USEFULNESS OF AGRICULTURAL INFORMATION AND COMMUNICATION CENTER (AICC) FOR KNOWLEDGE ACQUISITION

MD. MAHFUZAR RAHMAN

DEPARTMENT OF

AGRICULTURAL EXTENSION & INFORMATION SYSTEM

SHER-E-BANGLA AGRICULTURAL UNIVERSITY

DHAKA-1207

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BY

MD. MAHFUZAR RAHMAN

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Approved by:

Prof. Md. Mahbubul Alam, PhD	**Prof. Dr. Muhammad Humayun Kabir**
Supervisor	Co-Supervisor
Dept. of Agricultural Extension and Information System	Dept. of Agricultural Extension and Information System
Sher-e-Bangla Agricultural University, Dhaka-1207	Sher-e-Bangla Agricultural University, Dhaka-1207

Prof. Dr. Mohammad Zamshed Alam
Chairman
Examination Committee
Dept. of Agricultural Extension and Information System
Sher-e-Bangla Agricultural University, Dhaka-1207

Department of Agricultural Extension and Information System

Sher-e-Bangla Agricultural University

Sher-e-Bangla Nagar, Dhaka-1207

CERTIFICATE

This is to certify that the thesis entitled, **"USEFULNESS OF AGRICULTURAL INFORMATION AND COMMUNICATION CENTER (AICC) FOR KNOWLEDGE ACQUISITION"** submitted to the Faculty of Agriculture, Sher-e-Bangla Agricultural University, Dhaka in partial fulfilment of the requirements for the degree of **Master of Science (MS) in Agricultural Extension**, embodies the result of a piece of bona fide research work conducted by **Md. Mahfuzar Rahman, Registration No. 19-10162** under my supervision and guidance. To the best of my knowledge no part of this thesis has been submitted for any other degree or diploma.

I further certify that any help or source of information, received during the course of this study has been duly acknowledgement by him.

Dated: December, 2021

Dhaka, Bangladesh

Prof. Md. Mahbubul Alam, PhD
Supervisor
Dept. of Agricultural Extension and Information System
Sher-e-Bangla Agricultural University, Dhaka-1207

Dedicated to My

Beloved Parents

and

My Brothers

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDIX

ABBREVIATION AND ACRONYMS

AICC	Agricultural Information and Communication Center
ICT	Information and Communication Technology
BBS	Bangladesh Bureau of Statistics
AIS	Agricultural Information Service
AKIS	Agricultural Knowledge and Information Systems
UAO	Upazila Agriculture Officer
SAAO	Sub-Assistant Agriculture Officer
GDP	Gross Domestic Product
SPSS	Statistical Package for Social Sciences
BRRI	Bangladesh Rice Research Institute
BARI	Bangladesh Agricultural Research Institute
BI	Barrier Index

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ABSTRACT

The objectives of this study were (i) to describe the selected socio-economic characteristics of the farmers, (ii) to determine the farmers' perceived usefulness of AICC for knowledge acquisition and (iii) to explore the contribution of farmers' selected characteristics to their perceived usefulness of AICC for knowledge acquisition. Data were collected from randomly selected 120 farmers of three upazilas namely; Sariakandi, Dhunat and Sherpur upazila under Bogura district by using an interview schedule during 15 June to 10 July, 2021. The highest proportion (42.2 percent) of the respondent farmers perceived medium usefulness of Agricultural Information and Communication Center (AICC), while 20.8 percent of them perceived less usefulness and 35 percent of them perceived high usefulness of AICC for knowledge acquisition. Moreover, majority (63 percent) of the respondent farmers perceived medium to high usefulness of AICC. More than one-third proportion (34.3 percent) of the farmers faced high barrier in adopting ICT tools, while 34 percent and 31.7 percent farmers faced low and medium barrier respectively in adopting ICT tools. Findings revealed that training received on ICTs, self-efficacy, use of ICT tools and barriers faced by the farmers in adopting ICT tools significantly contributed to their perceived usefulness of AICC for knowledge acquisition. The study concludes with the recommendation to enable using of ICTs tools to promote the usefulness of AICC for knowledge acquisition.

CHAPTER I

INTRODUCTION

1.1 General Background

Agriculture is an important sector in Bangladesh which is leading to ensure food security in our country. It needs to adopt new farm technologies in order to meet the growing demands of food items and other related production inputs. Agriculture is one of the largest producing sectors of the economy since it comprises about 13.40% of the country's GDP and employs around 40.6% of the total labor force (BBS, 2021). The agricultural system of Bangladesh has a long history of cropping with the challenges. Over time the system has progressed in a surprising way. The addition of Information and Communication Technologies (ICT) improved the system's ability to meet the difficulties. Agricultural extension agencies are currently disseminating agricultural innovations developed by agricultural research institutes to the farmers. The use of ICT to disseminate agricultural technologies has been shown to improve agricultural production (Rahman and Islam, 2015).

AICC is a noble idea for agricultural extension service delivery in Bangladesh that is based on information and communication technology (Dash, 2015). AICC delivers up-to-date information on crop cultivation, animal and fish farming, local and worldwide market information, disaster management information and the dissemination of new agricultural technologies. Agricultural Information Service (AIS) under the ministry of Agriculture has a strategic goal to create AICC in each community (AIS, 2013). The main goals of AICC are to build e-agriculture, give ICT facilities to the all farmers and spread agricultural information through the media.

Agricultural extension services are critical for maintaining good productivity and efficient resource utilization in agricultural sector of a country, as well as providing farmers with critical access to the knowledge, information and technology they need to improve productivity and thus improve the quality of their lives and livelihoods (Anderson, 2007). As a result, it is critical to offer farmers with high quality information and knowledge in a timely manner. The farm family to grassroots level extension agent ratio is 1000:1, which is extremely low (Rahman and Islam, 2015). As a result, both the government and the business sector should take steps to offer timely, need based information.

ICT has emerged as a viable extension tool for strengthening development processes in general and agricultural development in particular (Kashem *et al.* 2010). The use of ICT to provide farm information to the farming community has been discovered to be successful. It could allow extension service providers to collect, store, retrieve and transmit a wide range of information to crop producers, such as best practices, new technology, lower input and output costs, better storage facilities, improved transformation links and weather, among other things. In various parts of Bangladesh, 499 AICCs have been created (Krishi Diary 2017). The effective adoption of agricultural inputs, market decision making, and acceptance of scientific methodologies can all be aided by the dissemination of pertinent information to farming communities. It is critical to disseminate information to agricultural and rural areas. Efficient farming is frequently built due to a limited ability to obtain knowledge and information in a timely and appropriate manner. As a result, closing the productivity gap between research stations and farmers' fields in the delivery of agricultural information services is critical to fight against poverty and hunger. Recognizing this, AIS established AICC in several rural locations, which is the focus of this research. While AICC transfer information, knowledge and technologies to farmers, this study will assess the usefulness of AICC towards knowledge acquisition by the farmers.

1.2 Statement of the Problem

AICC is considered as an ICT innovation of AIS. It plays a vital role in presenting technological thoughts, ideas and information to the farmers. In view of the preceding discussion, the researcher undertook this problem entitled, "Usefulness of Agricultural Information and Communication Center (AICC) for Knowledge Acquisition". This study tried to describe some selected characteristics of the farmers such as age, education, ICT ownership, self-efficacy, barriers faced by the farmers in adopting ICTs tools as the experimental variables and to determine the farmers' perceived usefulness of AICC for knowledge acquisition.

The use of AICC helps to the farmers for knowledge acquisition. For identifying usefulness of AICC for knowledge acquisition and other aspects of the study, it was necessary to know the answers of the following questions:

1. What were the salient features of the selected characteristics of the farmers?
2. To what extent farmers' perceived AICC as useful knowledge acquisition?

3. To what extent farmers' selected characteristics influence their perceived usefulness of AICC?

On the basis of the above discussion, the researcher undertook a piece of study entitled "Usefulness of Agricultural Information and Communication Center (AICC) for Knowledge Acquisition".

1.3 Objectives

- To describe the selected socio-economic characteristics of the farmers;
- To determine the farmers' perceived usefulness of AICC for knowledge acquisition;
- To explore the contribution of farmers' selected characteristics to their perceived usefulness of AICC for knowledge acquisition.

1.4 Justification of the Study

The primary goal of this study was to evaluate the perceived usefulness of AICC for knowledge acquisition. It is important to investigate whether or not farmers find it easy to access the AICC. AICC spreads information and knowledge in rural areas of developing countries. Knowledge and information are effectively improved agricultural and rural development (Gregg and Irani, 2004). Use of ICT as a source of information dissemination could be regarded as both a driver and an enabler. The agricultural sector is especially facing many problems in obtaining new information about market price, weather updates and other related issues (Man and Sadiya, 2009). By diminishing time, distance, and the information gap, ICT affects every area of life. The use of AICC is growing daily for faster and more effective communication among various groups of people from various societies, notably among farmers. AIS aims to create more AICC that would cover every village in Bangladesh. Given the questions raised above, the researcher decided it was necessary to conduct the current investigation, which is "Usefulness of Agricultural Information and Communication Center (AICC) for Knowledge Acquisition".

1.5 Scope and Limitation of the Study

The findings of the study will be particularly applicable to the Bogura district purposely selected as the locale of the study. Bogura district has twelve (12) upazilas. Three (3) upazilas were randomly selected as the study area for this research. These findings may

also be related in other areas of Bangladesh where the physical, socio-economic and cultural conditions are similar as the study area. The findings will be helpful to policy makers, as well as to the public and private agencies engaged in ICT base extension services. The study can contribute to the existing body of study on the integration of ICT for agricultural development. The main purpose of the study was to determine the farmers' perceived usefulness of AICC for knowledge acquisition. However, some restrictions must be set up with regard to specific study components in order to perform the research in a useful and practical manner. Considering the time, money and necessary resources available to the researcher the following limitations have been observed throughout the study:

1. The study was conducted in only Bogura district.
2. Population for the present study was kept confined within the members of AICC because they are reliable to perceive the usefulness of AICC.
3. Farmers possessed many characteristics and their characteristics varied to a great degree. Among those several characteristics were selected for investigation in the study.
4. Information used by the farmers for various purposes such as farming, business, politics, religions etc. but in this study, only investigated the farmers' perceived usefulness of AICC.
5. The focus of the study is on respondents' memory skills as well as their sincerity in sharing the specific information.
6. The facts and numbers the investigator gathered were applied to the conditions present in 2021.

1.6 Assumptions

In this study, the researcher had the following assumptions in mind while undertaking this study:

1. The sample of study respondents had the capacity to express their opinions and the knowledge necessary to respond to the questions.
2. The information provided by the respondents was reliable.
3. The AICC beneficiaries included in the sample were the actual representative of the population. The researcher who acted as interviewer was well adjusted to

the social and cultural environment of the study area. Hence, the data collected by him from the respondents were free from bias.

4. The findings of the study will have general application to other parts of the country where physical, socio-economic and cultural conditions do not differ much from the study area.
5. By using AICC for knowledge acquisition has contribution with the characteristics they selected.

1.7 Definition of Important Terms

AICC: Agricultural Information and Communication Center (AICC) established under AIS, is the pioneer for disseminating agricultural information and technologies at the root level by using ICT through establishing 499 AICC clubs across the country. Different ICT devices like laptop, smart phone, Internet, multimedia instrument etc. are registered and operated by AICC.

Information and Communication Technologies (ICTs)

ICTs refer to as communication technologies which include computers, the Internet, geographical information systems, mobile phones as well as the traditional electronic media like radio, television and e-newspaper. In this study, any computer-mediated communication media and applications such as mobile phones, Internet, social media, digital information repositories, ICT- assisted call centers, digital photography, web or mobile apps, blog consider as ICTs. (Balaji, *et al.*, 2007)

AIS: An agricultural information system can be defined as a system, in which agricultural information is generated, transformed, transferred, consolidated, received and fed back in such a manner that these processes function synergistically to underpin knowledge utilization by agricultural producers (Roling, 1987). Accordingly, an agricultural information system consists of components (subsystems), information related processes (generation, transformation, storage, retrieval, integration, diffusion and utilization), system mechanisms (interfaces and networks) and system operations (control and management). Agricultural information is considered as an essential input to agricultural education, research and development and extension activities.

Age: The age of the respondent is expressed as the number of real years since his birth at the time of the interview.

Education: The act or process of accumulating general information, developing one's analytical and decision-making skills, and generally putting oneself or others intellectually in a mature life-stage. Level of education of an individual farmer was defined as the formal education received up to a certain level from an educational institute(e.g. school, college and university) at the time of interview.

ICT Ownership: The use, implementation, and oversight of activities relating to devices used for information and communication can be characterized as ICT ownership processes, in which local stakeholders assume control and responsibility.

Training Received on ICTs: Training received on ICTs refers to acquiring operational knowledge on ICT related tools (Computer, laptops and multimedia etc.)

Self-efficacy: Self-efficacy is the capacity to access and use different ICT device. A person's greater efficiency will result in a more critical understanding of problems relating to ICT uses. As a result, learning activities and challenges with using ICT tools help people better understand the ICT resources they already own.

Uses of ICT: Use of ICT refers to the rate of using various devices for information and communication by the respondents for information interchange, devices like laptop, smart phone, internet, multimedia instruments etc.

Perceived Usefulness of AICC

Usefulness of AICC refers to the degree to which AICC is successful for acquisition of knowledge as perceived by the users.

CHAPTER II

REVIEW OF LITERATURE

The purpose of this Chapter is to review the literature that is pertinent to the current research. An attempt was made in this Chapter to represent a brief review of literature for the above purpose. But there are very few studies that address the viewpoints of usefulness of AICC for knowledge acquisition. The researcher attempted to search the literatures on a number of studies that have been conducted on usefulness of AICC for knowledge acquisition. This Chapter deals with general findings on the usefulness of using ICTs, contribution of the farmers' selected characteristics to their perceived usefulness of AICC and conceptual framework of the study.

2.1 General Findings on the Usefulness of Using ICTs

ICTs as defined in this study, concern all digital information handling and communication technologies, which are notably incredibly popular, especially in the rural parts of developing countries. Davenport and Prusak (1998) said digital ICTs (also known as "new ICT"), as well as hard technologies like radio, television and analogue telecommunication networks, and soft technologies like books, manuals and newspapers are all examples of information handling technologies. Radio, television, the telephone and email are examples of beneficial ICT that provide information to the poor and allow them to increase their productivity and revenue. Ssewanyana (2007) reported that in African rural settings, cell phones can sometimes perform successfully when combined with other traditional modes of communications. Bertolini (2004) argued that when comparing the costs and benefits of ICT development creative ways such as combining ICT based information sources (such as agricultural information systems) with conventional sources (such as radio broadcasting) should be considered. According to Asia Pacific Association of Agricultural Research and Institutions (APAARI) (2014) for farmers' information needs to be satisfied through use of ICTs are for market related information including price trends, assessing input and support services to be met and getting solutions to individual and community agricultural problems specially diagnosis of disease and pest problems.

Balaji *et al*. (2007) described radio, television and mobile phones in particular can help to speed up agricultural development by increasing access to informational knowledge services. ICT can be considered as a beneficial instrument in enhancing linkage

between research, farmers and Agricultural extension systems from the standpoint of Agricultural Knowledge and Information Systems (AKIS).

Sife *et al.* (2010) described ICT as an effective tools for providing information services because they allow for two-way communication and the provision of several services at the same time. Dash (2015) showed that 25.47% AICC respondents obtain information from AICC centers while 5.26% AICC farmers get from toll free call-center because they are aware of the services. About 34% of AICC farmers opined that their production and about 26% of the farmers believe that their production has increased due to the use of modern technologies learnt from AICCs. Kafura *et al.* (2016) concluded a study and found that few farmers were searching information in AICCs for their farm related issue. They also observed that in AICCs farmers looked for a wide range of information on different farm aspects which may be indicating the effectiveness of AICC. Mainly farmers asked the center for agricultural information specifically related to crop production and pest control. Hasan *et al.* (2009) found that farmers visit different ICT centers for seeking agricultural health and environmental information. Sometimes the AICC provides public service like showing results of public examinations like SSC or JSC examinations. It's also an income source for the center. Khan *et al.* (2016) reported that major proportion of the farmers considered the AICCs as either low or moderately effective to disseminate agriculture information. Pandit and Miah (2015) showed that 50% farmers per day are getting benefit from AICC and through AICC rural farmers can actively participate in the farm telecast and farm broadcast programs by phone in order to get their desired information.

According to Dercon (2002) Price risk is expected to be reduced significantly if traders and argo- processors have access to price information from other marketplaces as well as contact information for traders and agro-processors. Crop riskiness will be influenced by weather forecasts. ICTs may also improve the effectiveness of risk management crop sales. When common shocks occur, many families may opt to sell crops at once, causing the market to crash. The effectiveness of savings as a risk management approach is considerably reduced by the negative correlation between food and crop prices. There are a number of studies that investigate the effect of ICT on overall market efficiency and arbitrage.

Goyal (2010) examined the use of the Internet to provide the price information to Indian soybean growers that sell to wholesale market merchants. She discovered that providing farmers with price information resulted in a 1-3% boost in farmer prices.

In India, Fafchamps and Minten (2012) looked into the influence of an SMS based pricing dissemination service and found no effect on the price allegedly received.

According to Courtois and Subervie (2015) price information provided through the unknown e-Soko initiative led to a 10% increase in maize prices and an 8% increase in groundnut prices in Northern Ghana.

Modern communication technologies, such as mobile phones or the Internet are critical for development communication and can help the country of a socio-economic advancement. Lucky (2012) found that ICT based communication channels are critical in the spread of agricultural information and as a result in agricultural development. Farmers can use ICTs to contact directly with extension agents, ask questions, and receive answers without having to travel to an agricultural extension officer or wasting time, which is especially useful for urgent issues, Electronic media, radio, television, and the internet, may deliver information to even the most remote locations where direct contact is difficult.

In terms of time, cost and distance ICTs were particularly efficient in improving agricultural programs by facilitating access to new technology, production inputs and market information. He also noted that ICT had both direct and indirect effects on poverty reduction. The main direct consequence was better earnings from agricultural production as a result of the adoption of new technology and the main indirect benefit was the creation of jobs as a result of agricultural commercialization. As a result of the adoption of ICT based services, farmers are able to obtain more information and increase the production of their crops (Kaini, 2007).

Mobile phones support access to information about agricultural technologies and extension services. There are several potential mechanisms including improving access to information from private sources or through agricultural extension services; improving the management of input and output supply chains; facilitating the delivery of other services; increasing the accountability of extension services and increasing linkages with research systems. (Akter, 2011).

Farmers had a genuine need for market information, land records and services, accounting and farm management information, pest and disease management, rural development programmes and ICTs might assist them in gaining access to those services. ICTs help farmers to get timely information yet availability of ICTs is remained Limited (Meera 2004)

2.2 Contribution of the Farmers' Selected Characteristics to Their Perceived Usefulness of AICC

2.2.1 Age and perceived usefulness of AICC

S. M. M. A. Dipu *et al.* (2018) reported that highest proportion 46.2 percent of the respondents were in middle aged use ICT device compared to young aged 8.8 percent and old aged 45 percent.

M. Suzan Khan *et al.* (2017) found that highest proportion 49 percent of the respondents were in middle aged category compared to 30 percent old aged and 21 percent young aged category. The findings indicate that a large proportion 49 percent of the farmers were middle aged use ICTs device.

2.2.2 Level of education and perceived usefulness of AICC

Kafura *et al.* (2016) reported that education has a favorable and considerable impact on the effectiveness of agricultural information sources. Education had a good and important impact on the widespread usage of ICTs (Bhuiyan 1988). Education of the winter vegetable growers had moderate association with their use of different information sources (Rahman, 1996).

The education of the vegetable growers had a positive and highly significant relationship with their use of information sources. This means that the more the education of the vegetable growers, the more was their impact on information and communication sources used for vegetable cultivation (Ullah, 1996).

2.2.3 ICT ownership and perceived usefulness of AICC

Cole and Fernando (2012) reported that a randomized evaluation of the introduction of a mobile-phone based agricultural consulting service, "Avaaj Otalo (AO)" to cotton farmers in Gujarat, India, reveals the following. Demand for agricultural advice is high, with more than half of farmers calling AO in the first seven months. Farmer's offered the service turn less often to other farmers and input sellers for agricultural advice.

Management practices change as well: we observe an increase in the adoption of more effective pesticides, and reduced expenditure on less effective and hazardous pesticides. Farmers made tentative decisions considerably more readily with mobile phones than without, and farmers obtained, exchanged and manipulated information swiftly, according to the use of mobile phones in transmitting agriculture information. The findings found that the ownership of mobile phones by agricultural stakeholders had widely spread and increasingly assisted to overcome isolation and made communication between rural people, particularly farmers, easier. Mobile phones are, therefore, becoming increasingly important to agro-based entrepreneurs as an infrastructural device for improving efficiency of agriculture markets, promoting investment and contributing to empowerment (Akanda, 1994).

2.2.4 Training received on ICTs and perceived usefulness of AICC

S. M. M. A. Dipu *et al.* (2018) found that majority proportion (67.5%) of the farmers received 1 day training, 21.2% received 2 days duration training, 1.2% received 3 days duration training and 10% received no training.

M. Suzan Khan *et al.* (2017) found that majority proportion (92%) of the farmers received no training and 8% of the farmers received low training.

2.2.5 ICT using efficacy and perceived usefulness of AICC

In developing countries rural communities, particularly farmers, face a variety of hurdles and obstacles when it comes to employing information technology tools such as cell phones. Technical, economic, social and literacy are some of these issues. The lack of literacy and the poor quality of services provided by service providers are major challenges in creating ICT initiatives in rural areas. In the creation and usage of technology a lack of technological understanding was a major issue. Because the majority of rural people are illiterate, they are unable to learn and use technology tools such as cell phones and the internet (Samuel, *et al.* 2005)

2.2.6 Use of ICT tools in agriculture farming system and perceived usefulness of AICC

Lio and Liu (2006), stated that that using ICTs could have farmers strengthen their bargaining power. Small-scale farmers are able to compete with larger operators now that they have access to information. They can also gain information about crop selection, design products for niche markets and advertise the items directly to

consumers. Small farmers at the whim of global market pressures if they lack access to knowledge and communication capacities. While a few studies have found that ICT has a considerable positive impact on development, others have been more cautious or even critical. According to Cullen (2003), new technologies can coexist with older ones, but this typically leads to a digital divide and may cause other development goals to be overlooked. According to Mulata (2005), resources used to close the digital divide would have a greater impact if they were used to satisfy the basic needs of the poor. He goes on to ask about the outcomes of effective ICT use. Other researchers, Kirlidog and Aydemir (2005), have highlighted reservations about the adoption of western born ICTs in emerging cultures. However, it is now widely established that if used properly, ICT may contribute positively to development (Heeks, 1999).

2.3 Barriers Faced by the Farmers in Adopting ICT Tools and Perceived Usefulness of AICC

Rashid and Islam (2016) identified some problems while farmers using the e-agriculture that technical problems of different ICT based media in AICC, limited availability of ICT tools and Technology in AICC and lack of appropriate ICT based service offers to targeting rural farmers in AICC also some constraints to receive information from AICC. On the other hand, farmers thought that, lack of management of AICC activities and cost of using ICT services from AICC aren't clarify like above problems because AICC was established in an existing well-arranged IPM for ICM club and agricultural information where provided as cost free service from AICC among the member or non-member farmers.

2.4 Conceptual Framework of the Study

This study is concerned with the "Usefulness of Agricultural Information and Communication Center (AICC) for Knowledge Acquisition". It is impossible to deal with all characteristics in a single study. It was therefore necessary to limit the characteristics, which include age, level of education, ICT ownership, training received on ICT, self-efficacy, use of ICT tools in agriculture farming system and usefulness of AICC and barriers faced by the farmers in adopting ICT tools might have influence on the usefulness of Agricultural Information and Communication Center (AICC). Conceptual model of the study has been presented in figure 2.1.

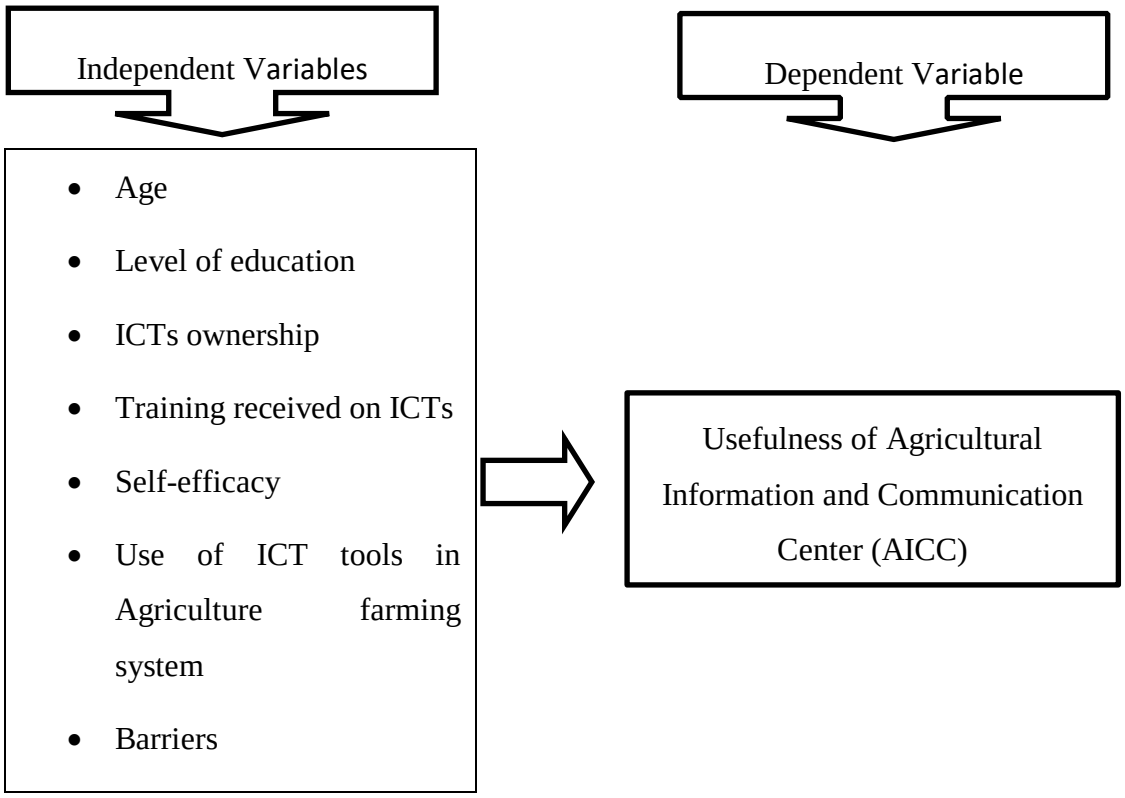

Figure 2.1 Conceptual framework of the study

CHAPTER III

METHODOLOGY

This Chapter describes the procedures and methods used in this study. This Chapter is divided into three sections. The first section describes the overview of research design. The second section describes the measurement of variables. Finally, the third section describes the methods applied in data analysis.

3.1 Research Design

3.1.1 Locale of the study

Bogura district is selected purposively as it is a potential district of Bangladesh for agriculture practices. There are twelve upazilas in Bogura district, among which Sariakandi, Dhunat and Sherpur upazilas were selected randomly. The study was conducted in Three villages namely Kiyorpara at Sariakandi upazila, Biswaharigacha at Dhunat upazila and Shibpur at Sherpur upazila. A map of Bogura district showing all the upazilas with study area is presented in Figure 3.1.

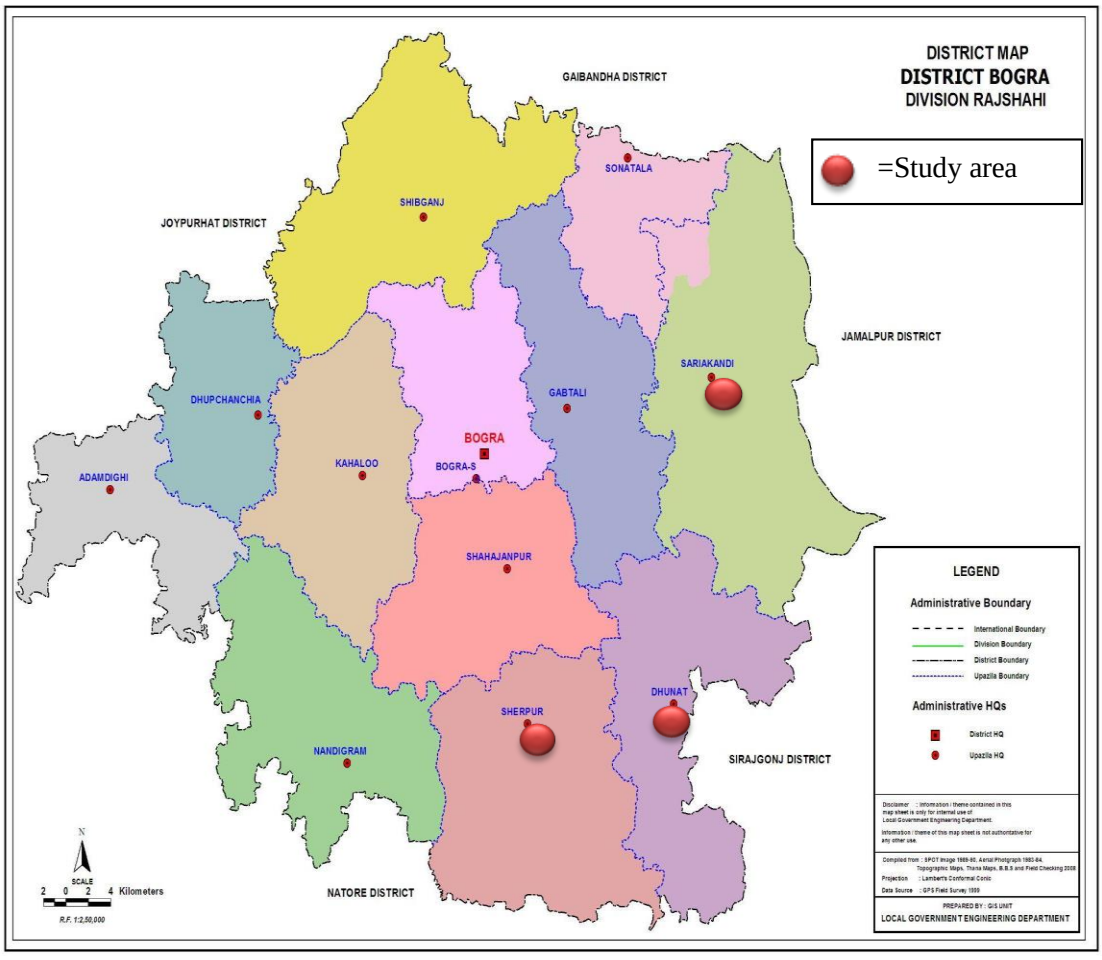

Figure 3.1 A map of Bogura district showing study area

3.1.2 Population of the study

There were twelve (12) AICCs in 11 upazilas of Bogura District. A total 184 farmers were found to be members of three (3) AICCs, which constituted the population of the study.

3.1.3 Population and sampling frame

Members of selected AICCs were constituted the population of the study. Data were collected from the sample rather than whole population due to time and fund constraints. Farmers were selected randomly and proportionately from different AICCs as the sample by using a random number table. This is illustrated as follows (Table 1). All the respondents were informed beforehand to collect the data and data were collected in a face-to-face situation during a period from 15 June to 10 July, 2021.

Table 1 Population and sample size of the study

District	Upazila	Population size	Sample size
Bogura	Sariakandi	52	34
	Dhunat	35	23
	Sherpur	97	63
Total		**184**	**120**

3.1.4 Instrument for data collection

Since the reasons for study were to test the hypotheses and measure the variances, a cross-sectional survey strategy was operationalized for this study. Henceforth, data were gathered utilizing an organized meeting plan. The study adjusted approved estimation things from earlier investigations. The beforehand prepared interview schedule was pre-tested and vital adjustments were completed. Both open and closed form questions were used. Approved estimation things of each variable with their literature sources were exhibited in an English version of the interview schedule as joined in the Appendix-A.

3.1.5 Variable of the study

Two types of variables were used for this study:

i. Dependent variable: It is a variable that is the outcome of different factors. The estimation of the reliant variable relies upon the estimation of alternate factors, that is, autonomous factors. In this study, “Usefulness of AICC” was considered as the dependent variable.

ii. Independent variables: These variable are regularly called as indicator variables or predictor variables. In a trial setting, a researcher needs to control the variable or acquaint another variable with see its impact on the criterion variable. In this study, selected seven (7) independent variables were selected. The independent variables were: age, level of education, ICT ownership, Training received on ICTs, self-efficacy, use of ICT tools in agriculture farming system, and barriers faced by the farmers in adopting ICTs tools.

3.2 Measurement of Variables

Variables are two types. These are discussing in the bellow:

3.2.1 Measurement of independent variables

3.2.1.1 Age

Age of respondent farmers was measured by the period of time from their birth to the time of conducting interview and it was measured in terms of complete years on the basis of their response. A score of one (1) was assigned for each year age. This variable appears in item number one (1) in the interview schedule as presented in Appendix-A.

3.2.1.2 Level of education

Education was measured by assigning score against each successful year of schooling by a respondent. One score was given for passing each level in an educational institution. For example, if a respondent passed the final examination of class five or equivalent examination, his/her education score has given five (5). Each respondent of can't read & write has given a score of zero (0). A person not knowing reading or writing but being able to sign only has given a score of 0.5. If a farmer did not go to school but took non-formal education, his educational status was determined as the equivalent to a formal school student. This variable appears in item number three (3) in the interview schedule as presented in Appendix-A.

3.2.1.3 ICT ownership

The ICT ownership score of a respondent was computed on the basis of his possession of the number and type of ICTs devices (Mobile phone, Internet, Computer etc.). This considered both self and shared access. Scores for ICT ownership were assigned as follow:

Nature of ownership	Score assigned
Full access	1
Shared	0.5
No Ownership	0

ICT ownership score was determined by summing the scores of all the three ICTs devices (Mobile phone, Internet, Computer etc.). Thus, the score could range from 0 to 3, where 0 indicated no access and 1 indicated the full access of ICTs.

3.2.1.4 Training received on ICT

Training of a respondent was measured by the total number of days for which a respondent attended in different training programs on ICTs. If a respondent takes training for 7 days, he will get 7 scores. This variable appears in the interview schedule as presented in Appendix-A.

3.2.1.5 Self-efficacy

Self-efficacy is referred to the level of expertise of ICTs materials (6 utilities of ICTs materials) used by the farmers. It was expressed in score. The efficacy scoring system for each item was done in the following manner:

Efficacy level	Score assigned
Can operate independently	4
Can use it alone but have less confidence in using	3
Can use with the help of member of the family	2
Can use it with the help of other members outside of the family	1
Don't know how to use	0

This variable appears in item number five (5) in the interview schedule as presented in the appendix. The score for ICT using efficacy were determined by adding all the scores obtained from all the items. Thus the score of ICT using efficacy could range from 0 to 24, where '0' indicates no efficacy and '24' indicates highest efficacy of ICT use.

3.2.1.6 Use of ICT tools

Use of ICT tools referred to the frequency of ICT materials (8 items of ICT) used by the farmers. It was expressed in score. The usages of ICTs scoring system for each item was done in the following manner:

Extent of use	Score assigned
Regularly	4
Often	3
Occasionally	2
Rarely	1
Never	0

This variable appears in item number six (6) in the interview schedule as presented in appendix. The score for use of ICTs could range from 0 to 32, where '0' indicates no use and '32' indicates highest use of ICTs.

3.2.1.7 Barrier faced by the farmers in adopting ICT tools

Barrier was measured by using nine (9) questions in open form as show in the variable no. seven (7) of the interview schedule. Same score was assigned for each of the question.

Following scores were assigned for each of 9 items:

Barrier faced by the farmers	Score assigned
High	4
Moderately high	3
Medium	2
Low	1
Not at all	0

3.2.2 Measurement of dependent variable

Usefulness of Agricultural Information and Communication Center (AICC) was measured by using nine (9) questions in open form as show in the variable no. eight (8) of the interview schedule. Same score was assigned for each of the question.

Following scores were assigned for each of 9 items:

Perceived of usefulness of AICC	Score assigned
Very useful	4
Useful	3
Moderately useful	2
Less useful	1
Not useful at all	0

Thus, the usefulness scores of AICC could range from 0 to 36 .This variable appears in item number nine (9) in the interview schedule as presented in Appendix-A.

3.3 Hypothesis of the Study

Hypothesis is always in declarative sentence form and they are related, either generally or specifically from variables to variables. In broad sense hypotheses are divided into two categories: (a) Research hypothesis and (b) Null hypothesis.

3.3.1 Research hypothesis

Based on the review of literature and development of conceptual framework, the following research hypothesis was formulated:

"Each of the 7 selected characteristics (age, education, ICT ownership, Training received on ICTs, self-efficacy, use of ICT tools in agriculture farming system, and barriers faced by the farmers in adopting ICTs tools) for knowledge acquisition had significantly influenced on farmers' perception regarding usefulness of AICC".

However, when a researcher tries to perform statistical tests, then it becomes necessary to formulate null hypothesis.

3.3.2 Null hypothesis

A null hypothesis states that there is no contribution of the concerned variables. The following null hypothesis was formulated to explore the contribution of the selected characteristics in empowering the farmers through e-Agriculture. Hence, in order to conduct tests, the earlier research hypothesis was converted into null form as follows:

"There is no contribution of the selected characteristics (age, education, ICT ownership, Training received on ICTs, self-efficacy, use of ICT tools in agriculture farming system and barriers faced by the farmers in adopting ICTs tools) on usefulness of AICC".

3.4 Data Analysis

3.4.1 Editing

Raw data were appropriately explored for omitting errors. The researcher made a watchful scrutiny when he finished a meeting with the goal that all data were incorporated to encourage coding and tabulation.

3.4.2 Coding and tabulation

The researcher consulted with the research supervisor and co-supervisor, made a detailed coding plan. All responses were given in numerical score. The respondent responses were transferred to a master sheet to facilitate tabulation. In accordance with the objectives of the research, all of the data were tabulated.

3.4.3 Categorization of data

For coding operation, the collected data were classified into various categories. These categories were developed for each of the variables based on their possible range (max and min). The procedure and categorization of a particular variable were further discussed in the Chapter 4 in detail.

3.4.4 Method of data analysis

The data were analyzed in accordance with the objectives of the proposed research work. The statistical measures such as range, means, standard deviation, number and percentage distribution were used to describe the variables. The analysis of data was performed using statistical treatment with SPSS (Statistical Package for Social Sciences) computer program, version 25. In order to estimate the contribution of the selected factors that might influence farmers in the use of AICCs in receiving farm-related information, linear regression analysis was used. Throughout the study the 0.01 and 0.05 levels of probability was used as the basis of rejection or accepting a null hypothesis. If the computed value was equal to or greater than the designated level of significance (p), the null hypothesis was rejected and it was concluded that there was a significant contribution between the concerned variable. Whenever the computed value was rejected. It was concluded that there was no contribution of the concerned variables.

CHAPTER IV

RESULT AND DISCUSSION

The results or the findings of this study and its explanation have been presented here in this Chapter. According to the objectives of the study, collected data were analyzed, tabulated and statistically analyzed which were obtained from the respondents. These are presented in three sections according to the objectives of the study. In the first section, independent variables (selected characteristics of the farmers) have been discussed. The second section deals with dependent variable (extent of farmers' perceived usefulness of AICC) have been discussed. And finally, significant contribution have been discussed in the third section.

4.1 Respondents Characteristics and Descriptive Statistics

Table 2 The salient features of the selected characteristics of the farmers

Sl. No.	Characteristics	N	Minimum	Maximum	Mean	SD
1	Age	120	20	75	38.53	10.972
2	Level of education	120	0.5	17	9.379	4.6797
3	ICT ownership	120	1	3	1.8	.55911
4	Training received on ICT	120	0	21	7.54	5.586
5	Self-efficacy	120	8	24	17.7833	4.34477
6	Use of ICT tools	120	9	24	17.8750	3.97167
7	Barriers	120	0	32	16.1167	8.82051
8	Usefulness of AICC	120	10	36	29.6417	4.13795

4.1.1 Age

Age of the farmers ranged from 20 years to 75 years, the mean was 38.53 with a standard deviation of 10.97. Age of farmers were classified into three categories namely: young aged (<35 years), middle aged (35-50 years) and old aged (>50 years). The distribution of the farmers in accordance of their age is presented in Table 3.

Table 3 Distribution of the farmers according to their age

Categories	Number of farmers	Percentage (%)	Observed range	Mean	SD
Young aged (<35 years)	38	31.7	20-75	38.53	10.97
Middle aged (35-50 years)	66	55.0			
Old aged (>50 years)	16	13.3			
Total	**120**	**100.0**			

Data presented in Table 3 indicated that the highest proportion 55 percent of the respondents were in middle aged category compared to 31.7 percent young aged and 13.3 percent old aged category. The findings indicate that a large proportion 55 percent of the farmers were middle aged. It also found that, middle aged farmers are proportionately higher than two other categories and they were the main user group of AICC.

4.1.2 Level of education

The level of educational scores of the farmers ranged from .5 to 17 with a mean and standard deviation of 9.38 and 4.68 respectively. Based on the educational scores, the respondents were classified into four categories such as can sign only (0.5), primary level (1 to 5), secondary level (6 to 10) and above secondary level (above 10). The distributions of the respondents according to their level of education are presented in Table 4.

Table 4 Distribution of the farmers according to their educational qualification

Categories	Number of farmers	Percentage (%)	Observed range	Mean	SD
Can sign only (0.5)	13	10.8	0.5-17	9.38	4.68
Primary level (1-5)	16	13.3			
Secondary level (6-10)	44	36.7			
Above secondary level	47	39.2			
Total	**120**	**100**			

Table 4 shows that respondent above secondary education level category constitutes the highest proportion (39.2 percent) followed by secondary level (36.7 percent), primary education (13.3 percent), can sign only (10.8 percent). It is found that the most educated farmer is likely to be more responsive to the modern facts, ideas, technology and agricultural knowledge acquisition.

4.1.4 ICT ownership

The ICT ownership of the farmers score ranged from 1 to 3 with an average of 1.8 and standard deviation 0.55911. Depending on ICT ownership status farmers are classified into three categories which are shown in Table 5.

Table 5 Distribution of the farmers according to their ICT ownership

Sl. No.	ICT Tools	Full access	No access
1	Mobile	120 (100%)	0
2	Internet	87 (72.5%)	33 (27.5%)
3	Computer	9 (7.5%)	111 (92.5%)

From the Table 5 we found that mobile phone, 120 (100 percent) respondents have full access. 87 (72.5 percent) respondents have full access. And 9 (7.5 percent) respondents had full access, and most of the respondents 111 (92.5 percent) had no access in computer.

4.1.5 Training received on ICT

The training exposure score of the farmers ranged from 0 to 21 days. The average score was 7.54 days and standard deviation was 5.59. According to the training exposure score, the farmers were classified into 4 categories such as, no training (0 days), short duration training (1 -3 days), medium duration training (4-7days), and long duration training (above 7 days) presented in Table 6.

Table 6 Distribution of the farmers according to their training received on ICT

Categories	Number of Farmers	Percentage (%)	Observed range	Mean	SD
No training (0 days)	30	25	0-21	7.54	5.59
Short duration training (1 -3days)	1	0.8			
Medium duration training (4-7 days)	52	43.3			
Long duration training (>7days)	37	30.8			
Total	**120**	**100.0**			

Data shown in Table 6 indicated that a majority (43.3 percent) of respondents received medium duration training, while 30.8 percent of the respondents received long duration training, 25 percent of respondents received no training, while 1 percent received short duration training. This means that a large proportion of the respondents received training which also enhance them using ICT tools use in agricultural farm management.

4.1.6 Self-efficacy

Self-efficacy score of the respondents varied from 8 to 24 against the possible range of 0 to 24 with a mean of 17.78 and standard deviation of 4.34. On the basis of ICT using efficacy, the respondents were classified into three categories such as, less efficacy (<16), Moderate efficacy (16-20) and High efficacy (>20) presented in table 7.

Table 7 Distribution of the farmers according to their ICT using efficacy

Categories (Mean±0.5 SD)	Number of Farmers	Percentage (%)	Observed Range	Mean	SD
Less efficacy (<16)	9	7.5	8-24	17.78	4.34
Moderate efficacy (16-20)	79	65.8			
High efficacy (>20)	32	26.7			
Total	**120**	**100.0**			

Data shown in Table 7 revealed that majority proportion (65.5 percent) of the respondents had moderate efficacy compared to 26.7 percent had high efficacy and 7.5 percent respondents had less efficacy.

4.1.7 Use of ICT tools in agriculture farming system

Use of ICT tools was scored by the respondents varied from 9 to 24 against the possible range of 0-32 with a mean of 17.88 and standard deviation of 3.97. On the basis of use of ICT, the farmers were classified into three categories such as less use (<16), medium use (16-20) and high use (>20) presented in table 8.

Table 8 Distribution of the farmers according to their use of ICT

Categories (Mean±0.5 SD)	Number of Farmers	Percentage (%)	Observed Range	Mean	SD
Less use (<16)	51	39.2	9-24	17.88	3.97
Medium use (16-20)	47	42.5			
High use (>20)	22	18.3			
Total	**120**	**100.0**			

Data shown in the table 8 reveals that majority proportion (42.5 percent) of the respondents had medium use of ICT in acquisition of knowledge compared to 39.2 percent respondents had less use and 18.3 percent respondents had high use of ICT tools for knowledge acquisition. Use of ICT tools expected to increase the interest of farmers towards AICC.

4.1.8 Barriers faced by the farmers in adopting ICT tools

The observed score of barriers faced by the farmers in adopting ICTs tools ranged from 0 to 32 against the possible range of 0-36 with a mean of 16.12 and standard deviation of 8.82. On the basis of barriers faced by the farmers in adopting ICTs tools, the respondents were classified into three categories such as low barrier (<12), medium barrier (12-20) and high barrier (>20) presented in Table 9.

Table 9 Distribution of the farmers according to their barrier faced in adopting ICT tools

Categories (Mean±0.5 SD)	Number of Farmers	Percentage (%)	Observed Range	Mean	SD
Low barrier (<12)	41	34.0	0-32	16.12	8.82
Medium barrier (12-20)	38	31.7			
High barrier (>20)	41	34.3			
Total	**120**	**100.0**			

The data presented in Table 9 shows that, highest proportion (34.3 percent) of farmers faced high barrier faced in adopting ICTs tools, while 34 percent and 31.7 percent farmers faced low and medium barrier faced in adopting ICTs tools.

Table 10 Barrier Index (BI) with rank order

Sl. No.	Problems	Extent of Severity					BI*	Rank Order
		High	Moderately High	Medium	Low	Not at all		
1	Lack of operational Knowledge	6 (5%)	5 (4.17%)	69 (57.5%)	22 (18.33%)	18 (15%)	199	7th
2	Lack of training facilities on ICT among farmers	6 (5%)	10 (8.33%)	80 (66.67%)	4 (3.33%)	20 (16.67%)	218	5th
3	Low awareness among rural farmers about AICC	11 (9.17%)	5 (4.17%)	83 (69.17%)	1 (0.83%)	20 (16.67%)	226	3rd
4	Lack of adequate skill among service providers in AICC	0 (0%)	5 (4.17%)	43 (35.83%)	16 (13.33%)	56 (46.67%)	117	9th
5	Shyness/anxiety of using ICT based media	31 (25.83%)	10 (8.33%)	44 (36.67%)	3 (2.5%)	32 (26.67%)	245	2nd
6	Low bandwidth speed of internet of AICC	64 (53.33%)	3 (2.5%)	11 (9.17%)	2 (1.67%)	40 (33.33%)	289	1st
7	Technical problems of different ICT based media in AICC	12 (10%)	13 (10.83%)	51 (42.5%)	26 (21.67%)	18 (15%)	215	6th
8	Limited availability of ICT tools and technology of AICC	16 (13.33%)	10 (8.33%)	51 (42.5%)	26 (21.67%)	17 (14.17%)	222	4th
9	Lack of management of AICC activities	18 (15%)	7 (5.83%)	48 (40%)	5 (4.17%)	42 (35%)	194	8th

$[BI]^{*}$ = (High×4) + (Moderately high×3) + (Medium×2) + (Low×1) + (Not at all×0)

Data shown in the table 10 revealed that "low bandwidth speed of internet of AICC" got the highest BI (289) and hence it was the highest (1st) ranked as barrier faced by the farmers in adopting ICTs tools.

"Lack of adequate skill among service providers in AICC" got the lowest BI (117) and hence it was the lowest (9st) ranked as barrier faced by the farmers in adopting ICTs tools.

"Shyness/anxiety of using ICT based media", "low awareness among rural farmers about AICC", "limited availability of ICT tools and technology of AICC", "lack of training facilities on ICT among farmers", "technical problems of different ICT based media in AICC", "lack of operational Knowledge" and "lack of management of AICC activities" got ranked 2nd, 3rd, 4th, 5th, 6th, 7th, 8th respectively as barrier faced by the farmers in adopting ICTs tools.

4.1.9 Usefulness of AICC

The observed usefulness of AICC scores of the respondents ranged from 10 to 36 against the possible range of 0-36 with a mean of 29.64 and standard deviation of 4.14. On the basis of usefulness, the farmers were classified into three categories such as less usefulness (<27), medium usefulness (27-31) and high usefulness (>31) presented in Table 11.

Table 11 Distribution of the farmers according to their usefulness of using AICC

Categories (Mean±0.5 SD)	Number of Farmers	Percentage (%)	Observed Range	Mean	SD
Less usefulness (<27)	25	20.8	10-36	29.64	4.14
Medium usefulness (27-31)	53	42.2			
High usefulness (>31)	42	35			
Total	**120**	**100.0**			

Table 11 indicates that majority proportion (42.2 percent) of the respondent farmers perceived medium usefulness of AICC, while 35 percent farmers perceived high usefulness and 20.8 percent of them perceived less usefulness of using AICC for knowledge acquisition.

4.2 Contribution of the Farmers of Their Perceived Usefulness of AICC for Knowledge Acquisition

In order to determine the contribution of socio-economic characteristics of the farmers to use of AICC, regression analysis was carried out which is presented in table 12.

Table12 Regression co-efficient of the selected characteristics of the farmers with their use of AICC for knowledge acquisition

Dependent variable	**Independent variables**	**B**	***P***	**R^2**	**Adj. R^2**	**F**
Usefulness of using AICC	Age	-.073	.260	.652	.630	29.988
	Level of education	.052	.580			
	ICT ownership	.034	.678			
	Training received on ICTs	.463	.000***			
	Self-efficacy	.163	.050***			
	Use of ICT tools in agriculture farming system	.122	.044***			
	Barriers faced by farmers	-.215	.003***			

(***Significance at 5%)

Among the seven hypothesized relationships, four (4) variables namely training received on ICTs, self-efficacy, Use of ICT tools in agriculture farming system and barriers faced by farmers were found to have significant contribution to usefulness of AICC for knowledge acquisition (Table 12) while rest of the variables showed no significant contribution. All the factors jointly contribute 65.2% of the variance of the adoption ($R^2 = 0.652$). Each predictor may explain some of the variance in respondents' of AICC using farmers by chance. The adjusted R^2 value (0.630) penalizes the addition of extraneous predictors in the model, but values of 0.630 still show that the variance in respondents' of AICC using farmers can be attributed to the predictor variables rather than by chance, and that both are suitable models (Table 12). In summary, the models suggest that the respective authority should consider the respondents' training received on ICTs, self-efficacy, Use of ICT tools in agriculture farming system improved the farmers.

4.2.1 Significant contribution of training received on ICTs by the farmers' perceived usefulness of AICC for knowledge acquisition

From regression analysis, it was concluded that the contribution of training received on ICTs for knowledge acquisition by the farmers by testing the following null hypothesis; "there is no contribution of training received on ICTs in knowledge acquisition by the farmers."

The p-value of the concerned variable was found .000. The following observations were made on the basis of the value of the concerned variable of the study under consideration.

a. The contribution of the training received on ICTs was found significant at 5% level of probability.
b. So, the null hypothesis was rejected.

Farmers' training received on ICTs had positive influence on knowledge acquisition. It had the significant (significant at $p<0.000$) contribution on their knowledge acquisition. It could be said that sometimes knowledge acquisition was not possible to ensure by short duration trained farmers compared to long duration trained farmers and they might face obstacles sometimes to take new decision for going outside from agricultural knowledge practices considering benefit.

4.2.2 Significant contribution of self-efficacy by the farmers' perceived usefulness of AICC for knowledge acquisition

From regression analysis, it was concluded that the contribution of self-efficacy for knowledge acquisition by the farmers by testing the following null hypothesis; "there is no contribution of self-efficacy in knowledge acquisition by the farmers by using AICC".

The p-value of the concerned variable was found .050. The following observations were made on the basis of the value of the concerned variable of the study under consideration.

c. The contribution of the self-efficacy was found significant at 5% level of probability.
a. So, the null hypothesis was rejected.

Farmer's self-efficacy had positive influence on knowledge acquisition. It had the significant contribution on their knowledge acquisition. This implies that with the

increased self-efficacy, the farmers will increase with their knowledge acquisition by using AICC.

4.2.3 Significant contribution of use of ICT tools in agriculture farming system by the farmers' perceived usefulness of AICC for knowledge acquisition

From regression analysis, it was concluded that contribution of use of ICT tools in agriculture farming system for knowledge acquisition by farmers by testing the following null hypothesis; "there is no contribution of use of ICT tools in agriculture farming system in knowledge acquisition by the farmers."

The p-value of the concerned variable was found .044. The following observations were made on the basis of the value of the concerned variable of the study under consideration.

d. The contribution of the use of ICT tools in agriculture farming system was found significant at 5% level of probability.
a. So, the null hypothesis was rejected.

Farmers who use of ICT tools in agriculture farming system had positive influence on knowledge acquisition. This implies that with the increase of use of ICT tools in agriculture farming system, the farmers will be able to increase their knowledge acquisition.

4.2.4 Significant contribution of barriers faced by the farmers in adopting ICT tools by the farmers' perceived usefulness of AICC for knowledge acquisition

From regression analysis, it was concluded that contribution of barrier faced by the farmers in adopting ICT tools for knowledge acquisition by farmers by testing the following null hypothesis; "there is no contribution of barrier faced by the farmers in adopting ICT tools in knowledge acquisition".

The p-value of the concerned variable was found .003. The following observations were made on the basis of the value of the concerned variable of the study under consideration.

e. The contribution of the barrier faced by the farmers in adopting ICT tools was found significant at 5% level of probability.
a. So, the null hypothesis was rejected.

Farmers who faced less barrier in adopting ICT tools had positive influence on knowledge acquisition. This implies that with less barrier faced by the farmers in adopting ICT tools, the farmers will be able to increase their knowledge acquisition.

CHAPTER V

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

This Chapter deals with the summary of findings, conclusions and recommendations of this study. Regression analysis was used to test the proposed hypotheses using SPSS v.23. In this Chapter, the summary of this study is presented.

5.1 Summary of the Findings

The major findings of the study are summarized below:

5.1.1 Selected factors influencing the farmers' knowledge acquisition

Age

The middle aged farmers comprised the highest proportion 55 percent followed by young aged category 31.7 percent and the proportion were made by the 13.3 percent by old aged category.

Level of Education

Farmers under secondary education level category constitutes the highest proportion (39.2 percent) followed by secondary level (36.7 percent), primary education (13.3 percent), can sign only (10.8 percent).

ICT Ownership

In case of Mobile phone, 100 percent respondents have full access. 72.5 percent respondents have full access and 27.5 percent of the respondents have no access in internet services. And 7.5 percent respondents have full access, and most of the respondents 92.5 percent have no access in computer.

Training Received on ICT

The majority proportion (43.3%) of respondents received medium duration training, while near 30.8% of the respondents received long duration training, 25% of respondents received no training, while 1% received short duration training.

Self-efficacy

The majority proportion (65.5%) of the respondents had moderate efficacy compared to 26.7% had high efficacy and 7.5% respondents had less efficacy.

Use of ICT Tools in Agriculture Farming System

The majority proportion (42.5%) of the respondents had medium use of ICT in knowledge acquisition compared to 39.2% respondents had less use and 18.3% respondents had high use of ICT for knowledge acquisition.

Barriers Faced by the Farmers in Adopting ICT Tools

The highest proportion (34.3%) of farmers faced high barrier in adopting ICT tools, while 34% and 31.7% farmers faced low and medium barrier respectively in adopting ICT tools.

5.1.2 Contribution of the selected characteristics of the farmers perceived usefulness of AICC for knowledge acquisition

Training received on ICTs, self-efficacy, Use of ICT tools in agriculture farming system and barriers faced by farmers were found significantly contribution to farmers' perceived usefulness of AICC for knowledge acquisition. Age, level of education, ICT ownership had no significant contribution with knowledge acquisition by using AICC.

5.2 Conclusions

Conclusions drawn on the basis of the findings of this study and their logical interpretation in the light of the other relevant factors are furnished below:

i. Training received on ICTs of the farmers showed a significant positive relationship with knowledge acquisition by the farmers. However, considering that most of the farmers belonged under the training received on ICTs group. Therefore, it may be concluded that the respondents received training which also enhance them using ICT tools use in agricultural farm management.

ii. Self-efficacy of the farmers showed a significant positive contribution with the knowledge acquisition by the farmers. The majority proportion (65.5%) of the respondents had moderate efficacy compared to 26.7% had high efficacy and 7.5% respondents had less efficacy. Farmers who are able to operate ICT tools, they get more benefitted.

iii. In case of Use of ICT tools, majority proportion (42.5%) of the respondents had medium use of ICT tools in acquisition of agricultural information compared to 39.2% respondents had less use and 18.3% respondents had high use of ICT for

knowledge acquisition. Use of ICT expected to increase the interest of farmers towards AICC.

iv. In case of barriers faced by the farmers in adoption ICT tools, the highest proportion (34.3%) of farmers faced high barrier in in adoption ICT tools, while 34% and 31.7% farmers faced low and medium barrier respectively in adoption ICT tools.

5.3 Recommendations

From the discussion and finding of the present study, the following recommendations were made:

5.3.1 Recommendations for policy

Now recommendations based on the findings and conclusions of the study are presented below:

i. Training received on ICT had a significant contribution on the usefulness of AICC. Most of the respondents had received ICT training. That is why then can use ICT tools like mobile phone or Internet. So, farmers should be given scope for receiving ICT training to increase the usefulness AICC.

ii. Self-efficacy had a significant contribution on the usefulness of AICC. Since ICTs self-efficacy is very important for a user to access the ICTs application, Ministry of Youth and Sports and ICTs Division of Government of the People's Republic of Bangladesh along with private sectors should promote ICTs self-efficacy training to the farmers. Therefore, the farmers may upgrade their skills and enable to minimize their economic loss due to market related inequalities.

iii. Use of ICT tools in agriculture farming system had a significant contribution on the usefulness of AICC. Most of the respondents have ICT devices like mobile phone or Internet. That is why then can use ICT tools like mobile phone or internet. So, farmers should use them properly to increase the usefulness of AICC.

iv. Usefulness of AICC had a significant positive contribution with knowledge acquisition. Farmers should learn about the usefulness of AICC that they could easily look forward to using ICTs devices.

5.3.2 Recommendations for further studies

On the basis of scope and limitations of the present study and observation made by the researcher, the following recommendations are made for future study. This study investigated usefulness of Agricultural Information and Communication Center (AICC) for knowledge acquisition. This study was only conducted in Bogura district of Bangladesh. Therefore, it was a small and limited research and cannot provide much information related to this aspect. Further studies should be undertaken to cover more information in the relevant matters. So the following suggestions were given for further research:

i. It is difficult to determine with the socio-economic characteristics of the farmers of Bogura district. Measurement of AICC using by the farmers is not free from questions. So, more reliable measurement of concerned variables is necessary for further study.

ii. The study was conducted in Bogura District. Similar studies should be conducted in other parts of the country to get a clear picture of the whole country which will be helpful for effective policy formulation.

iii. The study investigated the contribution of nine characteristics of usefulness of AICC for knowledge acquisition. So it is recommended that further study would be carried out with other dependent and independent variables.

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APPENDIX-A

ENGLISH VERSION OF THE INTERVIEW SCHEDULE

Department of Agricultural Extension & Information System

Sher-e-Bangla Agricultural University

Dhaka-1207

An Interview Schedule for data collection for the Research on

"Usefulness of Agricultural Information and Communication Center (AICC) for Knowledge Acquisition"

(This interview schedule is entitled to a research study.)

Serial No.....

Name of the respondent : ..... Father/Spouse name: .....

Village : ..... Union :.....

Upazila : ..... District :.....

Please answer the following questions

Personal Information

1. Age……...years

2. Level of Education: Please mention your level of literacy

i. Cannot read and write ( )

ii. Can Sign only ( )

iii. I have passed class----------

3. ICT Ownership: Please mention your possession and access to the following ICTs.

Sl. No.	Items	Possession Status		
		Full access	Shared access	No access
1	Mobile phone			
2	Internet			
3	Computer/Other communication device			

4. Training Received on ICTs.

Have you received any ICT training, till today? ( ) Yes ( ) No

If yes, please mention the following particulars.

Sl. No.	Subject matter of the training	Year of receiving the training	Name of the sponsoring organization	Duration of training (Days)
1				
2				
3				

5. Self-efficacy: Please mention your efficacy of using following ICTs.

Sl. No.	Items	Efficacy Level				
		Don't know how to use	Can use it with the help of other members outside of my family	Can use with the help of a member of my family	Can use it alone but have less confidence in using	Can operate independently with confidence
1	Receiving call by mobile phone					
2	Calling someone by using mobile phone					
3	Sending SMS					
4	Watching video					
5	Operate Computer					
6	Using agricultural apps					

6. Use of ICT Tools in Agriculture Farming System:

Do you use any ICTs tools in farming production? ( ) Yes ( ) No

If yes, please indicate your ICTs equipment.

Sl. No.	Items	Extent of use				
		Regularly	**Often**	**Occasionally**	**Rarely**	**Not at all**
1	Mobile phone	Daily	Multiple times /week	Once a week	Multiple times /month	Never
2	Internet	Daily	Multiple times /week	Once a week	Multiple times /month	Never
3	Computer	Daily	Multiple times /week	Once a week	Multiple times /month	Never
4	Union Information Service Center	Multiple times/ week	Once a week	Multiple times/ month	Once a month	Never
5	Agricultural Information service Center (AIS)	Multiple times/ week	Once a week	Multiple times/ month	Once a month	Never

6	Radio	Daily	Multiple times /week	Once a week	Multiple times /month	Never
7	Television	Daily	Multiple times /week	Once a week	Multiple times /month	Never
8	Social Media	Daily	Multiple times /week	Once a week	Multiple times /month	Never

Please mention the extent of usefulness of Agricultural Information and Communication Center (AICC) as perceived by you.

7. Barriers Faced by the Farmers in Adopting ICT Tools

Please mention your opinion against the following problems

Sl. No.	Problems	Extent of Severity				
		High	Moderately High	Medium	Low	Not at all
1	Lack of operational Knowledge					
2	Lack of training facilities on ICT among farmers					
3	Low awareness among rural farmers about AICC					
4	Lack of adequate skill among service providers in AICC					
5	Shyness/anxiety of using ICT based media					
6	Low bandwidth speed of internet of AICC					
7	Technical problems of different ICT based media in AICC					
8	Limited availability of ICT tools and technology of AICC					
9	Lack of management of AICC activities					

8. Usefulness of Using Agricultural Information and Communication Center (AICC)

Sl. No.	Items	Very useful	Useful	Moderately useful	Less useful	Not useful at all
1	Received timely information					
2	Getting accurate information					
3	Message completeness					
4	Getting agricultural farming information					
5	Getting weather information					
6	Getting agricultural product selling price					
7	Learning new technology					
8	Clarity of information					
9	Comprehensibility of information					

Respondent's Phone Number:

Thank you for your well co-operation

Dated..... Signature of Interviewer…….