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## ICT Based Agricultural Knowledge Transfer of Women Farmers: A Case of Gender Responsiveness from a Developing Country Perspective

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# **ICT Based Agricultural Knowledge Transfer of Women Farmers: A Case of Gender Responsiveness from a Developing Country Perspective**

## **Introduction**

Agriculture is considered as the lifeline of economy since the dawn of civilization (Das et al., 2019). The economy of Bangladesh is largely dependent on agriculture. In Bangladesh, agriculture is the main driving force in rural life and livelihood. Agricultural development helps alleviate poverty, ensure food and augment nutritional security and income. Agriculture contributes 13.07% to Gross Domestic Product (GDP) recently, whereas it provides employment to 40.6 percent of the total labour force. Bangladesh inherited male dominated society including rural. Now the participation of women is seen visible in many agricultural development initiatives. Increasing outmigration of males in the rural areas resulted in women participation in different agricultural operations. Many subsequent studies substituted the 10% diminishing of men's participation in agriculture. Therefore, the participation women in research, extension and education has increased. It has made a shift in agricultural professions. The enrollment of women students in agriculture education has also increased in several folds.

Women empowerment is now at the forefront of global phenomenon and discussion as it signifies the overall development of a society (Sharma & Maheshwari, 2015). The place of women in agriculture determines a substantial extent of women's influence to various agricultural resources and decision-making process (Shradha, Aggarwal & Kumar, 2020). The involvement of women in agricultural sector was first identified in the labour force survey of 1995-1996. Farm activities like cattle rearing, poultry farming, paddy husking, boiling and

drying, processing and preservation of food are included in agriculture as economic activities. Domestic jobs like household works including child care performed by women are not considered as economic activities in Bangladesh. According to FAO (2003), women make essential contributions to agriculture in developing countries, but their roles differ significantly by region and are changing rapidly in some areas. It says, women comprise, on average, 43% of the agricultural labour force in developing countries (SOFA Team & Cheryl Doss, 2011).

Gender disparity is the burning issue in almost all sectors in Bangladesh. Of the total labour force of Bangladesh, about 45.1% is directly employed in agriculture, while around 53.5% female depends on agriculture in one form or another for their livelihoods (LFS, 2013). But their contributions are mistreated as mainstream labor force that impedes the participation and advancement of women in agriculture in fullest potential (Ghosh et al., 2021). About 99% of post-harvest agricultural activities like drying, processing, grinding, storing, preserving, sowing seed, livestock rearing is done by women in rural villages (Das, 2016). Yet they do not possess land property as per legal system and norms. A powerful role is played by women in selecting nutritional fruits and vegetables to minimize malnutrition. Women are livestock keepers with feed preparation, milking and marketing. They are highly engaged in feeding and collecting grass and fodder for domestic animals, housing and shelter cleaning sheds. They look after their animals like their family members and consider an integral part of their household.

Exponential growth of modern information and communication technologies has changed the way of accessing the information by people all over the world (Das & Jadab, 2017). Provision and support of technology based service is the prerequisite of development of any field or nation (Das, Mondal and Das, 2017). Bangladesh has short and poor history of ICT use in agriculture. In 2003 the Ministry of Agriculture launched taskforce program as to support to ICT. Both

public and private sectors provide technology through mobile phones, computers and internet, television channels, radio and fixed live telephones in farming activities. MoA initiated different ICT initiatives through establishing AICC, FIAC, UISC Community Radio and Krishi Radio and krishi call centers. These service centers employ male and female farmers to learn how to use ICT tools in farming. ICTs can offer significant opportunities for girls and women including in rural areas. Extension of infrastructure, particularly wireless and satellite communications, to rural areas and semi-urban areas is vital to increasing women's access to information technology (Singh, 2003). The purpose of using ICTs as tools is to avoid the mistakes of past agriculture in technology use and to ensure positive outcomes not only for women but also for all the rural population of ACP countries (Hafikin & Odame, 2007). Another study conducted by Jain, Ahuja, & Kumar, 2012 reveals that the ultimate objective of enhancing access and use of ICTs is to improve the livelihood and enhance empowerment of women especially the farm women. Many obstacles bar female farmers to use ICT tools in farming. Agu, (2013) located the main constraint behind integrating ICT in agriculture as their not being mobile unlike the men because of their house-bounds. The right use of modern ICT tools only can assist them to optimize their production. The present research aims to sketch out the current state of the ICT-based agricultural knowledge transfer of female farmers in Bangladesh involved in agricultural operations to enhance farm productivity for agricultural contribution.

### **Research Objectives**

The main purpose of this study was to examine the overall knowledge transfer process using information and communication technologies (ICTs) of women farmers in Bangladesh. The specific objectives were to:

- determine the demographic characteristics of women farmers in Bangladesh
- examine access to and use of ICTs of women farmers

- trace out the access and receptiveness of agricultural extension and advisory services among the women farmers

## **Research Methods**

A quantitative approach was adopted in this study. The study applied a survey research methodology using a structured questionnaire. Respondent farmers from some agro-ecological regions of the country were the population of the study. The study was conducted on 140 female farmers from seven administrative divisions of Bangladesh- Dhaka, Chittagong, Rajshahi, Khulna, Barisal, Rangpur and Sylhet. The sample covered almost 39 districts. The respondents were female farmers from ICT based agro advisory service centers such as Agriculture Information Communication Centre (AICC), Farmers Information Advisory Centers (FIAC), Community Radio and Krishi Radio, Batighor etc. Both male and female farmers are the beneficiary of different agro-knowledge services of those ICT service centers. However, questionnaire was administrated face-to-face sittings only to the female farmers to collect the data. Random sampling was used in the study. Extensive field visits to those areas were made prior to the survey. Income and production were the dependent variables whereas female famers, land, labour, gender and other items were independent variables. Data were presented graphically and mathematically with necessary tables and figures. The findings were sorted into figures to demonstrate a clear view of understanding at a glance. The data were analyzed with Statistical Package for Social Sciences (SPSS) version 23.0.

## **Results**

### **Demographic Characteristics**

The population for this study was selected in the study are from AICC, FIAC, UISC Community Radio and Krishi Radio and other small service centers. Respondents were randomly selected

from these five major ICT based service centers. The table 1 shows the highest number of the respondents (50%) from AICC whereas the lowest Krishi Radio (2.8%). The second highest was FIAC (25%) and then UISC (10%). There was availability of AICC in the survey area and another reason behind the response is that the female farmers were the members in ICT service centers.

Female farmers of age group are also drawn in the table 1. The highest number of the farmers is in the group C (50%) comprising of 41-50 years. Therefore, it is seen that the middle aged women are most active in ICT service centers. It is perhaps that they had little bit passive responsibility towards their family.

**Table 1: Demographic information of respondents**

Measure	Frequency	Percentage (%)
<b>Age (Years)</b>		
A (21-30)	15	10.8
B (31-40)	37	26.3
C (41-50)	70	50.0
D (51-60)	13	9.3
E (61-70)	5	3.6
<b>Possession of ICT Tools</b>		
Radio	6	4.0
Television	56	40.0
Mobile	77	55.0

Computer	1	1.0
<b>Affiliation</b>		
AICC	70	50.0
FIAC	35	25.0
UISC	14	10.0
Community Radio	12	8.7
Krishi Radio	4	2.8
Others	5	3.5
<b>Level of Agricultural Works</b>		
Preserving Seed	60	42.9
Processing Crops	37	26.4
Sowing Crops	2	1.4
Rearing Poultry	26	18.6
Rearing Livestock	15	10.7

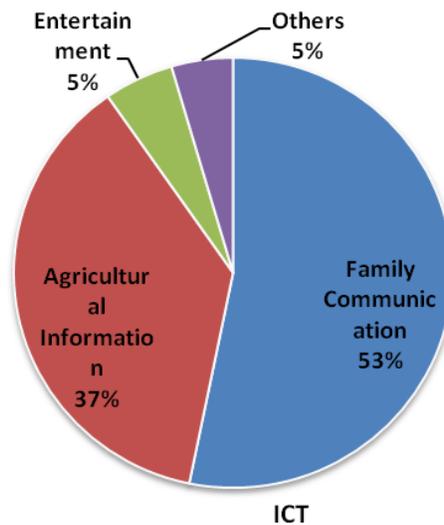
Most of post-harvest agricultural activities are performed by female farmers all the year round. Women in Bangladesh do these besides their regular household chores. Even caring animals, birds and other domestic pets is shared by them with their husbands and children. Women help their husbands reap, husk, dry up and store corns. Table 1 shows that seed preserving (42.19%), crops processing (26.53%), sowing seed (1.51%), rearing poultry (18.51%) and rearing livestock (11.26%) are performed by women in the villages. Preserving seed dominates all four activities for women are the perfect house keepers and they know how and where to preserve the seeds

well protected. On the other hand, sowing seeds is an out-run activity and thus it suits the male farmers best.

## Access to and Use of ICTs

### ICT Tools and Their Uses

The farmers of ICT service centers possess some tools to meet their agricultural needs. Most of the female farmers (55%) had mobile phone (not all smart phone) and one respondent had only computer owned from the center. 40% of them had television sets. The price of mobile sets is very low that is under their reach. Women tried to possess this little device as it is very essential for communication. Like male farmers, female ones also use ICT tools like mobile, radio, computer and television. They use these devices to communicate with their family members, to share knowledge, to obtain agricultural information and to get amusement.



**Figure 1: Purpose of using ICT tools**

From figure 1, it is evident that family communication (53%) is the main purpose behind having mobile set whereas carrying out agricultural information (37%) is the second priority for them.

Women think that holding mobile set is regarded as the best bridge for communication.

## **Response to Agricultural Extension and Advisory Services**

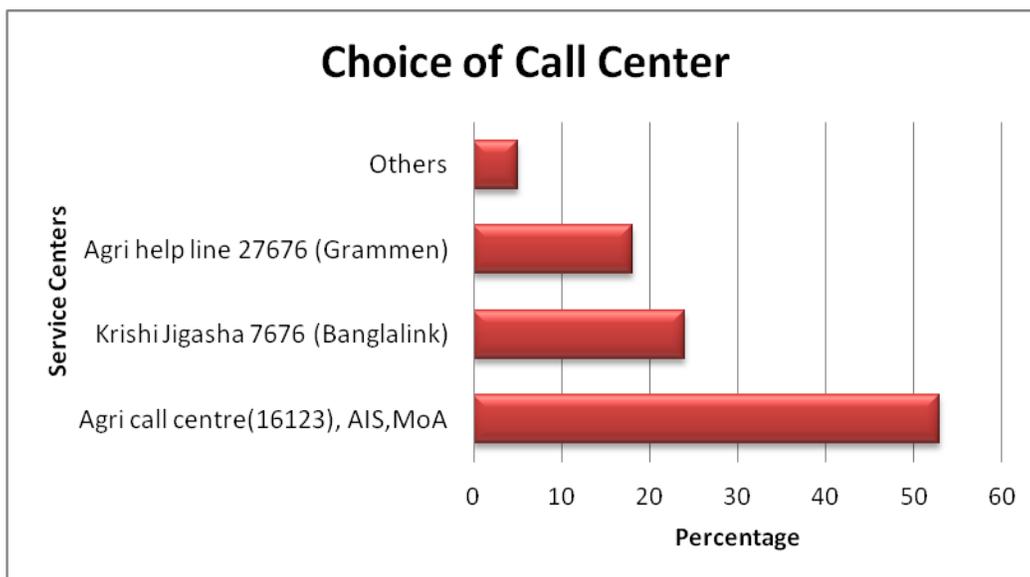
Women rarely get any spare time for recreation at home. They go to be with work and wake up with work. The little time they have is spent in listening news, attaining agricultural information, watching movies and other recreational activities such as chatting with neighbors. Out of little spare time, 67.14% of the female farmers watch selected agricultural news and 17.14% female watch agricultural programs on TV as they advised by SAAO (Table 2).

**Table 2: Use of Television Programs as Extension Service**

<b>Name of programs</b>	<b>No</b>	<b>Percentage (%)</b>
News	94	67.14
Bangla Movies	20	14.94
Agri. Programs	24	17.14
Others	2	1.43
Total	140	100

## **Extension Service from Call Centre**

Krishi (agriculture) Call Center is a popular information dissemination service for farmers. Now-a-days farmers are getting services on farming from different agriculture call centers. Among them, Agriculture call center (16123) operated by AIS, MoA, Agri-help Line (27676) by Grameen Phone and Krishi Jigasha (7676) by Banglalink and Win in Corporate are mentionable in the country.



**Figure 2: Choice of call centers**

The figure 2 illustrates that more than 53% of respondents keep quarries to government initiated call center (16123). Each call costs them 0.25 TK according to BTCL regulations though it was primarily free of costs. 23% of the farmers choose Krishi Jiggasha (7676) by Banglalink and Win in Corporate, 18% select Grameen Phone initiated call center and 6% choose other call centers like BIID Call Center, Win Miki Agro-call Center etc.

### **Training Received as Advisory Service**

Though women accomplish most of the post harvest operation, they do not possess land property as per legal system and norms or even they do not take any authoritative decision. ICT centers like AICCs, FIACs, UISCs, Community radios, Krishi radios have emerged to all farmers in many ways. The ICT farmers have learnt many technologies from those centers practically. Institutional knowledge and training taught the women some resultant technologies to use in cultivation. In this study, only 45 women (32.14%) had trainings on Seed Management, 21.43%

on IPM/ICM, 14.29% on fertilizer and weed management and 3.57% on rice production techniques and computer application (Table 4).

**Table 4: Trainings in Agricultural Fields**

<b>Name of Trainings</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Rice Production Techniques	5	3.57
Seed Management	45	32.14
Fertilizer and Weed management	20	14.29
IPM/ICM	30	21.43
Poultry Management	35	25.00
Integrated Fish Farming	0	0.00
Hatchery Management	0	0.00
Others	5	3.57

### **Discussion and Conclusion**

The study examined determine the current state of the ICT-based agricultural knowledge transfer of female farmers in Bangladesh involved in agricultural operations. It is seen that at present a large number of women are engaged in different agricultural professions. Most of them are poverty beaten in Bangladesh. They have to do farming activities along with household chores while they perform family duties with their male partners. Housewives from solvent families do not tend to do so. Some observations such as women empowerment, improvement of nutritional status, raising consciousness about their children’s schooling. ICT service centers should be well-built with ICT tools and modern devices. More trainings and training contents on agricultural fields have to be provided. Female farmers should visit the centers once a day. The

price of mobile sets should be decreased to the level of the poor people's reach. Calls in the call centers should be free of cost. Some incentives should be provided with the interested farmers (women) who are really engaged in farming with modern tools.

The accelerated ICT based knowledge environment is gaining ground in the agricultural technology transfer in Bangladesh. Several programs sponsored by the mainstream extension mechanism including private sector are engaged in the process of knowledge dissemination in the rural areas to augment agricultural production. It shows women are increasingly participating in those agricultural operations. Women are getting aware of the services associated with ICT based services and utilizing the facilities. The services are mostly dedicated to internet and mobile based ICT hubs located at the grass root level. We are proud that Bangladesh has achieved remarkable progresses in MDG-2015 goals in area of gender parity. Moreover, in SDG-2030, there is a direct gender related goal: Achieve gender equality and empower all women and girls.

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