (2015) on Mozambique. Lambrecht and Asare (2016) confirmed that land tenure systems are dynamic and change in response to rural transformation processes such as changing rural infrastructure, population increase, and rural-urban migration.

With respect to the above-stylised facts on gendered association with crops, that cash crops can be classified as men's crops while subsistence crops are described as women's crops. Evidence from Mozambique and Kenya shows that women plot managers grow fewer crops and fewer



cash crops (De Brauw 2015, Konstantinidis, and Barenberg 2014, Kilic, Palacios-Lopez, and Goldstein 2015). Lambrecht *et al.*, (2017) found that there are many settings where such distinctive gendered cropping patterns do not apply. According to Carr (2008), cropping patterns mainly depend on the socioeconomic situation and livelihood strategy of the household rather than a mere distinction according to the gender of the farmer or household head.

The stylized fact that men have more access to modern agricultural inputs compared to women; studies point to men's and women's unequal access to inputs as a cause of lower female productivity (Djurfeldt, Djurfeldt, and Bergman Lodin 2013). Other factors that have been suggested to explain the differences in input use by gender include education and time constraints (Saito et al. 1994), access to land and family labor (Doss and Morris 2001), and extension services (Doss and Morris 2001).

Findings by Lambrecht *et al.*, (2017) established that men are more likely to be plot holders than are women and that they hold larger acreages of land compared to women. Female plot holders hold an average of 3.47 acres of land, which is on average 3.78 acres less than that held by male plot holders. During the past 20 years, women have represented between 32 and 36 percent of all adults holding land in rural areas of Ghana. He observed that over time on average, land sizes of both women and men are not considerably changing. Small differences exist at the level of the agroecological zones, as the gender gap in land size seems to widen in the savannah but reduces in the forest. Female household heads are more likely to hold land and cultivate larger plots than female spouses in male-headed households. Women in matrilineal ethnic groups are more likely to hold land in the coast and savannah and hold larger plots of land in the forest. Lambrecht *et al.*, (2017) also concluded that gendered patterns are more outspoken in the northern savannah and forest in Ghana compared to the coast. Considering interaction between gender and time, the number of crops grown by women plotters decreases less rapidly than for men. Again, cropping patterns of female heads are more similar to male cropping patterns than that of female spouses.

According to Quaye et al (2017 unpublished), to reach out to women and the youth with extension services delivery requires extra effort. The study found out that agricultural programmes that deliberately targeted gender in extension activities such as that of Agricultural Development and Value Chain Enhancement (ADVANCE) program benefited females creating a new socio cultural roles for the empowered women (Kubatha 2010). To reach out to more women and youth in the agricultural value chain, we need to engage more women extension volunteers, engage the use of male champions, use advocacy groups to break socio-cultural barriers and the use of women groups such as the village loans and savings scheme to engage women. In addition, there are examples to share with experiences with Women self-help groups in India. The model aims to empower poor and self-employed women farmers in rural India, creating more opportunities and contributing to self-reliance through inclusive women's groups.

Extension and advisory Services are embodied in various ICT-enabled services ranging from traditional radio programs using add-on features, to television shows using short message services to request information on agricultural varieties or farming practices, to the emerging mobile technology services and internet (Mbo'o-Tchouawou and Colverson 2014). Lamontagne-Godwin et al (2017) studied Quality of extension advice: a gendered case study from Ghana and Sri Lanka. In this study they highlighted the importance of appropriate advice, according to farmer gender and crop grown. They suggested greater focus on local knowledge about women's role in agriculture to help achieve more tailored advice.

### **Conclusion**

Engagement with women is not just socially important but an issue of development and for that matter all-inclusive development. Gender gaps have been bridged through the use of women groups, greater focus on local knowledge about women's role in agriculture and deliver tailored information that will be of interest to them also taking into consideration the types of crops and activities that engage their attention. However, according to Mittal and Mehar (2016) farmers use multiple information sources that may be complementary or substitutes to each other and this also implies that any single source does not satisfy all information needs of the farmer.

Research findings conclude that:

**(1) Comparatively, male farmers have more access to extension and services delivery than their female counterparts.** In the case of female, 22.3% and 25.2% of the adult female farmers interviewed rated access to extension and services delivery high and moderate respectively. In the case of male farmers 34.0% and 35.2% of the adult male farmers interviewed rated access to extension and services delivery high and moderate respectively. While in the case of youth farmers 33.6% and 29.3% of the youth farmers interviewed rated access to extension and services delivery high and moderate respectively.

(2) Barriers to women access extension and services delivery could be categorised into (i) socio-cultural norms and value system, (ii) lack of access to productive assets particularly land and so end up having smaller farm sizes (iii) gendered associations with crop type, a situation where crops requiring more fertilizer inputs are preserved for males and few financially endowed women (iv) Lack of resources (v) Heavy workloads and multitask relating to farm work, care giving, and time spent on household chores.

The literature also supports the possibility of bridging the gender gaps through the use of women groups, greater focus on local knowledge about women's role in agriculture and delivery of tailored information and services of high interest to women. Clear patterns of men's and women's crops would considerably facilitate gender-targeted policy making and

program interventions. By targeting specific crops, programs could easily reach either men or women. The next sub-section looks at recommendations to eliminate the above-mentioned barriers.

### Recommendations

Designing activities based on gender analysis that will expand female smallholder farmer access to information, skills, equipment and finance as well as integrating gender sensitization into project capacity building efforts are critical. Tailor the Agro-Tech Model services package to gender roles and responsibilities along the value chain.

Table 3 Value Chain Specific recommendations

Value Chain Stage	Gendered Recommendations
Production	<p>Target women groups, women in village and savings schemes and sensitize women about the AgroTech Smart Ex Model through local radio adverts. Use radio programs to advocate for women access to productive assets such as Land.</p> <p>Target gender roles in the design of programs:</p> <ul style="list-style-type: none"> <li>• Land Preparation - men</li> <li>• Planting - females</li> <li>• Weeding by youth</li> <li>• Fertilizer Application - females</li> <li>• Weedicides application - men</li> <li>• Harvesting - Both males &amp; females</li> </ul> <p>Target gendered associated crops:</p> <ul style="list-style-type: none"> <li>• Cowpea, soyabean and groundnut related interventions will attract women</li> <li>• Yam and to some extent Maize will attract more men than women</li> <li>• Rice and Cassava will attract both men and women</li> <li>• Leafy vegetables and nutrition related interventions will attract more women</li> </ul>
Marketing	<ul style="list-style-type: none"> <li>• Promote direct sourcing between women aggregator/traders and producers as done with ADVANCE program.</li> <li>• Pilot test possibility of Market Queens and Traders becoming OBs</li> <li>• Provide suitable credit and training on post-harvest management and improved handling practices for women.</li> <li>• Facilitate links to buyers with predictable and regular demand requirements, such as poultry farms and feed mills.</li> <li>• Conduct Business Development Services (BDS) including financial planning and market analysis in the radio programs;</li> <li>• Facilitate links to large-scale customers with predictable and regular demand requirements, such as barracks and schools.</li> </ul>

Processing	<p>Design programs or interventions that will include processing activities. This will certainly engage the attention of women to be involved in beneficiary groups. The following activities should be encouraged:</p> <ul style="list-style-type: none"> <li>• Support women to add value to their produce. For example training on rice processing and quality rice identification;</li> <li>• Enable women to benefit from upgrading, own and manage post-harvest technologies;</li> <li>• Training of target groups such as rice processors or other commodity value chains such cassava processors</li> </ul>
Building linkages	<p>Strengthen relationships between actors in the selected value chains in ways that explicitly target and support women as well as men.</p> <ul style="list-style-type: none"> <li>• Pay attention to producer cooperative or FBOs for women friendly crops (horizontal relationships)</li> <li>• Pay attention to producer-aggregator-trader relationships also in existing value chain platforms such as the Rice value chain platforms in some donor funded projects – contact Savanna Agricultural Research Institute (SARI) and Crops Research Institute (CRI) (Vertical relationships)</li> <li>• Develop direct links between input providers and women producers; address women’s mobility constraints to access inputs</li> <li>• Ensure women farmers receive timely and equal access to land preparation services if possible</li> <li>• Develop direct links between market queens and/or traders and women producers</li> </ul>

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